



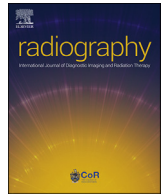
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## Expectations of therapeutic radiography students in Wales about transitioning to practice during the Covid-19 pandemic as registrants on the HCPC temporary register

N. Courtier\*, P. Brown, L. Mundy, E. Pope, E. Chivers, K. Williamson

Cardiff University School of Healthcare Sciences, Ty Dewi Sant, University Hospital Wales, Heath Campus, Cardiff, CF14 4XN, UK

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## ABSTRACT

**Introduction:** The Covid-19 crisis continues to profoundly impact on radiotherapy practice in the UK. We explore the views of therapeutic radiographer students on entering their first post in unique circumstances as a means to evaluate the support that may minimise negative impacts on their transition to practitioners.

**Method:** Focus groups were conducted outside of students' final year educational programme and immediately prior to them starting work. Qualitative data were analysed using a framework analysis.

**Results:** Emergent themes from the eleven participants were: Covid-19 as a layer on top of underlying anxieties; Degree of readiness for imminent psychological, emotional and practical challenges; Feeling valued as a health professional/radiographer at this time; A mixed student and qualified staff professional identity as HCPC temporary registrants.

**Conclusion:** Uncertainties related to Covid-19 were seen to add a destabilising component to existing anxieties and challenges. In this context, there are significant risks of impaired professional socialisation due to incongruence between students' expectations and the reality in clinical departments.

**Implications for practice:** Informed academic support and flexible clinical preceptorship that address anxieties and congruence barriers are vital to guide new practitioners through a health crisis that presents significant challenges but also opportunity for professional development.

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### Background

The Covid-19 pandemic has had a radical impact on working practices in UK radiotherapy departments. Rapidly amended treatment protocols recommend new treatment prescriptions<sup>1</sup> and working patterns that seek to balance health risks to patients and staff with an optimal allocation of NHS resources.<sup>2</sup> Radiotherapy services are anticipating extreme demand pressure from a significant patient backlog<sup>3</sup> caused by restrictions of upstream diagnostic oncology services, treatment options and uptake by service users during the first wave of the pandemic.<sup>4</sup>

Final year therapeutic radiography students in Wales have started work for the NHS against this uncertain background. They will initially work as registrants of the Health and Care Professions

Council (HCPC) Covid-19 temporary register under the auspices of the special health authority Health Education and Improvement Wales (HEIW). As this start date is earlier than normal, they have initially remained registered as students with a 60:40 clinical work/study split; at least until final assessments have been completed and ratified.

The transition from radiography student to qualified practitioner is a daunting prospect under the best circumstances.<sup>5,6</sup> This challenge is magnified by the current paradigm shift in working practices that may or may not become a new normal. There are indications that radiography students have experienced a range of negative emotions related to the pandemic,<sup>7</sup> but until work planned by Health Education England to understand the educational needs of allied health professionals in the light of Covid-19 is undertaken, their views remain unclear. The aim of this study is to explore students' feelings and expectations about starting work during the pandemic, in a cohort that had been removed from their educational placements in NHS departments. The findings can inform the vital support that academic and clinical staff can offer to

\* Corresponding author. School of Healthcare Sciences, Eastgate House, 35–43 Newport Road, Cardiff, CF24 0AB, UK. Fax: (+44) 02920 687 566.

E-mail address: [CourtierN@cardiff.ac.uk](mailto:CourtierN@cardiff.ac.uk) (N. Courtier).

this, and future student cohorts, starting work during an unprecedented crisis.

## Methods

A qualitative study design was used to explore and understand the student's beliefs experiences, attitudes, behaviour and interactions toward their situation through the use of a focus group method. Focus groups with students were conducted through the online meeting tool Zoom™. The intention was to form equally-sized groups of between five and eight participants, to balance the opportunity for individuals to share insights whilst maintaining their confidentiality.<sup>8</sup> Inclusion criteria were students in the final year of the radiotherapy and oncology programme who were eligible to be on the HCPC temporary register. At the time this study was undertaken the number of virus cases and related deaths was increasingly exponentially. Whilst a personal impact of disease, and cancer in particular, is not unusual for student therapeutic radiographers, it was thought that the suddenness and uncertainty around the virus might impact any decision to participate and therefore knowing someone who had been seriously ill or died from Covid-19 was considered an exclusion criterion. However, no student reported to have been affected in this way.

### Recruitment and consent process

Students were invited to participate in the study through a call sent via the electronic portal used by the university as its teaching and learning repository. There was a short window of opportunity in which to undertake the study however they were provided with an electronic information sheet and consent form more than 24 h before the focus groups. Those willing to take part emailed a signed consent form after an opportunity for queries to be addressed. Participants gave consent for audio and video recording of focus groups and to be contacted in the future about a follow up study component, but they could take part in the current study without giving consent for this.

### Focus groups

Two members of the university teaching team facilitated the focus groups. Their existing relationship with the cohort was acknowledged whilst emphasising that students were under no pressure to participate and that participating/declining/withdrawing would have no consequences for their education, professional esteem or employment prospects. Facilitators maintained a neutral position throughout the focus groups to promote the expression of honest opinions. Questions were guided by a semi-structured schedule and focussed on feelings and expectations about imminently entering their first therapeutic radiographer post as registrants on the temporary register and how they will cope with this situation. The schedule was based on relevant literature, discussions with clinical colleagues and professional experience regarding the transition of newly qualified radiographers.

### Data analysis

Data were transcribed and analysed using the framework analytic,<sup>9</sup> which is appropriate for analysing semi-structured focus group data<sup>10</sup> from applied health policy research.<sup>11</sup> Themes were developed within and across focus groups. All transcripts were independently double-coded by a second researcher. Provisional themes were returned to participants by email for comment, such as omission or misinterpretation of opinion, before final themes were agreed by the research team.

## Ethics

Study approval was granted by the institutional Research Ethics Committee (13/05/2020 ref: REC728). It was possible that student participants could experience emotional or psychological distress related to their focus group. In accordance with UK policy for health research,<sup>12</sup> the participants' well-being, rather than data collection, was paramount at all times. Sensitivity was exercised throughout by the experienced lecturer facilitators who were fully aware of access to student support services and able to sign post to these as necessary. Any such observed reactions were recorded by facilitators in reflective notes. Participant anonymity was established by the substitution of personal identifiers with a project pseudonym at transcription.

## Results

Eleven of 17 eligible students consented to take part. Nine females and two males were split across two focus groups, all of whom were of White British or Irish background (this detail is given in light of later revealed impacts of gender and ethnicity linked to Covid-19. Participants included a range of ages (school leavers and mature students at programme entry in 2017), with eight now aged 21–23 years, two 25–29 years and one 30-year old. They were a mix of with and without substantive posts arranged, with start dates ranging from the following week to more than a month later. The data were summarised by four emergent core themes (Table 1). Challenges to professional socialisation was a cross-cutting theme, which provides a focus for the discussion.

### Covid-19 as an extra layer

The response to Covid-19 was seen to add a 'layer on top' of the more fundamental transition to qualified staff member. This extra demand added both to the level of personal apprehension about starting work and the normal demands of the therapeutic radiographer role.

*As excited as I am I'm also anxious, but less anxious about the corona pandemic side more about starting as a newly qualified radiographer. Alex*

*People are probably going to be a bit on edge, staff wise. Patients are going to be a bit on edge. There's going to be all these different procedures and additional stuff that we are going to have to learn ... in my head they are going to be so busy trying to get on with their day-to-day thing, I am just going to feel like this extra task I suppose. Erin*

The perceived challenge of starting work during the pandemic was therefore seen by Emma as being a function of time previously spent on placement at the employment department.

*I'm a bit out of my depth, because it's going to be for me a new centre ... so I feel a bit like I'm starting everything again. Emma*

The departmental dynamics and processes were expected to be different but, beyond the feeling that staff would have developed a collective experience of Covid-19 practices and could be too pre-occupied to support new staff, there was little clear sense of how change would manifest.

*A lot of what we have learnt is going be different doing it for the first time, like the PPE and stuff. Stuart*

**Table 1**  
Summary of emergent core themes.

Value as a health professional	Feeling valued and excited at being an NHS therapeutic radiographer early. Reward from responsibility of being part of something bigger than self.
Covid-19 as an extra layer	Covid seen to add extra uncertainty about graduate role and anxiety to underlying apprehension about transition.
Readiness for change	Sub code – imminence of starting work. Attitudes towards accelerated change and uncertainty. Readiness for psychological, emotional and practical challenges.
Mixed professional identity	Sub code – life stage Mixed feelings about mixed identity of student/qualified staff. Sub code – professional subculture.

... having to learn all the new extras of covid and all the regulations, and not being able to do the things we would normally do, like not being able to go to certain parts of the department and how that protocol is going to work, so I do feel quite anxious about it in the sense of it's not going to be something I can just walk into and be 'oh yeah this is going to be fine, this is just a normal day'. Faye

The hypothetical proposition that, due to the NHS crisis, new staff could be asked to adopt roles that were not radiotherapy specific was initially met with shock. Reflection on the implications for acquisition of skills or knowledge produced some more nuanced thoughts.

I opted out of the Wales scheme because I knew that the department X start date would be later and what put me off was the fact that it could be a role which wasn't specifically radiotherapy related, because I felt that by the time I was trained up, I didn't feel like I would be competent enough for it. Sue

... also departments have got staff off because of covid, so where they are placing staff is probably going to be quite different to how they would normally place them. Faye

You're still in the department, you'll eventually be doing something you do like. Alex

The sentiment that 'you've gotta do what you gotta do' in these 'strange times' was expressed by multiple participants. This Wild West truism was rarely accompanied by a feeling of danger from corona virus exposure. This omission may have been influenced by any combination of selflessness, bravado, detachment ('you don't know what you don't know'), a realistic view of infection risks for the young or reassuring reports from departments: the overall tone was that things would be different but not bad.

...they are not suffering as much as some other departments are in hospitals, so I don't feel nervous as such about the pandemic side of it all. Sue

The level of anxiety/threat was however heightened when the start date for work was imminent.

I start on Monday and I'm quite anxious about going out in to the department. I feel very different to what I am used to as a student, like not being able to see people's faces and talk to people and have whatever regulations we are having at department X. It's quite scary. Prisha

### Readiness for change

Few of the cohort indicated that they would have chosen to take the summer break that is created by the time taken for HCPC registration in normal times: finances being mentioned as a

common reason. The impact of the unexpected accelerating effect of the temporary register shaped a range of attitudes in the student group.

... we are being able to start work early with a really sad reason, but there is obviously some excitement at being able to start sooner and to make that next step in our lives. Ruby

People have described it as a baptism of fire and I do feel a bit like that. Faye

I was gonna enjoy my summer, have a good time and now you have to start your proper job straight away. I also feel because most of us wouldn't have had a proper job before I think it is just a bit scary, but as X said we are all in the same boat, so it's not so bad. Sarah

The idea that everyone was in the same boat was suggested as a psychological mechanism that could mitigate against a feeling of personal unpreparedness. Although it was not always clear whether this sentiment referred to the student group, all radiotherapy staff or literally everyone, many comments did not support the idea. For example, age, or more accurately life stage, largely determined attitudes towards accelerated entry into the workforce.

Suddenly I have gone from being a student, and having, well my Dad has been doing everything like organising stuff, and now I've suddenly got to rent a house, I've got to think about stuff like tax. There's lots of adult things that I hadn't expected to have to deal with yet. Olivia

I don't know if it's because I'm that bit older but I'm just looking forward to being an adult again, so I'm not worried about tax or anything because I already know what's coming my way. But I think I will be looking forward to starting my adult life again. ... and hopefully getting a bit more of a routine. I suppose normalcy, knowing what the next six months is going to bring as much as possible. Erin

Building on the idea of normalcy, Olivia saw pandemic-related restrictions as a threat to maintaining key supportive networks at a time of profound personal and societal flux.

My challenge is more of moving away from X and leaving my Dad at a time when you're not sure whether you can go back and see him. I think that is going to be my biggest challenge more than the day-to-day. We're going to go to work, we're going to have to do what we have to do, and then you come home in the evenings, but it's more of moving your life not knowing, because Wales and England have different rules. Olivia

The prospect of normal working rhythms could also provide a welcome sense of dynamism during the stasis of the extended lockdown.

*I'm looking forward to talking to the patients and people other than people in the same house! Sue*

Work start dates that was more distant was again linked to a feeling of control, as Covid-19 related events could be evaluated, in turn engendering a greater sense of personal preparedness for upcoming professional events. The accelerated transition from student to staff also introduced pressing basic life issues.

*... trains were all on Sunday timetables so there never one early enough so I walked. It took an hour but I walked in [to the clinical department] every morning and got the train back. Erin*

*If I couldn't drive that would cause an issue as there's no other method of transport, so I would have to look at moving to City X. Sarah*

*A lot of houses are not ready until August because no one can view yet because of covid, so there's a month when I can't live in my house at the moment and I can't live in my new one, so I don't really know where I am going to be. Stuart*

### Value as a health professional

A few participants said that having the opportunity to contribute to a wider effort made them feel valued as health professionals.

*We're privileged enough to be allowed to go into the department at this time and valued enough as colleagues and staff to be working alongside them and at a much earlier rate than people would have done in previous years. Faye*

An interesting counterfactual point emphasised the unique opportunity for this cohort.

*If it was the other way and we were told 'although you have finished you can't go into the department for a few months' you would then feel really put off and really undervalued and then when you get into it you might lack confidence. Sue*

The opportunity to 'put on the uniform' during the pandemic was a rewarding prospect for some.

*I think I'm at the point in my life where I'm so ready to be part of a workforce, and a workforce I am really proud to be part of. Faye*

*So there's a lot of support for them [NHS] at the moment and I feel very proud to be part of that, and especially starting early. Sam*

Feelings of pride could become more equivocal when weighed against an uncertain reality in the radiotherapy department.

*...when you say you are going into work early everyone seems to be praising you, but then I also feel a little bit like an imposter just because the managers have been, like everything seems to be going normally, well OK, in the departments. Sue*

### Mixed professional identity

When questioned about their professional identity, some participants still felt like students, some felt as if their degree was complete, and others were ambivalent on this.

*In my head I've finished all my exams, I've finished all my clinical placements, so I feel I'm done with uni as I'm starting work, but, it's not that it's holding me back, but in a way it does feel like it is. Alex*

*The fact that we shouldn't really be there yet but we are... we're almost finished, we've got all the experience we would have had anyway. Sarah*

The inference for some was that the academic elements of the split role enacted through the temporary register was a hindrance or inconvenience. Conversely, the unusual split role was viewed by Sue as a stepping stone between student and working life.

*I can see that just from starting new jobs previously it takes it out of you, it's tiring because you are learning about the environment, so to actually have that time to be able to reflect on it would actually, I would imagine, help a lot going in to it as a student. Sue*

The fact that the group were still officially students whilst being eligible to start work was seen to blur the distinction between student and practitioner: both the person's internal perception of themselves and for how other staff members would view them. This threat to professional socialisation was felt most keenly by students starting work in a department where they been on placement, and where they would initially continue to work with the clinical tutor during the temporary register period.

*Because we are working somewhere where we worked as students, and we are still technically students, I'm quite concerned at still being classified as a student by staff. Prisha*

It was recognised that integration into a department is ultimately driven by socio-cultural factors. The pandemic could therefore be especially problematic for someone seeking to settle into a new department or geographic area.

*One massive thing when you start something new is the social side in getting to know people. It's such a big thing at helping you fit in and feel more comfortable and we won't have that because we are not going to be able to all be together at lunch or all be doing social things to get to know people...' Ruby*

*I'm going home so I don't feel quite as thrown as a new place might but, I was thinking more to do with getting to know a new group of people I will be working alongside ... Sue*

However, smaller teams working in a more isolated way could act to ease integration for a more introverted personality.

*... when I feel comfortable with a smaller group of people I will be better when I move on to meet the rest of them on the same level. Sam*

### Discussion

Most of our participants did not perceive the Covid-19 crisis as a significant independent challenge to their transition from therapeutic radiography student to practitioner. A sense of threat to personal and family safety or the possibility of death in service, for example, were notable by their absence. Instead, the pandemic was seen to add to 'normal' underlying anxieties about transition that have been previously reported by (diagnostic) radiographers.<sup>6</sup> How transformative the pandemic will ultimately prove for radiotherapy and oncology is unknown, but the working environment into which new graduates enter will influence the success of their transition.<sup>6</sup> The majority worldview expressed in our data may underestimate the impact of Covid-19 on a profession that overtly combines the

technological with the human.<sup>13</sup> A minority view in our data did expect a greater degree of disruption, but this remained rooted in uncertainty rather than something tangible. This finding is maybe not surprising where clinical placements had been cancelled in response to the pandemic<sup>7</sup> and therefore students were removed from the reality within clinical departments.

Given the numerous uncertainties that our participants reported, developing student's resilience and self-efficacy regarding their capacity to perform in changing circumstances<sup>14</sup> becomes an ever more important aspect of pre-registration radiography education and preceptorship periods, a quality that we could highlight through adaptation or changes to the taught curriculum for next year's qualifying students and subsequent cohorts. Adaptability will be a vital standpoint for those navigating immediate pandemic-related challenges and also ongoing professional revolutions such as automation and AI.<sup>15,16</sup> Using more than one clinical education department and elective placements are recognised ways to promote student adaptability through exposure to different ideas, practices and team cultures.<sup>5,17</sup> Work by the King's Fund suggests that incorporating theory and practice of compassionate leadership into undergraduate curricula, and even earlier at NHS cadet scheme level,<sup>18</sup> is also likely to contribute significant benefits to the individual and collective response to a health service crisis.<sup>19</sup> Considering leadership as a postgraduate competency is short-sighted in the current context.

Pre-registration programmes aim to extend learner's comfort zone through progressive exposure to challenge within a supportive structure. The 'got to just get on with it' attitude expressed by our participants may have been reinforced by time spent in clinical departments, as it has been a longstanding expectation within the profession.<sup>20</sup> This is a suboptimal strategy when the increasing complexity of cancer management is coupled with changing practices and protocols.<sup>7</sup> Flexible preceptorship packages provide the means to continue the supportive framework begun at university in a way that is tailored to the individual and their local circumstances.<sup>21</sup> For example, the unusually rapid gradient from student to staff during the period of Covid-19 lifestyle restrictions (enforced differently in devolved nations) was seen to destabilise the foundation for transition to an independent working life; factors we may need to consider in respect of the unknown impact of any subsequent spikes or second wave of the pandemic. Students were contending with the basic needs of accommodation and transport during a formative period already characterised by anxiety, tiredness<sup>5</sup> and low confidence.<sup>17</sup> A lack of timely support in this precarious environment could engender the feeling of being emotionally overwhelmed referred to as *reality shock*.<sup>6,20</sup> Graduate expectations that fall short of reality can threaten motivation and job satisfaction, potentially initiating modelling of poor coping strategies, withdrawal behaviours and ultimately attrition.<sup>7,22</sup>

Structured support should consider the extent to which students will be joining an established community of practice<sup>20</sup> that has evolved during an unfolding Covid-19 journey. A level of congruence may have formed that makes it more difficult for new staff to integrate. In simple terms, congruence theory suggests an employee is likely to perform well when their psychology and expectations are congruent with the patterns, values and culture of the organisation/environment they join.<sup>23,24</sup> Conversely, value incongruence arises when the expected environment or routines are changing, or the gradual socialisation of the employee into the organisation does not happen. Teams working in clinical bubbles may consciously or unconsciously raise barriers to professional socialisation and the informal opportunities for social integration of new graduates. Compassionate leadership that fosters the mentorship of junior cohorts from the ground up<sup>6</sup> as part of a flexible preceptorship package<sup>21</sup> could mitigate these risks.

Opportunity for reflection on clinical scenarios and experiences is a vital part of this preceptorship, and our data points to the value of the time provided by the academic component of the temporary register working in this regard. Finally, new opportunities for non-work social events, even if online, may smooth integration into the department, especially for those starting work early or living alone, via enhanced inter-personal understanding and a flatter social hierarchy.

#### Study limitations

The existing relationship between focus group facilitators and students may have impacted on their participation and responses despite our efforts to address this risk. Our data deliberately captured students' expectations immediately prior to leaving university. This study will be followed up with a further detailed study exploring issues raised with the broader clinical team and to retrospectively compare findings with the subsequent reality of starting work during the pandemic.

#### Conclusions

The Covid-19 pandemic will change the path of transition of students entering the radiography workforce; what remains to be seen is how different this is likely to be for the qualifying radiographers of 2020 in comparison to past and future students. The loss of clinical placement for the following cohorts during 2020 will also have its own story to tell, so effects are likely to be felt for at least the next two years. It is what we can learn from the situation and begin to implement within academic and clinical settings that will direct future guidance. The team are looking to take this study forward through the perceptions of qualified staff as to how the qualifiers of 2020 were professionally socialised and integrated into the clinical workplace, as well as returning to the participants in six to twelve months to obtain their view on the same areas. If wide-ranging anxieties and congruence barriers can be countered by a supportive preceptorship period, our data suggest that the way the profession meets the challenges of the pandemic presents a unique legacy. The NHS has arguably never been more prominent or valued by society. With this comes opportunity to take on responsibility and develop a strong professional and personal identity. The split role of the temporary HCPC register provides an opportunity for the reflection required to direct this development. At a more basic level, work represents a welcome sense of routine and purpose against a backdrop of limited social interactions.

#### Conflict of interest statement

The authors have no conflicts of interest to declare.

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#### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.radi.2020.09.001>.

## References

- Royal College of Radiologists. *Repository of advisory documents for cancer treatment during the coronavirus (COVID-19) pandemic*. 2020. Available at: <https://www.rcr.ac.uk/college/coronavirus-Covid-19-what-rcr-doing/clinical-information/coronavirus-Covid-19-cancer>. [Accessed 15 May 2020].
- National Institute for Health and Care Excellence. *Covid-19 rapid guideline: delivery of radiotherapy*. NICE guideline NG162; 2020. Available at: <https://www.nice.org.uk/guidance/ng162>. [Accessed 15 May 2020].
- Faivre-Finn C, Fenwick JD, Franks KN, Harrow S, Hatton MQF, Hiley C, et al. Reduced fractionation in lung cancer patients treated with curative-intent radiotherapy during the COVID-19 pandemic. *Clin Oncol (R Coll Radiol)* 2020;**32**(8):481–9. <https://doi.org/10.1016/j.clon.2020.05.001>.
- Hiom S. *How coronavirus is impacting cancer services in the UK*. 2020. Available from: <https://scienceblog.cancerresearchuk.org/2020/04/21/how-coronavirus-is-impacting-cancer-services-in-the-uk/>.
- Naylor S, Ferris C, Burton M. Exploring the transition from student to practitioner in diagnostic radiography. *Radiography* 2016;**22**(2):131–6. <https://doi.org/10.1016/j.radi.2015.09.006>.
- Harvey-Lloyd JM, Morris J, Stew G. Being a newly qualified diagnostic radiographer: learning to fly in the face of reality. *Radiography* 2019;**25**(3):63–7.
- Jamison N. 'We are here for you': crisis through the eyes of a student. *Synergy News* May 2020.
- Barbour R. *Doing focus groups: the sage qualitative research kit*. Ch4: 67. London: Sage Publications; 2007.
- Ritchie J, Spencer L. Qualitative data analysis for applied policy research. In: Bryman A, Burgess RG, editors. *Analyzing qualitative data*. London: Routledge; 1994. p. 173–94.
- Rabiee F. Focus group interview and data analysis. *Proc Nutr Soc* 2004;**63**(4):655–60.
- Srivastava A, Thomson S. Framework analysis: a qualitative methodology for applied policy research. *J Adm Gov* 2009;**4**(2):72–9.
- NHS Health Research Authority. *UK policy framework for health and social care research*. HRA; 2017.
- Goh P, Sandars J. A vision of the use of technology in medical education after the COVID-19 pandemic. *Med Ed Publish* 2020;**9**(1):49. <https://doi.org/10.15694/mep.2020.000049.1>.
- Ahmad AS. *Why you should ignore all that coronavirus-inspired productivity pressure*. The Chron High Edu; 2020. Available at: <https://www.chronicle.com/article/Why-You-Should-Ignore-All-That/248366>. [Accessed 2 May 2020].
- Kilgannon H. *Leadership through COVID-19: why authenticity and adaptability is key*. June 2020. Available at: <https://aqua.nhs.uk/leadership-through-covid-19-why-authenticity-and-adaptability-is-key/>. [Accessed 27 June 2020].
- Hardy M, Harvey H. Artificial intelligence in diagnostic imaging: impact on the radiography profession. *Br J Radiol* 2020;**93**(1108):20190840. <https://doi.org/10.1259/bjr.20190840>.
- Mackay SJ, Anderson AC, Hogg P. Preparedness for clinical practice – perceptions of graduates and their work supervisors. *Radiography* 2008;**14**(3):226–32.
- NHS England. NHS and St John Ambulance to recruit and train thousands of cadets. Accessed 05/07/2020. Available at: <https://www.england.nhs.uk/2020/07/nhs-and-st-john-ambulance-to-recruit-and-train-thousands-of-cadets/>.
- Bailey S, West M. *Covid-19: why compassionate leadership matters in a crisis*. March 2020. Available at: <https://www.kingsfund.org.uk/blog/2020/03/covid-19-crisis-compassionate-leadership>. [Accessed 4 April 2020].
- Decker S. The lived experience of newly qualified radiographers (1950–1985): an oral history of radiography. *Radiography* 2009;**15**:72–7.
- Martin A, Dodd E. First steps into practice: the value of preceptorship. *Imaging Oncol* 2020:34–9. Available from: [https://www.sor.org/system/files/article/202006/jio\\_2020\\_lr.pdf](https://www.sor.org/system/files/article/202006/jio_2020_lr.pdf).
- Williamson K, Mundy LA. Graduate radiographers' expectations for role development - the potential impact of misalignment of expectation and valence on staff retention and service provision. *Radiography* 2010;**16**(1):40–7. <https://doi.org/10.1016/j.radi.2009.05.001>.
- Spokane AR, Mair EI, Catalano M. Person–environment congruence and Holland's Theory: a review and reconsideration. *J Vocat Behav* 2000;**57**:137–87. <https://doi.org/10.1006/jvbe.2000.1771>.
- Verplanken B. Value congruence and job satisfaction among nurses: a human relations perspective. *Int J Nurs Stud* 2004;**41**(6):599–605. <https://doi.org/10.1016/j.ijnurstu.2003.12.011>.