



Sustainable future for diagnostic radiology: lifelong learning: delivering education and training for a sustainable workforce

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Background

The separate strands developed within the RCR *Sustainable future for diagnostic radiology* series have identified a number of issues that may potentially impact on training and education, since increased use of networked models, working from home and working for multiple providers may mean consultant radiologists spend less time on site, reducing face-to-face teaching and learning opportunities.

Implications for delivery of undergraduate training and education

Undergraduate teaching opportunities need to be considered and carefully designed alongside any changes to working practices and delivery of radiology services in networked models. While some consultant radiologists have undergraduate teaching recognised as part of the formal job planning process, many consultants deliver training on an ad hoc basis with the risk that these unrecognised educational opportunities will be lost given the possible move towards increased use of teleradiology, flexible home working and outsourced reporting.

Teaching for students/junior doctors based in hospitals where these models have been adopted may have to be more formally rostered and job planned with those responsible for planning undergraduate education, possibly through the use of the academy model, based at a central hub, with increased use of online material.

To maintain undergraduate teaching opportunities, consideration should be given to the following:

- Radiology trainees should be formally allocated medical student radiology teaching sessions since this will help their own learning and give them training and confidence in lecturing and presentation skills
- Compiling excellent medical student teaching material; such teaching presentations can be used repeatedly for subsequent cohorts of medical students.
- Good teaching generates enthusiasm for the discipline of imaging among the future generation of doctors and should ultimately encourage more trainees to specialise in radiology.

Implications for delivery of foundation training and education

Before implementing any plans to reshape the future, it is vital to continue to attract a highly motivated and enthusiastic group of young doctors into radiology to maintain the high-quality, patient-centred service, which forms an essential part of the whole of modern medicine, surgery and general practice. A well-designed career pathway in an innovative, high-tech and fast-moving specialty with a reasonable work–life balance is a desirable option for many.

- It is very important that radiology continues to be seen as a desirable and exciting career opportunity by both medical students and foundation doctors.
- At present, radiology remains a competitive specialty to enter, but further inroads into raising the profile of radiology at undergraduate (UG) and foundation (FP) levels need to be made.
- Raising the profile of the specialty is best achieved face to face, for example, through taster weeks allowing first and second year foundation doctors (FY1/2s) to see a radiology department in action delivering vital aspects of the specialty in relation to best patient care and management.
- Networking, increased outsourcing and less than full-time working may reduce teaching opportunities within departments and careful consideration will need to be given to managing this in any organisation that delivers training.

Implications for delivery of radiology run-through training and education

While the relentless demand for imaging means there is no shortage of training opportunities in radiology departments across the country, time pressure is a major barrier to the delivery of effective training.

While more flexible home-working, a growth in networking, increased use of teleradiology, expansion of outsourcing to private organisations and extended provision of non-radiologist reporting may result in a happier, more efficient and flexible senior radiology workforce, the effect on radiology training could potentially be catastrophic, particularly within the confines of the European Working Time Directive (EWT) New Deal restrictions and the delivery of out-of-hours imaging.^{1,2}

The increased adoption of sustainable working models in radiology has both positive and negative implications for radiology training.

- Creative use of outsourcing and teleradiology out-of-hours reporting could result in a decreasing reliance upon trainees to support on-call rotas, allowing them more effective training opportunities during the normal working week and helping them to feel more included as part of the core imaging department team.
- More consultants with access to better information technology (IT) infrastructure from home and increased outsourcing may provide better imaging support out of hours.
- More immediate review of studies and a decreasing out-of-hours workload may result in trainees working in a less pressurised environment. This seems to work well in some smaller departments. It is perhaps more difficult to apply in the major trauma/tertiary referral settings.
- Many training programmes are already predicated on a 'hub-and-spoke' model with trainees well-versed in having relatively short rotations in variety of different trusts during their training.
- Networked subspecialty work, for example in interventional radiology, may require working with unfamiliar consultants in different departments who use varying techniques; this may have some advantages, such as exposing trainees to different ways of working.
- Care needs to be taken since a reduced number of radiology consultants physically present during normal working hours has the potential to reduce informal training opportunities and flexibility around clinical supervision.
- In the future, training may be centred on more extended networks, requiring increased travel between sites (dependent upon regional geography) resulting in increased travel time and expense for individual trainees.
- Statutory and mandatory training passports and which body holds employment contracts are other areas which need to be taken into account.

Supervision

All trainees are required to have a trained clinical and educational supervisor who must have had formal training for the role.

The RCR provides supervisor skills and trainee in difficulty workshops designed around the General Medical Council's (GMC) requirements, as well as training the trainers courses.³

Educational supervision

- Educational supervision should not be affected by many of the proposed more flexible and networked models of radiology delivery as educational supervisors are responsible for a trainee's progress over time.
- Interactions and meetings will usually be formally scheduled and organised in advance.
- There may be occasions when trainees require more immediate support and advice, for example, in the context of an untoward or serious incident when they may wish for more dispassionate assistance. The role of a clinical supervisor is to provide oversight of a specified radiology trainee's education and clinical work, delivering constructive feedback during a training placement.
- Any move towards distant networking and reporting by non-radiologists will require clarification around the relationship and lines of responsibility between the clinical supervisor and the trainee because a clinical supervisor has to be immediately available, 'looking over the shoulder' of the trainee, teaching on-the-job with developmental conversations, providing regular feedback and responding rapidly to issues as they arise.
- All trainees should have a named clinical supervisor for each part of the radiology rotation who must be able to tailor the level of supervision to the competence, confidence and experience of their trainee.
- Workplace-based assessments will also tend to fall within the remit of a clinical supervisor, although a range of assessors is suggested.

Networking model

- This may be more easily implemented within some areas of special interest, such as the paediatric radiology model described in the networking document, however, there is the danger of having less general cover/experience which is required for many general ultrasound (US) and computed tomography (CT) lists, and the danger of the consultant workforce

deskill as general radiologists by becoming too super-specialised with too narrow an area of competence.⁴

- On-site provision of radiology can be achieved on a rotational basis using a networked model, but it does reduce flexibility in cross-cover for service, education and training and requires very careful planning of leave.

Less than full-time (LTFT) training

- LTFT training is an option that trainees may take for individual reasons, such as disability or ill-health or caring for children or another relative/dependant.
- Responsibility and funding for LTFT training lies with deaneries/local education and training boards (LETBs) and will usually involve a slot-share in radiology or working less than full time in a full-time post, as funding for supernumerary training opportunities is becoming increasingly scarce.
- Working LTFT will require an extension to the length of training time before gaining the Certificate of Completion of Training (CCT) on a pro rata basis. Similarly, the timing for sitting the FRCR examination may be affected, but otherwise a LTFT trainee will follow the same curriculum and take part in the same assessment system as any other trainee.
- LTFT training does not exempt a trainee from on-call duties.
- LTFT training can lead to some isolation and the feeling of being left behind when peers progress through the radiological milestones more quickly.

Out-of-hours support

In general this is less of an issue for conventional cross-sectional imaging, with many trusts already outsourcing on-call reporting to private providers, but many centres require hands-on out-of-hours (OOH) US, for example, with paediatric and transplant services on the diagnostic side and also those in interventional radiology (IR) subspecialty training. These organisations are often entirely reliant upon trainees with the requisite US training to perform these studies.

Major trauma centres are likely to require consultants to be available to attend, review and discuss complex imaging. While this may be done remotely, appropriate IT will need to be resourced to deliver the necessary large files rapidly. Networking with major trauma/transplant centres as hubs could be the answer as long as there are the requisite number of suitably skilled radiologists able to take part.

While proposed moves to on-call networks or private teleradiology provision may allow trainees more training opportunities during normal working hours, some important training aspects of working out of hours may be lost, such as interactions and dialogue with requesting clinicians and prioritisation of cases. A balance will need to be made between these conflicting requirements.

Investing in yourself

Out-of-programme activities (OOPA)

This is a collective term for periods of time taken out of the normal training programme. There are three types of formal OOPA, experience, research or training, with a fourth option being an out-of-programme career break, allowing a trainee to take a break in his/her training. All options have to be planned well in advance with completion of the relevant paperwork.⁵ An extension to CCT date may be required.

Post CCT fellowships/experience

Although these training and experiential opportunities are not a core activity for the RCR, 'Fellowships', either within the UK or abroad, allow trainees to expand on their training and increase their confidence in their chosen special interest/subspecialty.

Structure and resources

- Fellowships – These may be undertaken within the UK or abroad. In some cases, part of the training can be taken as an OOPA, which could count towards a CCT as long as the applications to the LETB/deanery and GMC are made prospectively.
- Research fellowships – the RCR actively supports clinical radiologists undertaking research and has assisted many Fellows members to go on to successful academic careers.⁶
- Continuing professional development (CPD) – fellowships may offer the chance to develop focused training and specific CPD not readily available during run through training.

Delivery of post-CCT training and education and implications for the sustainable working model

Post-CCT fellowships in UK

- There are a number of post-CCT fellowships available within the UK.
- There is a move within a number of medical colleges to develop more formal accreditation of such fellowships to ensure educational content and delivery, and such fellowships may form the basis of post-CCT credentialed training in the future.

Post-CCT fellowships abroad

- These opportunities offer exposure to other cultures and healthcare systems with their different strengths and weaknesses.
- They can broaden knowledge and understanding of other imaging techniques, diverse technology and IT systems.
- At their conclusion, most fellows return to seek consultant positions in the UK.
- One of the risks of the current turmoil and uncertainty within the NHS is that healthcare systems outside the UK may start to look increasingly attractive.
- There may be a rise in numbers of post-CCT fellows choosing to stay and practise radiology abroad adding to the attrition rate.

Sustainable working models and the delivery of ongoing training and education

As consultants progress through their careers, differing considerations and challenges arise. During the early stages, adjustments to the new independence and reduced external direction need to be made, which is where a mentoring process can be very helpful. It is a time to consider how best to develop other skills, such as in training or research, to build a fulfilling career. Towards the end of a radiologist's working life, other considerations may include a reduction in working hours and a change in working patterns.

Support for newly appointed consultant

- Mentoring, which may or may not be radiology specific, should be available locally at trust level. The RCR has piloted and is developing and delivering a mentoring scheme.⁷
- Support for professional development is required, including medical education, some of which is now mandatory in the later stages of the radiology specialty curriculum. There should be encouragement and support to develop further skills in research, management and training (both undergraduate and postgraduate) within departments, often with individual leads.
- There needs to be strong leadership within radiology departments to ensure younger consultants continue to be supported and avoid isolation, particularly in the context of increased working from home and proposed networking.
- The RCR Leadership for improvement programme is open to consultant radiologists to develop leadership skills before taking up leadership roles.⁸
- Additional training can be pursued to support both departmental and personal development but may require careful planning and short-term backfill.
- CPD, audit and quality improvement projects are ongoing requirements for consultants throughout their careers to ensure a high-quality service is being delivered to patients.
- Revalidation and appraisal are mandatory trust and GMC obligations required throughout a career in the NHS. Trusts need to ensure that there is adequate time within job plans for consultants to deliver this component of their post.

Support for established consultants

Many of the points outlined above will remain pertinent in the career of the more established consultant radiologist. However, during this phase of a consultant's career there may be particular pressures that could impact on the ability both to deliver and maintain education and training successfully, these include:

- Increasing special interest expertise resulting in the loss of more general radiology skills.
 - Careful job planning, possibly as a local radiology consultant group, should be implemented to address this. There is potential for this to have a knock-on effect for radiology on-call rotas, on-call cover and delivery of general US and CT lists
- Differing delivery models within separate departments and between departments, to encourage support, maintenance and the development of skills need to be investigated and supported
- Careful development of departmental rotas for trainees will be required to ensure appropriate delivery of core training alongside higher training needs in training departments
- Networks may require a complete change to job plans and more travel, albeit perhaps less frequently
- Consideration needs to be given to consultants having to work in different departments with unfamiliar equipment, which is particularly pertinent to interventional radiology. Suitable induction and supplementary training may be necessary
- Seven-day working, with cover for both general and specialist skills, will need to be planned.⁹ Delivery of training for trainees, and support for other healthcare professionals, needs to be factored into any reconfiguration on these lines.
- Isolation is one of the dangers of increased working from home and less than full-time working. One of the fulfilling components of a career in medicine is working as a team. There is a danger that radiologists may come to be seen merely as distant reporters, unless a regular, personal clinical interface can be maintained

- Job planning and support of ongoing individual professional development
 - Working for multiple providers adds challenges and possible conflicts of interest, as discussed in the *Sustainable future for diagnostic radiology: working for alternative and/or multiple providers*¹⁰
- Risks with respect to training and education, these are similar to those of networking
- Management of a disparate and dispersed department and regular communication within the radiology team may become increasingly complicated. There may be greater difficulties in responding to urgent capacity issues such as in US, and in covering the regular multidisciplinary team (MDT) and clinicoradiological meetings where there may be fewer radiologists physically present in a department for service delivery, training and supervision
- Proper induction and handovers will be vital at all levels for trainees and consultants
- Support, leadership and training for allied healthcare professionals, including nurses, radiographers and sonographers, as well as for healthcare assistants and clerical staff working within radiology departments, need to be preserved. There is a risk of a 'them and us' division if radiologists are perceived as sitting at home away from the sometimes challenging and stressful interactions with clinicians and patients
- Clinical governance meetings and learning from others, which may require the use of other resources, such as the RCR's Radiology events and discrepancies (READ) newsletter¹¹
- Methods to deliver training for other specialties, such as, ultrasound training in renal and chest medicine, and endovascular skills training for vascular surgeons will need to be provided

- It will be vital to maintain supervisory, teaching and training skills with a requirement for good, open communication with trainees and other trainers, particularly for trainees in difficulty, given the ongoing rapid and far-reaching organisational changes within the NHS.
- Becoming a mentor, either through local trust or RCR programmes, can be highly rewarding and provide support for consultants at the start of their career.⁵ It will become more important as working practices in the NHS and radiology change.

Senior consultant considering options close to and around retirement

While many of the points discussed above will remain relevant to senior radiology consultants coming towards the end of their career, specific considerations apply to radiologists who wish to retire and then return to work, often on a part-time basis, as they need to continue to be supported with appraisal and ongoing CPD.

- Towards the end of a working life in radiology, some consultants may choose to step back from some of the more challenging aspects of the job such as out-of-hours work. Succession planning will be needed to help future-proof radiology departments against the remaining team members becoming overburdened with the ever-increasing workload and responsibilities, including education and training.
- Similarly there may be a wish to change special interests, particularly in the context of some of the more technique-based aspects radiology such as IR.
- There are opportunities for senior consultants, who may have retired and returned, to provide predominantly a reporting service, be available to support trainees, check reports and maintain a pivotal educational role.

Conclusion

This summary document highlights some of the issues in radiology education encountered by consultant radiologists throughout their careers, ranging from undergraduate teaching through to retirement. There are no easy answers to some of the topics raised in the *Sustainable future for diagnostic radiology* series, however, to deliver training for a sustainable clinical radiology workforce with flexible ways of working and training, consideration needs to be given to the following:

- Increased training capacity
 - Ensure radiology remains an attractive and competitive career choice
 - Maintain high-quality radiology teaching and exposure at undergraduate and foundation levels
 - Invest in new training numbers, supported by central funding and increased training capacity in programmes designed to deliver high-quality postgraduate training
- A networked model of training that reflects moving towards networked service delivery
 - Support trainers and training programmes to deliver training, perhaps reflecting the academy model
- Delivering training and education within seven-day working, which will require:
 - Effective clinical supervision of trainees at all times, for example, investment in robust IT systems that allow home-working and networking, thus providing more rapid review of out-of-hours imaging
 - Additional resources
 - Increased consultant numbers to allow time for training and support for trainees working out-of-hours, ensuring this becomes a training and learning experience
 - Increased radiographic and other healthcare staff with skills mix where appropriate and provision of their ongoing education
- Added value of clinical radiology training for all diagnostic and interventional radiologists
 - This will require delivery of the full curriculum including the generic components and maintenance of core skills in years 4 and 5
- Ongoing development of RCR online resources to support trainers and trainees, enabling access to training materials 24/7. This will require:
 - Updating and integration of the Radiology-integrated training initiative (RITI) and e-learning for health
 - Building on the RCR on-line CPD library
 - The RCR educator development programme to support education and training in the workplace
- Continuing support and training for other team members, such as radiographers and sonographers and healthcare workers from other disciplines throughout their careers
 - Training and education, including clinical governance, for all staff groups
- Support, guidance and boundaries for radiology trainees and consultants, together with appropriate job planning throughout their careers, particularly at times of career development and changes in career direction
 - Protected supporting professional activity (SPA) time for CPD, mandatory training, appraisal and revalidation required particularly in the future with increased home working, networking and working for multiple providers, with the potential for increased isolation
 - Use of training fellowships for consultants or, in the future, credentialing if/when this becomes available
 - Research Fellowships
 - Leadership Programmes
- Need to ensure training and education throughout a career in radiology is fit for purpose in delivering a flexible workforce that will be able to reflect and respond to the changing needs of the NHS in the future.

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