

# Quality assurance in radiology reporting: peer feedback

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## Foreword

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Radiologists are constantly striving to improve the standards of service they provide, with a culture of learning, self-reflection and personal development.

The primary aim of radiologists is to support patient care by the provision of accurate and timely reports on appropriate imaging.

As with other diagnostic services, clinical radiology services involve decision making under conditions of uncertainty. The report a radiologist produces is his or her professional opinion, based on the information available at the time. Therefore with hindsight, often combined with additional information, a discrepancy may be acknowledged in the original interpretation of a study.

In addition, radiologists are human beings and they are susceptible to making errors.

Therefore, it is important to acknowledge that both errors and discrepancies will occur in the daily practice of a radiologist. With this acknowledgment come two responsibilities. The first is to ensure that systems are in place to minimise the potential harm to the patient of such events. The second is to ensure there is a learning system in place to avoid repetition.

Such a learning system should be focused at both the service and individual level. At the individual level, this should link to the continued professional development (CPD) and appraisal processes that underpin revalidation.

Radiologists, like all doctors, need to demonstrate objective assessment of, and reflection on, their practice.<sup>1-3</sup> Peer feedback can be used as one of the tools to provide this evidence but also, more importantly, as a result of an individual's review of discrepancies and adverse events, peer feedback has the potential to change professional practice and, in some instances, job plans.

The peer feedback system should not be abused and using peer feedback for bullying should be dealt with under the trust's bullying and harassment policy. However, if performed in a supportive learning environment, it can improve the quality of patient care and also contribute to the evidence for providers and users of the service as to its safety.<sup>4</sup>

*Quality assurance in radiology reporting: peer feedback* replaces the previous RCR publication entitled *Standards for the recording of second opinions or reviews in radiology departments* which has now been withdrawn. As such, it reflects a significant change in the thinking on the process of peer review in published papers as well as the experience of the RCR.

The document gives guidance on how peer feedback may be used as a component of a quality assurance reporting programme, alongside other processes including learning from discrepancies meetings (LDMs), multidisciplinary team meetings (MDTMs) and clinical audit.<sup>2,5,6</sup> It should therefore be read in conjunction with the two new RCR publications *Standards for Learning from Discrepancies meetings* and *Cancer multidisciplinary team meeting – standards for clinical radiologists*.<sup>2,6</sup>

The RCR has produced this document which sets standards for peer feedback, but accepts that this is an evolving process and that this document will require regular review and updating.

The RCR has committed to reviewing all relevant publications in line with the recommendations of the Francis Report and, where appropriate, applying the category of standard defined by Francis (fundamental, enhances or developmental); this document contains standards that fall within the enhanced category.<sup>7</sup>

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*Dr Pete Cavanagh*

Vice-President Faculty of Clinical Radiology

## Key recommendations

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This document provides guidance on the role of peer feedback in quality assurance in diagnostic radiology services.

The key recommendations are as follows.

1. The potential of peer review for feedback, shared learning, better team working and improved performance for patients is not used to its full advantage. Radiologist peer feedback should be part of daily practice, and all services that provide radiology reports should have a clearly defined process for peer feedback and should provide evidence of a quality assurance radiology reporting programme.
2. The validity of radiologist scoring of discrepant reports has been increasingly called into question. However, categorisation of reports can help in highlighting common pitfalls, systemic issues that need addressing, up-skilling needs and so on.
3. Peer feedback should be carried out through a number of processes in a structured framework integrated with multidisciplinary team meetings (MDTM), discrepancy meetings and clinical audit. All departments should aim to implement systematic review of 5% of reports by December 2018.
4. The process should be fair, objective, confidential and relevant to the practice of the department and individual radiologist.
5. Peer feedback, as part of the quality assurance (QA) programme, should be used by radiological service providers to monitor and evaluate their own performance, with the aim of improving quality and patient safety.
6. Until the information from such a system is mature, benchmarking between departments is not advocated as there will be a number of compounding variables that could render the process of little benefit and could potentially produce erroneous conclusions.
7. The QA programme should be integrated into the provider organisations' clinical governance process, with particular reference to serious untoward incident reporting.
8. Peer feedback should be supported within the clinical governance framework of the department and become part of the radiologists' routine clinical practice, and as such should be recognised in job plans.
9. A single system of categorising discrepancies for the purposes of shared learning which is clearly defined and understood (as outlined in this document) should be used in the UK.
10. All radiology information systems (RIS) in the UK should have a package that allows peer feedback in a time-efficient fashion. All new RIS/picture archiving and communications systems (PACS)/reporting systems installed after 2015 should include an integrated QA module, or provide a facility for electronic integration to a bespoke system.

## 1. Introduction

The fundamental objective of QA in radiology services is to promote patient safety and enhance patient care with accurate and timely radiological opinions. As part of such a programme, there must be systems in place for ensuring the standard of reporting.

The objective of this document is to give guidance for practical implementation of a QA system focusing on the accuracy of the radiological report.

There is published literature documenting radiological reporting discrepancy rate variation between 3–30%. Case-mix, selection bias, imaging modality and inter- and intra-observer variability all render robust standard setting very difficult.<sup>4,8–24</sup> The poor validity and high inter-observer variation in scoring radiological discrepancies has been demonstrated in recent literature.<sup>25–27</sup>

Learning from experience and discrepancies is an important part of continuing learning as a medical professional to maintain high standards of practice.

The key principles that should be adhered to for reporting QA are:

- Accepting that discrepancies will occur
- Mitigating against discrepancies through QA programmes
- Having processes in place to minimise any potential patient harm
- Having systems in place for shared learning from these discrepancies without a culture of blame.

A QA programme must consist of a number of inter-related processes that, taken together, provide evidence of both a department's and an individual radiologist's performance. The aim of this is twofold. First, to reassure patients and stakeholders that the service is safe, and second, to stimulate internal ongoing service improvement by the early identification of systemic problems.

Two key components of a QA programme in radiology reporting are peer feedback and 'double reporting'. The RCR has already produced guidance for individual radiologists on this

activity.<sup>3,6,28</sup> Daily peer feedback has been shown to have the potential to greatly enhance learning and team working. Much of this feedback currently goes undocumented, seriously compromising radiologist learning and the potential for performance improvement. Recent literature has demonstrated that electronic free-text peer feedback systems with efficient workflow exist, which could be implemented to ensure recording of daily peer feedback.<sup>29–31</sup>

The National Advisory Group on the Safety of Patients in England emphasises that 'the most important single change required is a system devoted to continual learning and improvement.'<sup>32</sup> The report also emphasises that 'fear is toxic to both safety and improvement.'<sup>32</sup> Workflow efficient, daily electronic free-text systems enabling radiologist peer feedback would address both of these points. Discussion and learning through regular departmental discrepancy meetings is also fundamental in this process.

In regard to the implementation of peer feedback systems, radiology can learn from other highly reliable industries such as aviation.<sup>33</sup> Larson and Nance, in a key publication on what aviation can teach radiology about performance improvement, note that peer review data are highly subjective and inaccurate, prone to sampling bias and under-reporting, and ignore the system and team. They add that the numeric output generated by peer feedback gives a false impression of accuracy, fosters defensiveness and undermines trust and co-operation.<sup>33</sup>

Many factors contribute to errors, and any QA programme should include the ability to identify systemic errors, and to eliminate these where possible.<sup>34–37</sup> It is essential that this is a positive process so that it avoids inappropriate individual blame and encourages learning from errors and improving quality.

In producing this guidance the best international practice has been reviewed and adapted where appropriate. This document is integral to and should be read alongside its sister document *Standards for Learning from Discrepancies Meetings*.<sup>2</sup>

## 2. Terminology

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When discussing peer feedback in radiology, a number of different terms are used, often interchangeably, which has led to confusion. The RCR's definitions of these terms are outlined in Appendix 1.

The term 'radiologist' is used throughout this document to refer to the individual who issues the report. The RCR recognises that there are other medical practitioners and healthcare professionals who also issue reports. We believe that this guidance should apply to all such services/individuals.

The term 'error' in radiology has been widely discussed and is considered an inevitable part of radiology reporting. However, the term does not accurately reflect radiology practice. Reporting involves decision-making under conditions of uncertainty and therefore, with hindsight, often combined with additional information, it is inevitable that discrepancies will be acknowledged in the original interpretation of a study. The term discrepancy is more appropriate and will be used throughout this document.

### 3. Principles of peer feedback in radiology reporting

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- **Objective:** A system of categorisation of discrepancies should be clearly defined with clear boundaries.
- **Fair:** In applying a system of categorisation to the process of peer feedback, the benchmark should be set at the level at which general radiologists are expected to practice. The exception to this would be if a specific peer feedback process was aimed at assessing the performance of a group of subspecialist radiologists by their subspecialist peers.
- **Anonymised:** To encourage participation, and to protect patients and radiologists from inappropriate use of information out of context, QA data should be anonymised where possible and kept confidential.
- **Clinically governed:** Outcome data from QA, be it opportunistic or systematic, should feed into the clinical governance infrastructure of the institution and be acted on, where appropriate, with formal feedback to individuals.
- **Supportive:** Peer feedback should be seen as a supportive process of learning and development to improve standards. If used incorrectly, without due process, it may result in adverse consequences for individuals and departments.<sup>38-44</sup>
- **Electronically integrated:** To minimise administrative time and errors, peer feedback QA data should be collected through software modules which are fully integrated to RIS/PACS systems, either as a built-in module, or as an external electronically integrated stand-alone module. The RCR recommends these should be in place by 2015.
- **Pragmatic and unobtrusive:** The system should be integrated into normal reporting workflows to encourage participation by all radiologists.
- **Part of routine clinical practice:** All radiologists/reporters should undertake peer feedback as part of their routine clinical practice and the quantity and quality of this should be identified to inform job planning.
- **Clearly understood:** There should be clarity with regard to the potential outcomes and actions generated by peer feedback, including supplementary reports being sent to the referring clinician.

Individual poor performance by radiologists is likely to be acted on much sooner by individuals or colleagues through daily constructive electronic peer feedback.

## 4. Options for peer feedback process

### Secondary review

Opportunities for secondary review include:

- Ad hoc routine interpretation of current images with review of previous images and reports
- MDT meetings
- Systematic peer feedback with an agreed number of randomly selected cases to be added to individual radiologists' work lists.

There are many proprietary dedicated radiology report QA products that are stand-alone or can be integrated into RIS/PACS systems, which can facilitate secondary review.

The RCR recommends that all providers of radiology reporting services acquire or develop such software to enable ongoing peer feedback to be performed as part of normal clinical practice with minimal impact on radiology working practice. All new RIS/PACS/reporting systems installed after 2015 should include an integrated QA module, or provide the facility for electronic integration to a bespoke system. Such systems should permit free-text peer feedback in a time-efficient way, with possible learning points and positive feedback where appropriate.

### MDT peer feedback

The publication *Cancer Multidisciplinary Team Meetings – Standards for Clinical Radiologists* lays out the requirements of the radiologist.<sup>6</sup> In those cases where the images have been reported by another radiologist within the department, the secondary reporting form (or electronic equivalent) can be completed and then passed back to the reporting radiologist.

The scope of this process should be expanded to cases reported within the network and the forms returned to individuals in other hospitals. This issue should be discussed at the relevant cancer and radiology network groups who may wish to formalise this process.

This is an area with great opportunity for the generation of secondary reviews using existing workload and could be included in the non-randomised process referred to above.

However, cases reviewed in this way are at risk of a very high selection bias (higher prevalence of pathology, cancer affecting multiple sites and so on) if the reviewer is a specialist in that field therefore discrepancies generated from this data are not valid for assessing or comparing clinicians or institutions. This should be used as a positive learning exercise and any discrepancy fed back to the original reporting radiologist.

### Double reporting

The RCR has issued guidance on how an individual radiologist can use double reporting to add to their evidence for revalidation.<sup>28</sup> This is a time-consuming process involving two radiologists looking at cases completely blinded to the other's report and a third radiologist comparing the results. In terms of improving radiologist performance, and doing so in a time-efficient fashion, the emphasis must be on frequent peer feedback and true double reporting has no real role to play in this as it is relatively complex and costly on QA resources and radiologist time.

## 5. Peer feedback categorisation

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Categorisation should concentrate on factors to improve reporting standards rather than focusing on making judgements on performance. Scoring does not improve standards.<sup>33</sup> Categorisation should:

- Help guide the 'acute management' of a discordance (for example, a change in diagnosis which has significant impact on immediate patient management will trigger an accelerated communication with the clinical team)
- Allow categorisation of the clinical significance of discordances for review through discrepancy meetings and clinical governance frameworks for individuals, departments and institutions.

Data collected should only be used in a supportive manner to improve practice at department or individual level, not as a tool for judgement (see Appendix 2).

## 6. Dealing with 'significant discrepancies'

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A significant discrepancy is defined in this document as one that 'has, or has the potential to have, a major impact on patient care and/or causes harm'. Non-committal reports can, in some instances, be harmful in delaying treatment or resulting in unnecessary further investigations.

In many cases, significant discrepancies will be known to radiologists and clinical teams. Any significant discrepancies not previously known to the clinician should be recorded in the usual way for the individual radiology department, often as a supplementary report. There should be an addendum on the report, communicated to the clinicians involved. This should follow the RCR guidance on significant findings.<sup>37</sup>

For any major discrepancy which has caused harm to patients, the principles of openness and transparency should be applied and it is essential that communication with the patient should be part of the process, ideally face to face, involving the clinical team, keeping the patient's physical and psychological wellbeing paramount.

Radiology learning from discrepancies meetings (LDMs) should provide a forum for shared learning and facilitate discussion of significant discrepancies. There are multiple causes for discrepancies and there is inevitable bias in secondary reviewing of a report, particularly in MDTs or at LDMs as outlined by the *Standards for Learning from Discrepancies meetings document*.<sup>2</sup>

Discrepancies should be viewed from the perspective of the general radiologist and contextualised (the reporting circumstance and what information was available at the time of initial reporting). Where there are genuine clinical concerns about performance, the individual organisations should use the clinical governance procedures in place to deal with these.

Organisations will be familiar with guidance on conducting an investigation into serious untoward incidents (SUI). Root cause analysis to determine underlying causes for any significant discrepancy, regardless of the seriousness of the impact to patient care, should underpin any review which is to be undertaken.

An anonymised bi-annual report from the LDM is an important tool for identifying recurrent department-wide discrepancies and alerting colleagues to be particularly vigilant for these sources of discrepancy. Through the use of such reports, important changes in practice can be achieved, including addressing issues such as checklists, standardisation of technique, equipment and training requirements. Systematic analysis of significant discrepancy cases for contributory factors, as has been undertaken in other areas of medical practice,<sup>30</sup> may be an extremely effective means of reducing discrepancies across an enterprise and/or department, and enabling learning from discrepancies so that they can be avoided in the future.<sup>45-47</sup>

## 7. RCR recommendations for peer feedback

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The RCR recognises that there is marked variation in peer feedback activity throughout the UK, and understands the challenges of introducing peer feedback into overstretched departments. However, it is recommended that all services develop a formalised peer feedback process based on secondary review of randomly selected primary reports augmented by the non-randomised systems during routine reporting and MDT meetings.

The modalities should be restricted to those centring on image interpretation only such as computed tomography (CT), magnetic resonance (MR), radionuclide radiology and plain radiographs. Positron emission tomography-computed tomography (PET-CT) is currently double reported routinely.

Ultrasound imaging is a dynamic study with only limited representative images and peer feedback for this is not covered in this document.

In coming to a decision about the level of peer feedback activity, consideration has been given to existing schemes. Any move towards peer feedback should be encouraged, but too low a level of peer feedback may be meaningless and ignored. An automated software program to allocate random cases during routine reporting will help minimise

disruption and additional workload. Even when automated software programs are in place, reported compliance rates vary from 53%–76%.<sup>30,31</sup>

The RCR would recommend the following:

- If all aspects of secondary review that are already taking place are included (retrospective, non-random or random, MDTMs and double reporting), all departments should aim to implement systematic review of 5% of reports by December 2018. It is the intention of the RCR to audit this in 2015 to assess progress towards achieving this
- A QA level of >5% for some retrospective audits analysing specific parameters (for example, where accurate discordance rates are required for a specific subgroup of examinations – such as on-call CT) may be required
- The above rates of QA should ideally be achieved by a continuous process throughout the year and as soon as possible after the primary report so the risk of adverse outcome from a discordant finding is reduced. There should be a system in place such that a proportion of the sample of cases are randomly selected to ensure they are an unbiased representation of the workload.

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## Appendix 1. Definitions

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**Primary reporting:** The process by which a radiologist reviews relevant available clinical data and imaging examination, and provides a radiological opinion on the imaging findings, in the form of a written or typed radiology report.

**Primary reporter:** Any radiologist, medical practitioner or healthcare practitioner who undertakes the primary interpretation of medical imaging investigations, and provides an opinion to another person, usually in the form of a written report. Wherever the term 'radiologist' is used, the same recommendations apply to all other primary reporters.

**Secondary reporting:** A process by which a primary report and the associated images are subsequently reviewed by a second radiologist and the second report approved/modified. The second read may be prospective (prior to final verification of the report) or retrospective (after the primary report has been verified).

When retrospective, the second reporting radiologist may have access to additional radiological and clinical outcome information.

**Secondary review:** A process by which a primary report and the associated images are subsequently reviewed by a second radiologist. A secondary report is not issued.

**Double reporting:** A process by which two independent radiologists, provided with the same clinical information and images, each generate a separate primary report (in parallel), without knowledge of the other's report, and both reports are reviewed by a third (peer) radiologist. A final report is verified by the third radiologist or by consensus. These cases should come from routine radiology practice within a defined period of time and in a defined modality or set of modalities. The radiologist evaluating the reports completes a form for each case reviewed. The two radiologists should discuss all cases where there is disagreement between them and come to a consensus view. Where no agreement can be reached, the cases could be reviewed by a departmental adjudicator. On completion of the double reporting sample, the radiologist produces a summary detailing modality type, number of examinations and the categorisation of results. This report and supporting pro formas could then be used as part of the individual's consultant annual portfolio.

**Joint reporting:** Process by which a radiology report or interpretation is generated by two (or more) radiologists, providing a report which is the product of multiple serial (second read), parallel (double reporting) or consensus (MDT reporting) opinions. The final report is a construct of more than one radiologist's opinion.

**Peer feedback:** Peer feedback does not require a modified report to be generated, except in cases of significant discordance where there is the potential for significant harm. In these circumstances, the primary report should be modified or addended and communicated to the referrer.

## Appendix 2. Examples of categorisation

### Learning and outcome

Discrepancy	Reporting discrepancy			System discrepancy		
	Perceptual	Cognitive	Effective communication	Clinical information	Poor imaging/patient factors	Working conditions
No						
Yes						

Learning points:.....

Agreed outcome/further actions:

(a) Communication to clinician: done/required/not necessary

(b) Communication to patient: done/required/not necessary

**Note:**

The categorisation should:

- Include both primary findings and incidental findings on the imaging study
- Include both misses and overcalls as appropriate.

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**The Royal College of Radiologists**  
63 Lincoln's Inn Fields, London WC2A 3JW  
**Tel:** +44 (0)20 7405 1282  
**Email:** enquiries@rcr.ac.uk [www.rcr.ac.uk](http://www.rcr.ac.uk)



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