

# Lifelong learning and building teams using peer feedback

September 2017

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## Foreword

*Lifelong learning and building teams using peer feedback* is aimed to enrich radiologists' professional lives by explaining how time-efficient, pertinent feedback on images one has previously reported can be facilitated using optimised information technology (IT).

However, it is more than an IT specification document. This publication is about the fun, information and personal improvement that can be gained from such feedback, each working day. In time this should become as natural as reviewing previous imaging and reports. It is also about human factors and team building potential of peer feedback.

All human communication requires skill and sensitivity; giving peer feedback to previous reporters of images is no exception. Most times it will be simply a brief message alerting colleagues to follow-up imaging and reports of patients whose previous images they have reported.

Colleagues increase in number and location each year, whether in one's own department or network or teleradiology colleagues helping with local reporting. While this is an RCR publication developed primarily for our radiologist members, all healthcare professionals who report imaging would and should benefit from supportive feedback. This document is openly accessible to facilitate its widespread use by all who report patients' images and to empower the informatics industry.

Many have contributed to the development of this publication, but in particular Dr Neelam Dugar, RCR Clinical Radiology Informatics Adviser, Dr Nicola Strickland, RCR President and members of the College's Clinical Radiology Informatics Committee, Clinical Radiology Professional Support and Standards Board and Clinical Radiology Faculty Board.

It replaces the 2014 RCR publication *Quality assurance in radiology reporting: peer feedback*, which is now withdrawn.

Dr Richard FitzGerald  
Vice President, Faculty of Clinical Radiology

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## 1. Key messages

This document aims to highlight the importance of peer review and peer feedback in a radiologists' day-to-day practice. These are the key messages outlined in the publication.

- Peer feedback is an easy way to learn and to help colleagues to do likewise.
- It should occur every working day and should not take more than five to ten minutes to give and five to ten minutes to analyse.
- Feedback on images one has reported is an intrinsically relevant and cost-effective way of learning.
- Giving supportive peer feedback is an indicator of good teamworking.
- Peer feedback must not be judgemental or involve scoring or grading.
- Demonstration of participation in peer feedback and occasionally documenting lessons learned would be useful for appraisal and revalidation.
- IT investment is essential for timely and efficient peer review and feedback processes
- Daily peer feedback should be differentiated from learning from discrepancy processes. The latter occur less frequently and highlight only a tiny number of cases, not all of which are relevant to everyone.
- Radiology departments should be able to demonstrate quality assurance data in the form of frequency of peer review and feedback.

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## 2. Introduction

### This document provides definitions and explanations for radiologists and the IT industry of peer review and peer feedback.

Golfers know that their swing is improved by visual feedback. Radiologists without feedback on their reports are like golfers hitting their shots in the dark. Radiologists are often unaware of the outcome for patients whose imaging they have reported.

Radiologists regularly perform **peer review** (reviewing already reported studies), but are unable to log this, due to inadequate IT systems. **Peer feedback** (notifying a peer of an outcome) has the potential for extensive, pertinent, timely learning opportunities. Currently peer feedback occurs to a very limited extent due to the lack of efficient technology and cultural barriers among radiologists. This document is intended to help foster the necessary supportive culture change within radiology teams. It is important that peer review is harnessed for educational peer feedback leading to learning and quality improvement. Peer review leading to peer feedback provides learning opportunities for colleagues and enhances team working among radiologists.

Peer feedback and peer review are essential for continuous quality improvement in radiology. Scoring-based peer review should **not** be used within radiology teams. It is subjective, inaccurate, does not provide learning opportunities and it can undermine interpersonal relations and team working.

Appendices A, B and C provide technology specifications for NHS trusts to take to their radiology information system (RIS) providers (or the reporting application provider) to support efficient and automated peer review and peer feedback processes. If regional multidisciplinary team meetings (MDTMs) are happening, Appendix D should be used to inform both RIS and network teleradiology platform (NTP) providers.

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### 3. Definitions

**Peer review** – *reviewing already reported studies*. Peer review happens during the following workflow processes.

1. Most often it happens when reviewing prior reported imaging studies, as part of a normal reporting workflow.
2. During preparation for or during MDTMs.
3. *Ad hoc* review may take place upon request from a clinician for a second opinion (which most commonly happens in the same organisation, but occasionally may take place in another organisation).

These instances of peer review provide opportunities for radiologists to give educational feedback to their peers to help them learn of the clinical course of patients whose images they have reported.

**Peer feedback** – *notifying a peer of an outcome*.

Radiologists would find it useful to receive feedback on studies in which they may have been involved, especially when:

- An addendum is added to a study they have reported
- A further relevant study or follow-up study has been performed
- The histology from a biopsy or surgery is available for a study they reported
- Further clinical information is available on a study they have reported
- An MDTM decision is made on a study they have been involved in.

When giving feedback, every radiologist must remember that it should be beneficial to the person **receiving** the feedback. Peer feedback messages within radiology teams should be concise and informative (examples are suggested overleaf). Non-judgemental feedback provides learning opportunities and enhances team working.

### 4. Peer feedback mechanisms

There are many mechanisms for peer feedback available to radiologists today, including:

1. Face-to-face feedback
2. Telephone conversations
3. Letters
4. Emails
5. Feedback after learning from discrepancies meetings (LDMs) (when there is a difference in opinion)
6. Automatic feedback via the radiologist's dashboard/message board on RIS.

Mechanisms 1–5 are very time consuming and inefficient. Face-to-face feedback can be difficult for junior radiologists when giving feedback to senior colleagues. The current obstacles to peer feedback are the lack of both a time-efficient IT workflow and a culture of giving and receiving educational feedback on a regular basis. Current inefficient feedback processes result in extensive loss of learning opportunities for radiologists. Some feedback could be automated by the IT system. Hence, automatic and one-click feedback via RIS messaging is recommended (see Appendices A and B).

## 5. Good practice for peer review and peer feedback

### Good practice for peer review

Reports for previous imaging displayed on picture archiving and communication systems (PACS) should **always** be available to reporting radiologists. This is essential for patient safety. Radiologists should always factor previous relevant imaging and reports into their assessment of a study being reported. Currently, every NHS radiologist regularly performs huge amount of peer review as part of his or her normal reporting practice. However, they are unable to demonstrate the frequency of peer review as a result of poor technology. In addition, this peer review needs to be harnessed for peer feedback to contribute to lifelong learning, performance improvement for patients and enhanced personal morale. Peer review and feedback should be logged electronically as a departmental metric of the quality performance of a **team**. Peer review should **not** be used as a measure of individual performance.

### Good practice for peer feedback

The purpose of peer feedback should be educational, hence, the majority of feedback should be positive and beneficial to the recipient. Radiologists must be professional and supportive in the tone and wording of informal peer feedback messaging and addendum reports.

#### 1. Peer feedback messaging

Concise feedback messages are recommended. Some examples include:

- 'Follow-up imaging available'
- 'Good spot'
- 'Great report'
- 'MDTM outcome available'
- 'Histology available'
- 'Surgical outcome available'
- +/- Free text option – care must be taken when wording an informal free-text messages.

#### 2. Recording formal second opinions (addendums)

When a request for a formal second opinion is made (whether via MDTM process or as an *ad hoc* request from a clinician), more clinical information or histology is often available to enable a more accurate radiology opinion by the second radiologist. When a formal second opinion is recorded, the primary reporter would benefit from automatic feedback from the IT system – 'addendum available'. It must be understood that supplementary reports/addendums do not necessarily signify disagreements with the primary reporter. They are most commonly used to record a definitive diagnosis arrived at during an MDTM or a more enhanced opinion following clinical discussions when a second opinion is requested.<sup>1,2</sup> It is important that the tone and content of the supplementary report is factual and professional and recognises biases from more information being available.

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## 6. Discrepancies and monitoring of feedback

### Dealing with a reporting discrepancy

Occasionally, radiologists may find a reporting discrepancy when reviewing previous imaging and the associated report. This may be due to the pathology being more obvious with passage of time, more sensitive imaging used subsequently or aided by additional clinical information. Care must be taken to ensure that the tone of the feedback messaging to the primary reporter or addendum report recognises hindsight bias and other biases. Hence, it is suggested that the peer feedback message should remain simple and non-judgemental, for example, 'Discussed at MDTM', 'Follow-up imaging available', 'Addendum added' and so on.

Radiologists should use the anonymised processes for submitting cases to LDMs when errors/discrepancies are identified, as explained in the RCR publication *Standards for Learning from Discrepancies Meetings*.<sup>3</sup> This will allow group learning to take place. When an addendum is added, it should follow the RCR *Standards on recording of second opinions and reviews in radiology departments*.<sup>1</sup>

### Monitoring of peer feedback messages and addendum reports

Addendums and peer feedback messages should be regularly assessed and evaluated for tone and content. A radiologist, selected by their peers, should fulfil the role of peer feedback moderator. Addendums and peer feedback message moderators should ensure that the tone and content of addendum reports and peer feedback messages is constructive, non-judgemental and professional. They should not be used to undermine colleagues. Bullying behaviour should be addressed promptly, through proper processes identified within individual trusts.

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## 7. Quality assurance data – peer review and peer feedback

It should be possible for radiologists to extract the following information from the RIS:

### 1. Indicator of good reporting practice (frequency of peer review)

- On how many imaging studies did a particular radiologist perform peer review?
- Are they achieving the goal of performing peer review on 5% of studies?
- Review of relevant previous images and reports is essential for optimal reporting accuracy.

### 2. Indicator of team engagement (frequency of peer feedback)

Peer feedback is an important component of team engagement. It benefits patients by providing colleagues with efficient, pertinent, lifelong learning. Radiologists should be able to extract information on how often they gave and were given peer feedback. The most common feedback anticipated is 'Follow-up imaging available'. This is an indicator of a radiologist engaging with their team members.

### 3. Indicator of learning

Radiologists could show evidence of regularly reading peer feedback messages.

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**8.**  
**Trust and radiology  
department  
responsibilities**

**Trust and radiology department responsibilities**

1. Ensure that IT applications used for reporting (usually the RIS in the NHS) support peer review and peer feedback processes as described in the Appendices. (This may require upgrades or replacements.)
2. Ensure that job-plans include time for supporting peer feedback and peer review.
3. Appoint a peer feedback moderator within each department.



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## References

1. The Royal College of Radiologists. *Standards for recording of second opinions and reviews in radiology departments*. London: The Royal College of Radiologists, 2010.
  2. The Royal College of Radiologists. *Cancer multidisciplinary team meetings – standards for clinical radiology*. London: The Royal College of Radiologists, 2014.
  3. The Royal College of Radiologists. *Standards for Learning from Discrepancies Meetings*. London: The Royal College of Radiologists, 2014.
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## Appendix A. Technology support for peer feedback

Technology to support and measure peer review and feedback must be part of any 'reporting application'. (The reporting application is the software used for generating a radiology report). Within the NHS the RIS is currently the commonly used 'reporting application'. Picture archiving and communication systems (PACS) and NTPs may also be used as reporting applications.

- All peer feedback messages should populate a radiologist's **personal** dashboard list or folder on the RIS (or reporting application).
- Messages should arrive as 'unread'.
- Radiologists should be able to mark an 'unread' message as 'read' after reading the feedback message.
- Radiologists should be able to filter a list of their 'read' and 'unread' messages.
- There should be a one-click context link from the message to the images on PACS directly from the list.

### 1. Peer feedback with one-to-one messaging

While reporting or reviewing a study, a radiologist may wish to provide a peer feedback message to the primary reporter.

#### Workflow

1. A radiologist is reporting an imaging study on the RIS. They review the prior imaging study and report (or they may simply be reviewing a study on request from a clinician).
2. On the imaging history list on the RIS, they should have the option to send feedback the primary reporter of previous imaging, with the following messaging options from a drop down menu:
  - 'Follow-up imaging available'
  - 'Histology available'
  - 'Surgical outcome available'
  - 'MDT outcome available'
  - 'Good spot'
  - 'Other'
  - +/- Free text messaging option.
3. This message should appear on the dashboard/message board of the primary reporter, with a one-click link to the imaging study information.
4. It should be possible to launch the PACS via desktop integration with one or two mouse clicks from the dashboard or message board to review the follow-up imaging.

### 2. Peer feedback from addendum reports (also called supplementary or appended report)

A supplementary report (often referred to as an addendum by RIS-PACS systems and appended reports by the HL7 standard) may be added following formal review at MDTM or *ad hoc* review requested by clinicians (see HL7 report types in Appendix C). This is consistent with the General Medical Council's (GMC) good medical practice recommendations on clinical documentation. It must be understood that supplementary

reports do not necessarily signify disagreements with the primary reporter. They are most commonly used to record a definitive diagnosis arrived at during an MDTM or a more enhanced opinion following clinical discussions when a second opinion is requested.<sup>1,2</sup> It is important that the tone and content of the supplementary report is factual and professional and recognises biases from more information being available. Supplementary reports should always be used for supporting patient management. Supplementary reports should **not** be used for undermining colleagues or point-scoring.

### Workflow

1. When an addendum report is added, the RIS should log who the addendum reporter is. The RIS also records who the primary reporter is.
2. If the addendum reporter is different to the primary reporter, the RIS should automatically send out a message to the primary reporter saying 'addendum added'.
3. A message should appear on the primary radiologist's dashboard/message board on the RIS saying 'addendum added', with a link to the imaging study information.
4. It should be possible to launch the PACS via desktop integration with one or two mouse clicks from the dashboard or message board.

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## Appendix B. Peer review data logging

### 1. Peer review of relevant priors while reporting

It is well recognised that a large amount of peer review takes place in the NHS during reporting and review of relevant priors. Reviewing imaging studies already reported by colleagues provides an enormous amount of education. However, this is captured poorly by RIS-PACS in the NHS. It must be possible for radiologists to 'mark', for example with a one-click tick of a checkbox on the prior imaging study, to say that it has been peer reviewed by them during reporting. This would allow efficient achievement of the 5% internal peer review goal set by the RCR.<sup>1</sup>

### Workflow

1. A radiologist is reporting an imaging study on the RIS and reviews the prior imaging study and report. (Or they may have been asked to do an *ad hoc* review of a study.)
2. On the imaging history list on the RIS they should be able to tick a checkbox to confirm that they have peer reviewed the previous imaging study.
3. Peer review would then be logged in the RIS database with the ID of the radiologist who did the peer review.
4. An imaging study may have more than one peer reviewer within the database.  
**NB:** Radiologists must have an option to add a one-to-one feedback message during peer review (see Appendix A).

### 2. Peer review at MDTMs

A significant number of imaging studies are peer reviewed at MDTMs. Additional information is often made available such as histology, TNM staging and the management plan. The MDTM summary may be added by the MDTM radiologist who peer reviewed the study as an addendum. Current systems fail to capture this peer review data and fail to

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provide feedback to the primary reporter about the diagnosis and decision making process which would have huge educational value.

### Workflow

1. When an imaging study is added to an MDTM worklist on the RIS, the RIS should automatically flag in the database that the imaging study has been peer reviewed.
2. At the end of the MDTM, the radiologist may choose to add an addendum or send a one-to-one feedback message (see Appendix A).
3. Even if the radiologist chooses **not** to add an addendum, the RIS should still automatically log the radiologist who added the exam to the MDTM worklist.

### 3. Peer review at *ad hoc* clinical review

The RIS should allow *ad hoc* clinical review, which can be used by radiologists while they are in the middle of other tasks, such as reporting or vetting.

1. Clinicians or another radiologist may ask a radiologist to review an imaging study.
2. A radiologist would search for an imaging study on the RIS (using unique ID, NHS number, name, date of birth and so on) and, through the desktop integration on PACS, review the images.
3. On the imaging history list on the RIS, the radiologist should be able to tick a checkbox to confirm they have peer reviewed the previous imaging study.
4. At the end of the *ad hoc* review, the radiologist may choose to create an addendum or send a one-to-one feedback message (see Appendix A).

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## Appendix C. HL7 report status

All suppliers must understand HL7 report status definitions for network-based imaging study review and addendum report creation. Report status is transmitted in OBR25 (Result Status). Report statuses that are relevant to the peer review and peer feedback process include:

1. **Final Report (F)** – Final or authorised report.
  2. **Corrected Report (C)** – Report content is corrected after a final status but no additional content is added (if a grammatical or spelling mistake is made, it allows a report to be corrected/edited with tracked changes kept in the report creator system for audit trail purposes). It should only be possible for the radiologist who created the original content of the report to edit/correct the report. When a report is corrected then it should be prefixed by the following sentence – ‘Please note this report has been edited after the initial report was issued on...!’
  3. **Appended Report (B)** – Additional report content, possibly from another radiologist, is added but the original report content is left unchanged. When additional content is added, the report should be prefixed with ‘Please note that additional content has been by added by Dr..., on ... date. The original report/s is unchanged.’
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## Appendix D. MDTM workflow on a network teleradiology platform

### Peer feedback from regional MDTM review

Where second opinion or MDTM reports are provided by a radiologist in another trust at a regional MDTM, the network should invest in an NTP, so that a network radiologist can issue a supplementary/addendum report. The report should be sent back to the trust where the images were acquired via an HL7 ORU message. It is important that the most up-to-date radiology opinion, provided by a radiologist, exists alongside radiology images on the enterprise RIS-PACS so that appropriate decisions on patient management can be made. It is also important that the specialist radiologist makes the primary reporter aware of the second opinion or MDTM report provided as part of the peer feedback message. Investment in a NTP is required.

A radiologist may be required to review images from multiple hospitals within a cancer network during a network wide MDTM.

### Workflow

1. MDTM co-ordinators create MDTM worklists, including a list of patients that need to be discussed at the MDTM, using cancer/non-cancer databases such as Somerset Cancer Registry, Infoflex and so on.
  - MDTM lists should be identified by the name of the MDTM (for example chest, urology and so on) and date for discussion.
  - Each patient to be discussed should be identified by the local patient administration system (PAS) ID and national ID (for example, NHS number).
  - The unique accession number should identify each imaging study for MDTM discussion.
2. Each hospital should be able to push images for discussion to the teleradiology platform using Digital Imaging and Communications in Medicine (DICOM) push from their local PACS to the teleradiology platform.
3. The teleradiology platform should be able to use a vendor-neutral, industry-standard database mechanism such as a Restful web API, SQL or ODBC query, to query and download MDTM worklists from the MDTM database. (Query parameters would include name and date of MDTM; responses to the query would be a list of imaging studies to be discussed, including at least the patient ID and accession number.) In the absence of database query support, radiologists should be able to manually create MDTM lists of studies on the teleradiology platform one by one, based on images sent via DICOM push.
4. Radiologists must be able to save pre-prepared screen layouts, including layouts simultaneously displaying imaging studies from multiple different imaging modalities and stacks of images arrested temporarily at a particular slice.
5. Radiologists should be able to create addenda on the teleradiology platform after an MDTM, while leaving the original report unchanged – the report status will be appended report.
6. Appended reports are reports containing both the original report with unchanged old content and an addendum report with new content that has been added by the MDTM radiologist and transmitted via HL7 ORU message to the local institution (where the imaging study was originally generated) for onward distribution to all relevant IT systems.

7. If the addendum reporter is different from the primary reporter, local enterprise RIS should automatically send out a message to the primary reporter that an addendum has been added.
8. A message should appear on the primary radiologist's dashboard/message board on the RIS, with a link to the imaging study information.
9. It should be possible to launch the PACS via desktop integration with one or two mouse clicks from the dashboard or message board.

## Appendix E. Suggested reading

The following may be useful when considering peer feedback and review in your department.

1. Gunderman R, Chan S. Knowledge sharing in radiology. *Radiology* 2003; **229**(2): 314–317.
2. Larson DB, Nance JJ. Rethinking peer review: what aviation can teach radiology about performance improvement. *Radiology* 2011; **259**(3): 626–632.
3. Mucci B, Murray H, Downie A, Osborne K. Interrater variation in scoring radiological discrepancies. *Br J Radiol* 2013; **86**(1,028): 20130245.
4. Bender LC, Linnau KF, Meier EN, Anzai Y, Gunn ML. Interrater agreement in the evaluation of discrepant imaging findings with the Radpeer system. *AJR Am J Roentgenol* 2012; **199**(6): 1,320–1,327.
5. Iyer RS, Swanson JO, Otto RK, Weinberger E. Peer review comments augment diagnostic error characterisation and departmental quality assurance: 1 year experience from a children's hospital. *AJR Am J Roentgenol* 2013; **200**: 132–137.
6. McCoubrie P, FitzGerald R. Commentary on discrepancies in discrepancy meetings. *Clin Radiol* 2014; **69**(1): 11–12.
7. Prowse SJ, Pinkey B, Etherington R. Discrepancies in discrepancy meetings: results of the UK national discrepancy meeting survey. *Clin Radiol* 2014; **69**(1): 18–22.
8. Alkasab TK, Harvey HB, Gowda V *et al*. Consensus oriented group peer review: a new process to review radiologist work output. *J Am Coll Radiol* 2014; **11**(2): 131–138.
9. Eisenberg RL, Cunningham ML, Siewert B, Kruskal JB. Survey of faculty perceptions regarding a peer review system. *J Am Coll Radiol* 2014; **11**(4): 397–401.
10. Hussain S, Hussain JS, Karam A, Vijayaraghavan G. Focused peer review: the end-game of peer review. *J Am Coll Radiol* 2012; **9**(6): 430–433.
11. Strickland NH. Quality assurance in radiology: peer review and peer feedback. *Clin Radiol* 2015; **70**(11): 1,158–1,164.
12. Larson DB, Donnelly LF, Podberesky DJ *et al*. Peer feedback, learning, and improvement: answering the call of the Institute of Medicine Report on Diagnostic Error. *Radiology* 2017; **283**(1): 231–241.
13. Virma N, Hippe DS, Robinson JD. Assessment of interobserver variability on the peer review process: should we agree to disagree? *AJR Am J Roentgenol* 2016; **207**(6): 1–7.
14. Gunderman RB, Moneva D. Unhappiness and the radiologist. *J Am Coll Radiol* 2016; **13**(5): 582–584.
15. Shabazz T, Parry-Smith W, Oates S *et al*. Consultants as victims of bullying and undermining: a survey of Royal College of Obstetricians and Gynaecologists consultant experiences. *BMJ Open* 2016; **6**: e011462.

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The Royal College of Radiologists. *Lifelong learning and building teams using peer feedback*. London: The Royal College of Radiologists, 2017.

Ref No. BFCR(17)5

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