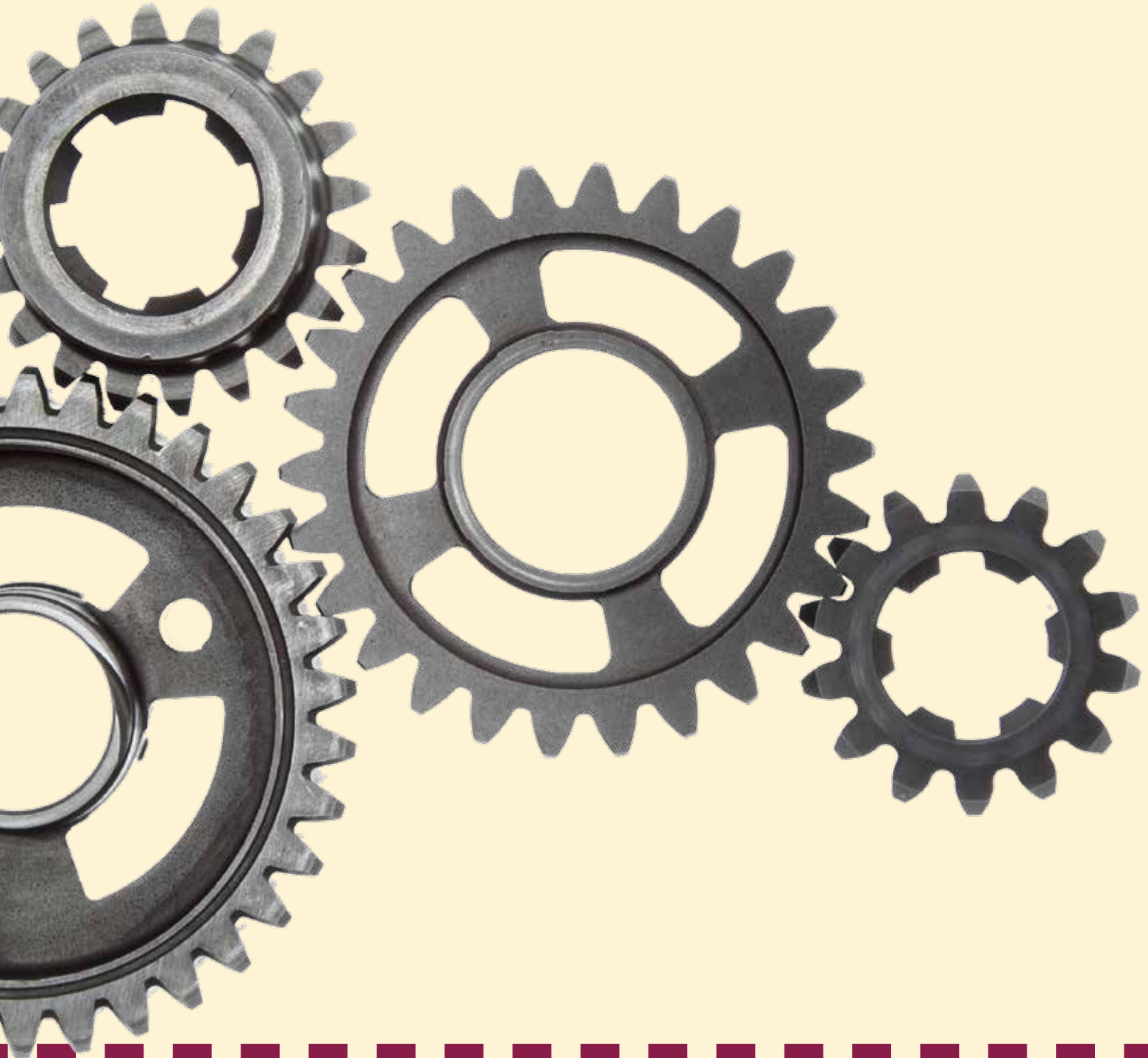




Team working in clinical imaging



**A joint document from The Royal College of Radiologists
and the Society and College of Radiographers**

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Foreword

Team working is at the heart of clinical practice today. Imaging is pivotal to modern healthcare and is an essential component of many patient journeys. The complementary and combined skills of radiologists and radiographers are, therefore, vital to delivering imaging services today in the UK.

As the foremost professional bodies concerned with ensuring the delivery of high-quality imaging in the UK, it is incumbent upon the Society and College of Radiographers and The Royal College of Radiologists to guide services in making the very best of their professional teams. This document, therefore, sets out the principles and arrangements which we believe are appropriate for high-quality patient care. What is said here should underpin a service that is safe, effective, efficient and sustainable. In many ways, this reflects what is currently happening in many clinical imaging services where our members work effectively together to provide high-quality and timely patient imaging.

This document is of great importance for other reasons as well. It is too easy in the current economic situation with budgetary restraints and demands for greater efficiency and productivity, for inappropriate, short-term service configurations to be introduced. We cannot and will not support service decisions made on unsophisticated economic grounds or with lack of appropriate governance, which would almost certainly lead to lower quality care for patients and/or an unsustainable service.

This will be ever more important with the growing aim to see more care delivered to patients in the community. Imaging services have a very positive role to play in assisting those in primary care to access directly the most appropriate imaging test from efficiently organised services at the right time.

Our two bodies mutually recognise the skills that each set of professionals – radiologists and radiographers – can bring to the service. We also recognise that this document can only be a statement of the current position. Clinical practice – and medical practice in particular – changes at a rapid and unceasing rate. What is at the cutting edge of research in one year can rapidly become everyday practice in the next. We confidently expect, therefore, to revisit the whole topic of team working in clinical imaging at regular intervals in the future.

The Colleges would like to thank Drs Sean Desmond, Dick Fowler, Nick Ashford and Pete Cavanagh from the RCR and Sean Kelly, Margaret Diamond, Professor Audrey Paterson OBE and Dr Julie Nightingale from the SCoR for jointly developing this document.

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Executive summary

Team working in clinical imaging sets out the key components of team working that The Royal College of Radiologists and the Society and College of Radiographers (the Colleges) believe are essential to delivering high-quality, effective clinical imaging services in clinical and political environments that are changing rapidly.

Good healthcare outcomes are the goal of all healthcare services and obtaining correct, timely diagnoses is vital. Research evidence shows that:

- Healthcare teams that function effectively provide higher quality patient care
- Members of teams that work well together have relatively low stress levels
- A diverse range of professional groups working together is associated with higher levels of innovation in patient care.

The delivery of effective clinical imaging services to support good health outcomes demands team work, leadership, and appropriate skills and support, and these should be evident across all areas of clinical imaging service delivery. This document examines the application of these demands, and sets out the Colleges' views relative to the following key areas:

- Justification of examination requests
- Radiation protection
- Image acquisition
- Reporting
- Management and service improvement.

The document identifies that robust team working underpinned by relevant professional education and strong governance enables roles and responsibilities to be shared across professional groups to deliver cost-effective high-quality clinical imaging services with real benefits and gains for both patients and referrers.

In conclusion, excellence in team working within clinical imaging services is pivotal to delivering the best possible service to patients and to referrers. The Colleges expect this guidance to be used to support the delivery and continuing development of effective clinical imaging services.

1. Introduction

The Royal College of Radiologists (RCR) and the Society and College of Radiographers (SCoR) have produced this document which defines the key components of team working that they believe are essential for high-quality, effective clinical imaging services. The document also shows how these may be applied to key areas of service delivery.

It updates *Team working within clinical imaging. A contemporary view of skills mix* published jointly in 2008, which has now been withdrawn, and takes account of the considerable changes to healthcare and clinical imaging services that have taken place in the past five years. The 2010 RCR document *Medical image interpretation by radiographers: Guidance for radiologists and healthcare providers* has also been withdrawn.

The healthcare environment within the UK is evolving rapidly in response to changes in political agendas, financial restraints, disease prevalence and population demographics. In England, the Health and Social Care Act (2012) is driving what is undoubtedly the greatest shake-up of the NHS since its inception, reducing emphasis on management by central government, with greater devolved powers at a local level. Developing new governance structures on this scale is being undertaken against a backdrop of significant NHS financial savings. Politics aside, it is impossible to ignore the rapidly increasing pressures on the NHS caused by demographic change.

The UK population was approximately 62.3 million in 2010 and is estimated to reach 70 million by the year 2027.¹ Statistical trends show a rapidly aging population. Life expectancy has been growing for the last half century, reaching the highest level on record, with male life expectancy of 78.1 years, and females 82.1 years.² By 2030, it is likely that over half the adult population will be over 50 years of age.³

Demographic change such as this has consequences for all aspects of society, but the health impacts are significant. Long-term conditions are likely to need to draw more heavily on NHS resources and conditions such as cancer are predominantly found in the elderly. In the last 30 years, the UK cancer incidence rate has increased by 16% in males and 34% in females, with three-fifths of these cancers being recorded in the over-65 age bracket. Cancer incidence has been predicted to increase by 45% between 2007 and 2030.⁴

There is a growing appreciation and understanding that the key to attaining good healthcare outcomes is getting the correct diagnosis in a timely manner. This has already put significant pressure on clinical imaging services in terms of the volume of examinations carried out, the increasing complexity of imaging investigations and the speed with which these need to be delivered. This pressure will continue to increase as modern imaging plays a crucial and integral part in the management of most patients.

Clinical imaging departments across the UK have seen a year-on-year increase in demand for examinations, with annual rises of 2.9%, 3.3%, 5% and 2.8% between 2007 and 2010 (England only).⁵ All imaging disciplines have seen a gradual increase in demand since 1995. Ultrasound, computed tomography (CT) and magnetic resonance imaging (MRI) have seen rapid increases, but requests for traditional radiography and fluoroscopy have also continued to rise.⁶

As diagnostic and treatment pathways develop, expansion of existing clinical imaging services and the introduction of new services are likely to compound existing pressures. Expansion of cancer screening and early diagnosis programmes (such as the National Stroke Strategy in 2008), as well as

demands for better access to interventional procedures, is already stretching clinical imaging departments, with increasing pressures to introduce 7/7 and 24/7 working. In the near future, it is likely that completely new services such as non-oncology PET-CT and dementia imaging will be required. In addition, there will be expanded direct access to clinical imaging services from primary care by direct commissioning. All these factors put increasing pressure on already stretched services.⁷

A recent RCR workforce census⁸ has identified that while there has been a small increase in radiologist capacity in the UK to 2,714 whole-time equivalent (WTE), one in 13 of posts remain unfilled, with significant regional variation. The census also reports greater demands on existing radiologist time that take them away from direct clinical activities, particularly multidisciplinary meeting activity.

The radiographer workforce supply is expected to remain steady relative to demand,⁹ although the profession remains on the Migration Advisory Committee (MAC) shortage occupation list, along with sonographers and nuclear medicine technologists.¹⁰ Shortages in ultrasound are prevalent¹¹ and the move to extended working days will inevitably impact on staffing resource across the radiography workforce.

For clinical imaging departments within the NHS to survive and prosper in this new world, they will have to be innovative in their approaches, ensuring their services are of the quality appropriate and acceptable to patients and referrers while developing working practices that integrate, support and encourage staff. Patient safety and good healthcare outcomes must be the primary considerations.

There is good research evidence¹² to show that:

- Healthcare teams that function effectively provide higher quality patient care
- Members of teams that work well together have relatively low stress levels
- A diverse range of professional groups working together is associated with higher levels of innovation in patient care.

It is with this evidence in mind that this document explores team working in clinical imaging services.

2. Team working and team culture

The term 'team' is sometimes used inappropriately to describe a group of people who happen to work in the same area but as individuals rather than as a true team. The following is a definition of a properly functional team:

'A team is a group of individuals who work together to produce products or deliver services for which they are mutually accountable. The team members share common goals and rely on each other to achieve them. Because the team holds itself collectively accountable, the work of integrating with one another is included among the responsibility of members.'

Team culture is a vitally important component of effective team working, although it is difficult to define and, unlike most other aspects of clinical imaging, even more difficult to measure.

The common theme behind many of the recent failings in the Health Service that have made headline news (such as The Mid Staffordshire NHS Foundation Trust Inquiry¹³) has been the lack of an open and safe team culture.

The principles on which successful teams are founded are the following.

2.1 Team work

- Clearly defined shared goals and objectives:
 - This gives the team a clear identity
 - Individuals have agreed a common purpose that they can all articulate and this common aim sits above individual personal goals
 - Enables the team output to be greater than the sum of the individuals.
- Agreed individual and mutual accountability.
- Agreed measurement of performance against goals with feedback.
- Individuals value each others' individual skills and work together to optimise these
 - Individuals interact together on a daily basis to achieve the goals
- Agreed norms of conduct:
 - Mutual respect
 - Agreed communication styles
 - Expectations of excellence.

2.2 Leadership

- Clearly defined leadership roles are essential:
 - Leadership need not be a single individual
 - Dispersed leadership may be appropriate as long as there is clarity in relation to situations and circumstances.
- Leaders gain their roles by appropriate leadership skills rather than professional or technical knowledge or expertise.

- Leadership should:
 - Set direction
 - Demonstrate personal values and beliefs relevant to the team
 - Lead the management and continued improvement of the service
 - Work collaboratively with other stakeholders necessary for the delivery of the agreed aims.

These leadership attributes are articulated in the NHS Leadership Framework,¹⁴ which is made up of seven domains that describe leadership knowledge, skills and behaviour. It provides a single overarching framework for the leadership development of all staff in health and care, irrespective of discipline, role or function. The Medical Leadership Competency Framework preceded the NHS Leadership Framework and was jointly developed to guide leadership development for doctors by the NHS Institute for Innovation and Improvement and Academy of Medical Royal Colleges.¹⁵ Its five leadership domains are embedded in the NHS Leadership Framework. The College of Radiographers has also issued guidance for their members on leadership development.¹⁶

2.3 Appropriate skills and support

Leadership should set the framework under which a team prospers. This must include:

- Relevant training and continuing professional development for all team members
- A safe and just culture where all members of the team are clear about the rules and the same set of rules applies to the whole team without exception.

One of the key underpinning principles is what has been described as ‘psychological safety’ – the belief that an individual will not be punished or humiliated for speaking up with ideas, questions, concerns or mistakes.¹⁷ A shared sense of psychological safety is a critical input to an effective learning system, and to excellent team working

- Appropriate governance processes including measurement, audit and feedback.

3. Team working in clinical imaging services

Team working in delivering all elements of clinical imaging services is very important, and especially so in the following key areas:

- Justification of examination requests, including protocols
- Radiation protection
- Image acquisition
- Reporting
- Management and service improvement.

3.1 Justification of examination requests, including protocols

The selection of the most appropriate imaging investigation followed by the acquisition of good quality images is essential for effective patient care.

The RCR guidance, *iRefer: Making the best use of clinical radiology*, provides evidence-based support to referrers.¹⁸ There is a fundamental requirement of the clinical imaging team to ensure that the imaging test is tailored to the clinical question to be answered. This is not only to avoid delays in diagnosis and unnecessary radiation to patients, but also to deliver a more cost-effective service. Clinical radiologists play a critical role in justifying and accepting examination requests as, by virtue of their medical training, they are best placed to ensure the clinical question is answered. However, increasingly, these roles are shared with radiographers and delegated to other team members that have undertaken appropriate training; for example, nursing staff, clerical and administrative officers. Sharing and delegating the roles of justification and acceptance of examination requests is particularly important at times (such as out of hours) when the advice of senior colleagues may not be readily available.

Agreed protocols referenced to national guidelines should be used to support a service-wide approach to managing the justification of examination requests efficiently. *The Ionising Radiation (Medical Exposure) Regulations (2000)*¹⁹ require employers to ensure that written protocols are in place for every type of standard radiological practice for each piece of medical equipment (Sec 4[2]). Protocols define what imaging is to be carried out and how it should be conducted. The detail of protocols will vary with locality and service need, but an essential component for effective team working is that the rationale for the protocols is clear, and agreed and understood by all members of the team within the clinical imaging department and by the referring community. The 'right test – right time' is a maxim to be embraced by the whole team. Standardised protocol templates may be available within an organisation, but additional guidance for the development of evidence-informed protocols is available from several sources.^{20,21}

3.2 Radiation protection

Radiation protection is a fundamental and legal requirement for all imaging examinations involving the use of ionising radiation. The relevant regulations, *The Ionising Radiation (Medical Exposure) Regulations (IRMER)*, are far reaching, extending across the whole

process of imaging from justification through image acquisition to a documented evaluation of each medical exposure (Sec 7[8]).¹⁹ They expand on the as low as reasonably practicable (ALARP) principle and require all organisations providing these imaging services to be able to demonstrate compliance with them.

Compliance with radiation protection legislation is the responsibility of the employer and all 'entitled' duty holders as defined in the regulations. In the NHS, the employer is normally the chief executive of the NHS board or trust or a designated person at this level of seniority. All duty holders must know who their IRMER employer is.

Radiation protection is a core role for radiographers and radiologists, and their education and training enables them to lead on radiation protection matters. Safe, effective practice requires their leadership to develop robust systems of work and protocols capable of external scrutiny.

Pressures on clinical imaging services – such as the reduction and abolition of waiting times, 24/7 services, one-stop clinics, GP drop-in services, standard booked appointments – and referrals from emergency, outpatient and ward units require extension of radiation protection responsibilities to other staff groups to avoid bottlenecks in service provision and inappropriate delays for patients. In particular, a greater range of trained and entitled referrers (for example, registered nurses, chiropodists, physiotherapists) may be appropriate. The timely justification of examination requests by registered professionals trained and entitled as practitioners is also essential.

It is vital that these changes to the delivery of clinical imaging services are supported by adequate education and training, and are audited and reviewed regularly. It is essential to produce and audit policies and protocols for all aspects of the imaging procedure, and radiographers and radiologists working together are central to this whole process, and to ensuring the delivery of exemplary services through effective team working.

Good team working and robust policies and procedures should minimise the occurrence of adverse incidents. Where these do occur, it is vital that they are handled in accordance with organisational governance and regulatory requirements, and used as opportunities for the whole team to learn, to review training and operational needs to avoid future errors, and to improve services.

In summary:

- Radiation protection is fundamental to clinical imaging services and requires a thorough knowledge of the principles of radiation protection, and the legislative and regulatory requirements
- Service pressures and redesign has led to the sharing and delegation of radiation protection matters to a wide range of staff. It remains the responsibility of the radiation protection leaders (radiographers and radiologists) to ensure that sharing and delegation is appropriate and that all staff are properly educated and trained for their roles in radiation protection
- Delegation beyond the clinical imaging department, including into primary care, will enable further service improvements
- Robust policies and procedures to comply with governance and regulatory requirements are essential.

3.3 Image acquisition

The prime responsibility for the acquisition of good quality images lies with the radiographic team. This team requires structure and professional leadership, and integration with the reporting team, as image acquisition and reporting are mutually interdependent.

The primary purpose of both image acquisition and reporting is to provide benefit to patients and to referrers.

Both technical and preliminary clinical evaluation of images are fundamental radiographic roles, with the latter a stepping stone to image interpretation by suitably qualified radiographers.

3.4 Reporting

One of the most important objectives of clinical imaging services is the timely production and accurate interpretation of imaging examinations. It is also a legal requirement that a clinical evaluation of the outcome of each medical exposure is recorded in accordance with the employer's procedures.¹⁹

3.4.1 Team work

Team working in radiological reporting usually means a multidisciplinary team involving clinical radiologists, radiographers at advanced or consultant practitioner level and, occasionally, other members of staff; for example, vascular and nuclear medicine technologists, medical physicists, midwives and speech and language therapists.

A multidisciplinary team approach to reporting has been demonstrated to be effective in several clinical areas, such as musculoskeletal trauma reporting, gastrointestinal imaging, breast screening and ultrasound.²²⁻²⁷ This approach is able to add real value to the clinical imaging service, contributing significantly to the reporting workload, helping to ensure that reports are timely and possibly releasing radiologist time for other tasks.

The RCR and SCoR believe that reporting teams should be the result of careful and considered service development, central to which is an overview of the clinical imaging service as a whole. This should lead to clear definitions of roles and responsibilities, an agreed common purpose, and measurable goals and outcomes for the reporting team. A successful reporting team is a successful multidisciplinary group working together.

Underpinning appropriate and cost-effective skills mix in reporting is a strong governance framework to assure patient safety.

Requests for imaging examinations are requests for expert clinical opinions from the clinical imaging team, and all imaging requests should contribute to patient management.

In many areas of imaging, the radiologist is best placed to provide the clinical report. However, advanced practitioner or consultant radiographers with appropriate education and training are also able to provide clinically relevant reports that contribute significantly to patient management. Similarly, there are others (such as midwives, nurses, vascular technologists) that are able to provide such reports. Those producing reports, regardless of their professional background, are expected to meet the standards of best clinical practice, substantiated by appropriate audit and good governance processes. Neither the RCR nor the SCoR will provide support

for their respective members providing reporting services outside a clinical governance framework.

There may be areas where the roles of team members, for example, advanced practice radiographer and clinical radiologist, overlap. This does not mean that the roles are interchangeable.

3.4.2 Leadership

Clear effective leadership is essential if the reporting team is to achieve the shared outcome of timely, accurate, clinically relevant reports where patient safety is the paramount concern.

An effective leader of such a multidisciplinary team must acknowledge and respect the value of all team members and the contribution that they are capable of making. Effective leaders should support the development of team members in an open and fair way.

Depending on circumstances, the leadership of a reporting team may be the responsibility of one individual, although a distributed model of shared leadership may be appropriate in certain situations.

A consultant radiologist will have general and expert skills depending upon specialisation and, if possessing the necessary leadership skills, makes an appropriate leader of a reporting team.

An advanced practice radiographer will have expert skills and knowledge in a defined field or fields of reporting; the consultant radiographer will have built upon this and have extended knowledge and skills, often involving extensive clinical expertise in their defined field.²⁸ This enables them to make effective contributions to the reporting workload and to reporting teams.

There are examples of where consultant radiographers have made a real impact in developing and leading imaging and reporting services, working in constructive partnership with radiologist colleagues.^{29,30}

Therefore, there may be a number of variations on how a team would function but good team working and governance would suggest that reporting teams include radiologists and radiographers.

When planning the development of reporting services, it is the responsibility of the leadership of the clinical imaging department to ensure that the appropriate team structure is in place to ensure effective working and to promote and develop leadership skills in all professions (see Box 1, opposite^{31–33}).

3.4.3 Training and skills

For a reporting team to work effectively, all members of the team need access to appropriate training and continuing professional development. The users of the reporting service need to be assured of its quality by evidence of transparent governance processes.

Rigorous training to nationally agreed standards is essential for those carrying out a reporting role. This should be supported by continuing education and audit.

Box 1. Effective radiological report team working

The reporting caseload

- The reporting caseload can be divided between the professions.
- Radiographers with appropriate training may report within a defined scope of practice, with radiologists providing review of difficult cases or those outside the clinical scope of the reporting radiographers. Depending on the clinical scenario, it may also be necessary for radiologists to make recommendations for further imaging where this is outside the scope of the reporting radiographers.
- Where double reporting is recommended as best practice (eg, mammography), the first report can be provided by a reporting radiographer. This is particularly beneficial when the reporting radiographer performed the procedure. The second report may be provided by a radiologist or a reporting radiographer working within their defined scope of practice and competence. In some circumstances, radiologists will also produce the first reports; eg, in breast screening, both can provide either first or second reports.
- Radiologists and radiographers are both integral to quality improvement and audit processes and the discussion of discrepancies and this process needs to be conducted jointly. Guidance for personal and collective review of errors and discrepancies is available.^{31,32}
- Where an image flagging system (eg, red dot) or preliminary radiographer evaluation is offered, the professional providing the definitive report has a responsibility to be involved in feedback on the accuracy of the flag or evaluation to the radiographer concerned.

Auditing reporting practice

- All professionals have a responsibility to audit their own practice and this should be part of a regular service-wide audit. The reports of experienced and specialist consultant radiologists may be used as the 'gold standard' against which to audit reporting standards within a clinical imaging service. This may involve 'double reporting' a small percentage of the reporting caseload of all those producing definitive reports as part of an annual audit cycle. Double reporting is recommended to radiologists as a potential peer review method of assessing their own individual performance to support revalidation.³³ Similarly, reporting radiographers may use double reporting and review as evidence to support re-registration every two years with the Health Professions Council. Clinical imaging services must make time available in the work plans of radiologists and reporting radiographers for this activity.
- Radiographers and radiologists should work together to identify other objective measures against which to audit the reporting service, including comparison of reports against alternative imaging investigations (eg, endoscopy), or surgical, pathology and cancer databases where relevant.
- Reporting radiographers are well placed to lead audits on the accuracy of image flagging (eg, red dot) or preliminary evaluation systems, as well as working in collaboration with emergency department staff to audit any discrepancies between radiological and emergency reports.

Radiologists train to the high standards of a five-year postgraduate training course, approved by the General Medical Council (GMC), leading to entry onto the Specialist Register. It is incumbent upon all consultant radiologists to engage with continuing professional development (CPD), audit of personal work, local appraisal and national revalidation. This is the public's safeguard for the maintenance of high standards by radiologists.

Similarly, reporting radiographers undergo postgraduate education and training, supported by educational programmes approved by the College of Radiographers. Such programmes have radiologist and reporting radiographer involvement in the programme faculty, course design and assessment processes. There is a rigorous process for auditing reporting practice during the training period and reporting radiographers are expected to continue to audit their practice following qualification.

The College of Radiographers has a rigorous two-year programme for accreditation and re-accreditation of advanced practitioners and consultant radiographers.³⁴ This, at present, is voluntary. Both Colleges strongly recommend that employers require their reporting radiographers to seek and maintain advanced or consultant practitioner accreditation as appropriate to ensure the highest quality of reporting services.

Clinical radiologists and radiographers are autonomous practitioners responsible for their own actions and outcomes. Clinical radiologists may work together with reporting radiographers to develop a multi-professional reporting team, sharing or redistributing activities traditionally in the province of radiologists. In doing so, both clinical radiologists and reporting radiographers are each responsible and accountable for their own actions.

3.4.4 Governance

The reporting team and its leadership should work to develop a safe and just learning culture. Individuals within the team should feel safe to share their concerns and mistakes in an environment where all staff feel supported, and the safety of patients is paramount (Box 2, opposite).

It is the view of both Colleges that both radiologists and radiographers involved in providing reporting services should work within an agreed contract of engagement, which defines their areas of practice and accountability.

Governance arrangements for reporting must include audit of activity with analysis and actions resulting from errors and discrepancies identified. Reporting teams should work together to refine and implement good governance arrangements, matched against national standards where available (such as breast screening).

Working in isolation is a potential risk to patients, and employers and commissioners are advised against engaging services without a team providing appropriate support and governance.

Box 2. Key principles of team working in radiological reporting

- The RCR has established the 'gold standard' of training for image interpretation. Comparison of report findings with objective standards such as pathological and cancer databases is advised where appropriate.
- Advanced practitioner or consultant radiographers with reporting roles add real value to reporting services.
- The role of radiographers in ensuring quality assurance of image acquisition is fundamental to the effectiveness of the reporting service.
- Reporting teams combining both radiologists and radiographers can deliver excellence in reporting services and service improvement as evidenced, for example, in musculoskeletal imaging and in ultrasound.
- High-quality education and training is essential for all professions within the reporting team.
- Effective governance and resources are available to support CPD, audit, and revalidation, re-registration and reaccreditation for all professions; these are all essential components within a reporting service.
- Both commissioners and providers of clinical imaging services and reporting services take responsibility for ensuring effective governance arrangements are in place.
- Single-handed or isolated practice without appropriate governance is not acceptable.

3.4.5 Multidisciplinary team meetings

The multidisciplinary team meeting (MDTM) is now established as an essential component of effective patient care. Attendance by members of the clinical imaging team is essential at most MDTMs. While this is frequently clinical radiologists, there are instances where attendance by reporting radiographers is extremely valuable, such as the breast disease MDTM, particularly where their reports are being considered in the context of a particular patient's management.

Attendance at MDTMs by all members of the clinical imaging team is to be encouraged as they provide important learning opportunities and promote more effective working relationships between referrers and the clinical imaging service.

3.5 Management and service improvement

To deliver its objectives, clinical imaging services must be led effectively, with a management infrastructure, which supports a culture of continuous improvement. As noted previously, there is strong evidence that a culture of team work facilitates an environment in which innovation and improvement flourish.

The aim of this section is to highlight the two Colleges' views on how the three fundamental components of a learning culture (leadership, team work and appropriate skills) can support effective development of clinical imaging services.

While both Colleges recognise that circumstances vary widely between institutions and geographic locations, certain fundamentals will apply.

Radiographers and radiologists have always worked very closely together to provide integrated and broad-based management and leadership of clinical imaging departments. Long-term workforce planning and innovations in skills mix, including new appointments and new roles, require input of both lead consultant radiologists and radiographers in roles as clinical imaging services managers. This enables a balanced strategy to be achieved that is appropriate for patients, the hospital or healthcare facility, and local health services in alignment with national standards and in the context of relentless pressure on clinical imaging and new imaging techniques.

3.5.1 Leadership

Traditionally the head of the clinical imaging service was a consultant radiologist who led the department alongside a superintendent radiographer. Medical matters were the domain of the radiologist and radiographic matters those of the superintendent.

With the development of new management structures, these traditional roles have changed. Most clinical imaging departments now have responsibility for all aspects of providing a prompt, efficient, cost-effective and, above all, safe clinical imaging service. To deliver this, various leadership structures have evolved with differing titles; for example, the radiology lead role may be titled 'clinical lead' or 'clinical director', while the radiographer lead role may be 'clinical imaging services manager' or 'general manager of radiology services'.

Inherent in these new structures is the very important principle of clearly defined leadership roles dispersed between numbers of key individuals. The success of the clinical imaging service will depend heavily on how these roles are performed and how the individuals in them work together to deliver agreed and shared goals. For the sake of clarity, the terms 'lead radiologist' and 'lead radiographer' are used for these two key responsibilities. Guidance is available from the College of Radiographers (2005) related to leadership roles for radiology services managers and consultant radiographers.¹⁶

The roles of the clinical imaging services leadership team include:

- Defining objectives of the service in line with those of the organisation in which it functions
- Clearly articulating these objectives to the rest of the team or teams that they lead
- Demonstrating personal values and beliefs that develop a culture of improvement and expectation of excellence
- Working collaboratively with key stakeholders necessary for the delivery of these aims.

In addition to these roles, the lead radiologist and radiographer have the responsibility of leading the two professional teams, and the other professions and staff involved in delivering the service.

3.5.2 Team work

Both leadership post holders have significant shared responsibilities in budgetary and financial management, workload organisation, and equipment procurement and

provision best accomplished when working effectively together and with others outside the clinical imaging department; for example, the finance directorate.

The team has a wide remit and includes other disciplines such as nursing, medical physics, clerical and IT services. As a whole, the team has important shared responsibilities in ensuring safe practice and overseeing development and use of departmental protocols, such as radiation protection and dose reduction.

While the roles of the two lead professionals have varied from hospital to hospital, successful clinical imaging departments have thrived where both have worked closely together. Each has their own special attributes and abilities and both may, and will, overlap in many common areas of expertise. In some departments, a third role has developed, often referred to as radiology business manager. In these circumstances, the principles of close team working continue to apply, now across the three lead roles.

The leadership of the clinical imaging service is often supported by management teams (including a lead radiographer and lead radiologist) overseeing operational management and service improvement in specific areas of the service. These teams are usually in the best position to identify local needs and drive service improvements within their area. The inclusion of a consultant radiographer into service or system-specific leadership teams (such as trauma services, breast imaging) can bring significant benefits for service improvement, as service evaluation and improvement are key aspects of the consultant radiographer role.²⁸

One of the key areas of service improvement in clinical imaging services has been the effective use of skills mix, with radiographers taking on more demanding clinical work, and assistant practitioners undertaking defined roles in image acquisition. The enhanced clinical contribution of radiographers has taken many forms, including the provision of ultrasound services, various reporting roles, barium studies, justification of imaging requests, intravenous injections, selected interventions, and supplementary prescribing.³⁵

All members of the team are responsible for the patient experience and continuity of care.

3.5.3 Appropriate skills and support

For a service improvement to be successful and sustainable, the department must be receptive to change. Not every change is an improvement but certainly every improvement is a change and something cannot be improved unless it is changed.³⁶

Therefore, it is important that the leaders of the clinical imaging service both provide individuals with the skills to effect change, and build a culture that continually supports improvement and innovation. This may involve supporting individuals to drive and manage change (as innovators and champions) as well as communicating a clear vision of the direction of travel of the service to the staff within it and all stakeholders.¹⁶ The latter is key as current patient-led approaches demand the effective engagement of service users, carers and staff groups. Innovation results when creative ideas are implemented.³⁷

Service improvement is part of a continual process that should be built into the everyday activity of the clinical imaging service. Leadership should encourage creativity

and innovation and seek to support clinical excellence by continuously adapting and refining processes and pathways for the benefits of patients, carers, staff and the organisation as a whole.¹⁶ Effective service improvement is clinically led and managerially driven. Service improvement has a range of definitions, but the common theme that it involves is change.³⁸

Over the last ten years, departments have introduced service improvements often based on methodology developed outside the NHS. There are a number of different methodological approaches to driving improvements, including:

- Total quality management (TQM)
- Six Sigma
- Lean thinking
- Theory of constraints
- Model for improvement
- Process mapping.

There is no particular best model and the method employed need not be complex. However, for successful application, it is essential that those using them are taught the knowledge and skills to apply them.

Most methodologies share a common organisational philosophy in which the workforce is empowered and expected to make or suggest changes. Providing highly visual data to staff helps this. Mapping of the patients' pathway on a much wider scale is promoted, with an emphasis on quality and the elimination of poor and wasteful practices. Service improvement focuses on value from a customer perspective, and eliminating activities that add no value. Most techniques are also intended to create a safer working environment with reduction of unnecessary variation and error rates.

Service improvement is a key factor in the management of clinical imaging departments and requires and develops both a functional, efficient radiography and clinical radiology team. This, in turn, has major benefits for patients.

Service improvement should be a team effort requiring input from all relevant professions and grades of staff. Effective departments will have one or more trained clinical service improvement leads who initiate, communicate and drive changes. This may require support of other colleagues outside the clinical imaging department, including managerial and project management support at both executive and department levels, finance support, support for data management and analysis. Many initiatives are based on measuring capacity, demand, activity and backlogs in the service. This includes collecting and displaying data and using this to inform and understand variation in demand. These initiatives require designated time for representatives of all relevant groups to meet. Facilitation skills are essential.

Essential to the adoption and sustainability of service improvements is the close team working between lead radiologists and lead radiographers in co-ordination with experienced staff working within the different specialties (for example, subspecialist radiologist, specialist radiography manager/team leader, and advanced and consultant practitioners).

If a service develops an effective improvement programme, which is professionally led and supported by an open culture of team working among individuals who have developed the appropriate skills, the benefits are far-reaching:

- **For patients:** improved experience, including shorter waiting times, less visits, choice, dignity, privacy, equity, increased safety
- **For staff:** improved morale, less pressure, predictable workload, less unscheduled call-outs, fewer interruptions, improved skills, career development. Workload tends to be more predictable with a quality service, reducing stress and helping staff morale and motivation. Flexibility of working hours can both help staff and in some cases patients
- **For organisations:** efficiency, reduced costs, reduced non-attendances, shorter waiting times, reduced risk, less complaints, release of unused capacity, further opportunity to innovate.

Box 3 provides some specific examples of innovation and improvement. For more information visit the NHS Institute for Innovation and Improvement website (<http://www.institute.nhs.uk/>).³⁹

Box 3. Examples of leadership and team working in service improvement³⁹

- Pathway redesign – one-stop clinics, direct access, proactive organisation of follow-up tests/appointments
- Waiting lists – profiling, did not attend (DNA) policy, text and email reminders
- Scheduling
- Improve deficiencies – reducing interruptions to reporting radiologist by ‘duty radiologist/radiographer’
- Increasing capacity – extended working day
- Protocol-driven examinations and reporting to increase reliability and reduce variation
- Choose and Book – appointments based around the patient’s availability reduces DNAs, rearranged appointments
- Demand management vetting of requests is time consuming for radiologists and may be shared with radiographers
- IT solutions
- Picture archiving and communication systems (PACS)
- Voice-activated dictation
- Electronic requesting
- Imaging electronic portal and teleradiology
- Improved patient-centred care; mapping the service through the patient’s journey and experience – patient representatives, interviews, patient shadowing, mystery shoppers
- Improved staff experience – factors that may improve a patient’s experience reflect on and improve staff experience

In summary:

- Clear professional leadership with a team approach is essential
- Leaders should agree common goals within teams with which they work ensuring mutual accountability
- Service improvement should be integrated into the strategic plan and not seen as an optional extra activity
- Improvement does not happen without careful planning, training and support
- Improvement is most effective if it is done by frontline staff rather than to them.

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