



Standards for the education and training of reporting practitioners in musculoskeletal plain radiographs

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Acknowledgement

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1 Introduction

Clinical imaging services play a pivotal role in the diagnosis, treatment and monitoring of various disease processes and injuries; they are available 24 hours a day to deal with emergency cases as well as supporting scheduled care. Patients are referred to imaging services for assistance in both diagnosis and deciding on the best management of a patient's condition, and as such clinical imaging services are vital for the delivery of effective health and social care.

One of the most important objectives of clinical imaging services is the timely and accurate interpretation of imaging examinations, both for ongoing management of conditions and for directing care of patients referred to emergency services due to trauma or other acute presentations. Rapid access to high quality diagnostic imaging is vital in making swift and correct diagnoses in acute situations, allowing appropriate triage and impacting on transit times through emergency departments and ultimately on inpatient capacity and length of stay.

Demand for reporting services in clinical imaging departments is increasing significantly. In the year to March 2013, 36.1 million imaging tests were carried out, compared to 44.9 million in the year to March 2020 – an increase of 24%.¹ Other service challenges include further predicted increases in activity,² particularly with the advent of community diagnostic hubs (CDHs); a chronic shortage of radiologists³ and radiographers⁴ and longstanding-issues associated with capital investment strategies and trust deficits for the NHS.⁵

The value and benefits of effective team working to deliver clinical imaging services are well-known. The 2012 joint publication from the Royal College of Radiologists (RCR) and Society and College of Radiographers (SCoR) 'Team working in clinical imaging'⁶ set out the principles and arrangements for providing high quality patient care in this area. This document defines the education and training required for all members of the multi-professional team who report on musculoskeletal (MSK) plain radiographs within a clinical imaging service. It is expected that other MSK plain film reporters operating outside of a clinical imaging service should follow the same standards for education and training to ensure that they are trained to the same level of overall competence.

2 Aims

All reporting practitioners are required to complete a programme of education and training approved by the relevant professional body. Radiologists follow a General Medical Council (GMC) approved curriculum published by the RCR. Radiographers are required to complete a Masters level programme approved by the College of Radiographers (CoR) and regulated by the Quality Assurance Agency for Higher Education (QAA). The details of how these programmes are structured may differ for each profession, however, they share a common aim of high standards of image reporting.

The aim of this document is to provide a framework describing the standards required for the education and training of all healthcare professionals who report MSK plain radiographs as part of a clinical imaging service, and to ensure that the training of all reporting practitioners meets the same minimum requirements. It is intended to support the design and delivery of training and assessment for MSK plain radiograph reporters, and all education providers must ensure that their training programmes meet the standards described.

The GMC-approved RCR clinical radiology curriculum and all programmes approved by the CoR encompass these standards. Other professions who may report MSK plain radiographs outside of a clinical imaging service should also have received training that meets these standards.

3 Learning Outcomes

All programmes of education for MSK plain radiograph reporting should be based around the same overall programme aim: to produce competent, safe, and reflective reporting practitioners with the knowledge, understanding and ability to interpret and report MSK plain radiograph findings within their scope of practice.

The learning outcomes are separated into generic outcomes that apply to all healthcare professionals and those that are specific to MSK reporting.

Generic outcomes:

By the end of the programme of training, learners should be able to:

1. Successfully function as part of the imaging department team
2. Engage in evidence-based practice and evaluate research
3. Mentor, support and provide teaching within their scope of practice to other members of the imaging department
4. Communicate clearly, effectively and appropriately with patients, carers and other healthcare professionals
5. Recognise their limitations of practice and know when to consult other senior colleagues, including relevant specialist radiologists
6. Engage in critical reflection, clinical governance and quality improvement processes, including audit and self-audit
7. Ensure that information governance processes are adhered to and safeguard data, including imaging data
8. Undertake quality management relating to reporting equipment, including new technology, and implement change as required

MSK reporting-specific outcomes:

By the end of the programme of training, learners should be able to:

9. Understand the spectrum of relevant radiographic pathology and differentiate between normal and abnormal radiographic appearances. Identify the distinguishing features, discriminators and differential diagnoses related to plain radiograph MSK reporting
10. Analyse and evaluate data obtained from patients, referring clinicians and previous/current MSK plain radiograph examinations and their reports, seeking advice from a radiologist where other imaging modalities have been performed
11. Provide timely, accurate and clinically useful reports of plain radiograph MSK examinations to answer the clinical question
12. Address complex plain MSK reporting issues, including specialist and non-trauma radiographs and those in paediatric patients, taking advice from colleagues in the imaging department team, including a specialist musculoskeletal/paediatric radiologist as appropriate
13. Recommend follow-up imaging where appropriate, including discussion with a radiologist where any possible follow-up imaging falls outside of their scope of practice.

4 Learning and Teaching Strategies

Education programmes which lead to a qualification in reporting of MSK plain radiographs should be designed and structured to enable learners to demonstrate achievement of the high-level learning outcomes described in this document. Responsibility for the delivery of education and training for reporters working within an integrated clinical imaging service rests with CoR-approved higher education institutions (HEIs), in collaboration with local/regional Advancing Practice faculties or their equivalents in the devolved nations, and the GMC-approved clinical radiology training programmes overseen by the postgraduate deans. For reporters working outside of clinical imaging services, education and training should be overseen by the equivalent organisation for that profession. Local clinical imaging departments should have input into the delivery of all education programmes.

Training should be delivered through a variety of learning experiences and should include both theory-based learning and experiential learning within the clinical imaging department. Education programmes should utilise local and regional resources, including imaging academies and opportunities for remote and online learning. The sequence of training should ensure appropriate progression in experience and responsibility and be designed to ensure that all learning outcomes are covered over the duration of the programme. It is expected that learners who will undertake work in specialist areas including paediatric radiology will require specific training related to their practice.

Learners should have a named supervisor responsible for monitoring overall progress through the programme of training. Supervisors are encouraged to identify learner-centred educational opportunities in the course of clinical work, maximising the wide variety of learning opportunities in the clinical imaging workplace. Programmes should be constructed to enable learners to experience the full range of educational and training opportunities available and there will be robust arrangements for quality assurance in place to ensure consistent implementation of the standards outlined in this document.

Learning methods may include work-based experiential learning, remote and online learning, formal postgraduate teaching, independent self-directed learning, external study courses, learning with peers and simulation as appropriate to the individual programme and learner need.

5 Indicative Assessment

Individual training providers are responsible for the programme of assessment in their own curricula and will have their own robust assessment procedures in place. However, to provide consistency, all training providers should ensure that their programmes of assessment meet the minimum requirements given below.

Accountable, professional judgment is central to ensuring that learners have demonstrated achievement of the learning outcomes. The programme of assessment should detail how professional judgements are used and collated to support decisions on progression and satisfactory completion of training. It should be comprised of several different individual types of assessment, covering both summative and formative assessment. Assessment must take place throughout the training programme to allow learners to continually gather evidence of learning and to provide the formative feedback essential to improving clinical practice.

A range of assessments, based on the judgement of many assessors, on multiple occasions, are needed to generate the necessary evidence required for global judgements to be made about satisfactory performance, progression in, and completion of, training. The training provider must ensure that there is a local faculty of trainers capable of building a balanced judgement of a learner's performance supported by appropriate assessment. Such an approach will prevent any individual having undue influence regarding a trainee's progression.

Learners have a personal responsibility to undertake self-assessment and reflection as an integral part of their professional life.

Summative assessment

All programmes of assessment should include a formal examination. For radiologists and other medical specialties that report MSK plain radiographs, GMC-approved national examinations provide this function. CoR-approved training programmes for radiographer reporting also include a formal written, examination, which should be constructed in line with the following standards:

1. A wide range of appendicular and axial MSK examinations (100 cases) should be included, approximately 30% should be axial
2. The prevalence of abnormal examinations should be approximately 70% of the 100 cases
3. Within the abnormal examinations, the ratio of trauma to non-trauma referrals should be approximately 1:1
4. A wide range of pathologies should be included in addition to trauma. Typically, these should include but not be limited to: arthritides (erosive and non-erosive), metabolic and endocrine disorders, infection and tumours (primary bone lesions and secondary deposits)
5. Care should be taken to include a sufficient range of appropriately discriminatory cases
6. Staff responsible for constructing the image bank, and associated expected answers, should include qualified experienced reporting practitioners
7. Cases should be compiled in DICOM format and viewed using a suitable viewing platform and computing hardware that meets appropriate standards
8. The pass mark will be 90%.

Formative assessment

Formative assessment is the cornerstone of assessment of day-to-day practice. In different programmes formative assessments may be referred to as workplace-based assessments (WPBAs) or supervised learning events (SLEs).

Reflection and feedback are an integral component to all formative assessments to enhance and drive learning. The assessments should be seen as opportunities for identifying strengths and areas for further development. For trainees to maximise benefit, reflection and feedback should take place as soon as possible after an assessment. Feedback should be of high quality and should include an action plan for future development.

For radiologists and other medical specialties that report MSK plain radiographs, GMC-approved curricula define the range and requirements of WPBAs or SLEs; for CoR-approved training for reporting radiographers, individual curricula define this.

All training programmes should ensure that their programme of assessment includes a range of formative assessment. For CoR-approved training for reporting radiographers, this is likely to include written and oral presentations, case-studies, reflective assignment, records of practice/shadow reports and image-based tests, although this list is not intended to be prescriptive or exhaustive. All programmes of assessment for CoR-approved courses should include monitoring of a record of practice/shadow cases (minimum 500 appendicular and 500 axial reports) with feedback and reflection. All assessments, including those conducted in the workplace, should be mapped to the relevant learning outcomes described in this document.

6 Indicative Resources

Individual training providers will list the specific resources available to their trainees, which should include access to local and regional resources, imaging academies and the IT resources required to utilise opportunities for remote and online learning.

Training providers should also ensure that their trainees are familiar with the range of related guidance that underpins the standards for education and training of MSK plain radiograph reporting practitioners. These include the 2012 joint publication from the RCR and SCoR 'Team working in clinical imaging'⁶ and the Quality Standard for Imaging (2019) document.⁷

National Occupational Standards⁸ and guidance for workplace supervision⁹ are also available for further guidance and the Multi Professional Framework for Advanced Clinical Practice (2017)¹⁰ outlines how reporters from the allied health professions may further develop their skills and knowledge.

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