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# Transitioning to Peer Learning: Lessons Learned

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## Abstract

**Purpose:** To describe the transition from a traditional peer review process to the peer learning system as well as the issues that arose and subsequent actions taken.

**Methods:** Baseline peer review data were obtained over 1 year from our traditional peer review system and compared with data obtained over 1 year of using peer learning. Data included number of discrepancies and breakdown of types of discrepancies. Staff radiologists were surveyed to assess their perception of the transition.

**Results:** There were 5 significant discrepancies submitted under the traditional peer review system, and 416 cases submitted under the new peer learning methodology. The most reported peer learning events were perception (45.0 %) and great calls (35.1%). Surveys administered after the intervention period demonstrated that most radiologists felt peer learning contributed more to their professional development and had more opportunities for learning compared with the traditional peer review system.

**Conclusion:** The benefits of instituting peer learning include increased radiologist engagement and education. There may be challenges in the transition from a traditional peer review system to peer learning; however, the process of solving these issues can also result in an overall improved system.

**Key Words:** OPPE, peer learning, peer review, transition, workflow

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## INTRODUCTION

Peer review has always been a challenging proposition in radiology, with methodologies used in other specialties often not directly applicable to our field. In 2002, a patient safety task force of the ACR introduced RADPEER to allow radiologists to provide quality assessment and routine peer review [1]. This now familiar form of peer review involves a score-based, retrospective assessment of prior interpretations of imaging studies. Although this traditional peer review process has been widely used to satisfy credentialing bodies, such as the Joint Commission, its use in producing meaningful learning opportunities has been questioned [2]. Furthermore, the traditional peer review process focuses

on mistakes of an individual rather than on the shared learning opportunities for the entire team. In 2015, the Institute of Medicine (now the National Academy of Medicine) published *Improving Diagnosis in Health Care*, which emphasized the importance of applying methods to identify and learn from diagnostic errors, with a fundamental shift in focus from one of blame to one of education [3].

The newer concept of peer learning described by Larson et al [4] introduced a process of peer review that follows the tenets outlined by the National Academy of Medicine in identifying diagnostic errors with an emphasis of education and improvement. Since its introduction, peer learning has demonstrated improved radiologist satisfaction and educational value particularly when compared with the traditional peer review process [4-6].

Because of the significant differences compared with traditional peer review, the transition to peer learning requires substantial changes in mindset, workflow, and logistics. These factors presented challenges that threatened to disrupt its implementation. The purpose of this article is to describe our transition to peer learning, the issues we encountered, and the adjustments that were subsequently made.

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## METHODS

This HIPAA-compliant project obtained a waiver from our institutional review board. Peer review data were collected on imaging studies from a network that included an academic tertiary care center, two community hospitals, and multiple outpatient sites. Each peer review was placed electronically in Conserus software (Change Healthcare, Nashville, Tennessee) built into the PACS (Synapse, Fuji Medical Systems USA, Stamford, Connecticut). The baseline peer review data included reviews from January 1, 2018, to December 31, 2018. The intervention period included the peer learning review data from January 1, 2019, to December 31, 2019. Surveys were sent to participating radiologists to assess their opinions on the peer learning system compared with the baseline peer review system after the conclusion of the intervention period.

### Baseline Peer Review

The existing departmental peer review process (Fig. 1) required each radiologist to randomly select cases to review on a biannual basis. The rating system used was based on the RADPEER (ACR, Reston, Virginia) grading system:

- I. Agree with read
- II. Discrepancy in interpretation, not ordinarily expected to be made
  - a. Not clinically significant
  - b. Clinically significant
- III. Discrepancy in interpretation, should be made most of the time

- a. Not clinically significant
- b. Clinically significant

At the end of each biannual review period, a report was generated that included all peer-reviewed cases given a score of IIb or higher, and these cases were then reviewed by the Peer Review Committee (PRC). The PRC was comprised of the chair of the PRC, chair of radiology, and the vice chair of quality and safety. The case was considered a discrepancy if the PRC agreed, and only then was a notification sent back to the original reading radiologist.

### Peer Learning

The shift to peer learning resulted in significant technical and logistical changes from the baseline peer review system. Changes in the interface in the PACS system included the development of a new classification scale based on peer learning concepts and allowed for more granular information to be captured for each peer review. In addition, the cases from the new peer learning system served as the basis for learning conferences, including the periodic morbidity and mortality (M&M) meetings, a change from the previous ad hoc system of obtaining cases for M&M. By directly pairing the peer learning system with M&M conferences, a formalized method of obtaining cases to review with the entire department including residents was established. Furthermore, strict adherence to anonymization of each case presented was enforced to emphasize the educational aspect of these conferences and to prevent shaming of involved radiologists.

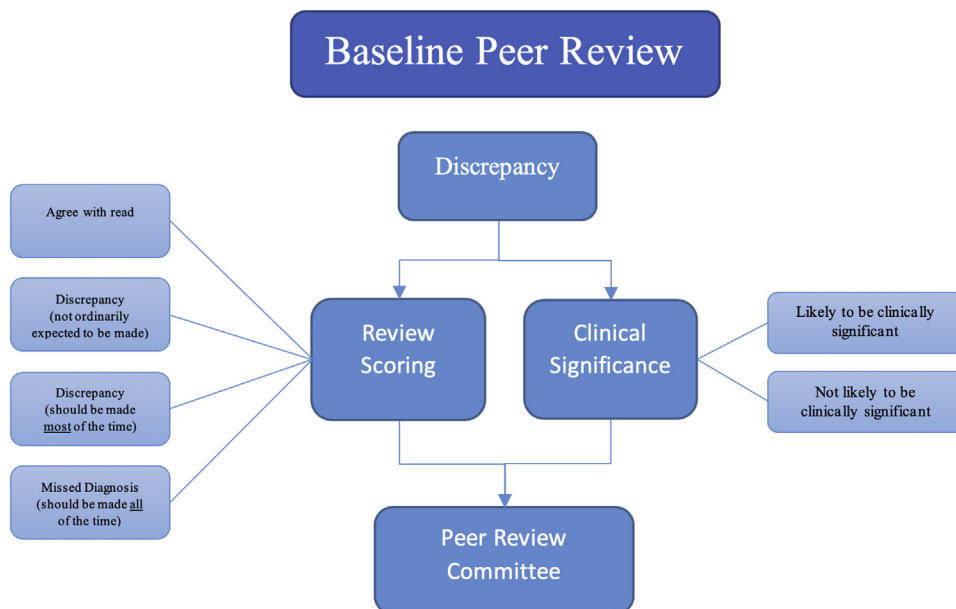


Fig 1. Workflow baseline peer review.

However, the most important difference in making the shift to peer learning was conceptual. The central theme in the adoption of peer learning is embedded in its name: learning. The most important purpose for identifying discrepancies under the peer learning format is to improve the practice of radiology through education. This is a critical distinction compared with our baseline peer review system in which the focus was primarily compliance, with education a decidedly secondary objective.

**Early Implementation of Peer Learning.** The implementation of peer learning resulted in a new rating system, with discontinuation of the system that was based on RADPEER (Fig. 2). New peer learning categories were created based on a similar system described by Larson et al [4] and incorporated into the Conserus software embedded in the PACS as follows:

1. Great call
2. Learning opportunity
  - a. Perception
  - b. Cognition
  - c. Communication
  - d. Reporting
  - e. Other

When a learning opportunity was selected, an additional box prompted the radiologist to choose either “clinically significant” or “not clinically significant.” The category “great call” was created to capture exceptional identification of subtle findings or instances of impressive cognition to acknowledge that learning opportunities do not always

derive from instances of error. Other recorded data for each case included the reviewer and reviewee radiologists involved and a brief description of the teaching point.

Although a minimum number of two reviews were required each month to promote the importance of education in this process, radiologists were encouraged to place reviews whenever they saw a discrepancy. Given the changes of the peer learning process and the anticipation of unforeseen issues with the new workflow, a relatively low number of required reviews was selected to minimize radiologist anxiety during the transition. To give peer learning the best chance of success, it was felt initially that not overburdening the radiologists with an untested workflow was paramount.

Similar to the workflow for the baseline peer review process, the reviewed cases were collected and those labeled “clinically significant” were sent to the PRC to be vetted. Given the priority of education under the peer learning system, the PRC was expanded to include at least one representative from each subspecialty to improve validation of cases.

The PRC’s responsibilities were also expanded. In addition to vetting the submitted peer-reviewed cases, it was tasked to select cases to be formally presented at M&M conference. Furthermore, these M&M conferences were held quarterly and represented cases from all subspecialties, replacing the previous system of semiannual M&M conferences, which were centered on a specific subspecialty. The change from focusing on one subspecialty to including all subspecialties in each conference was made initially because it was felt that reviewing M&M cases from only one

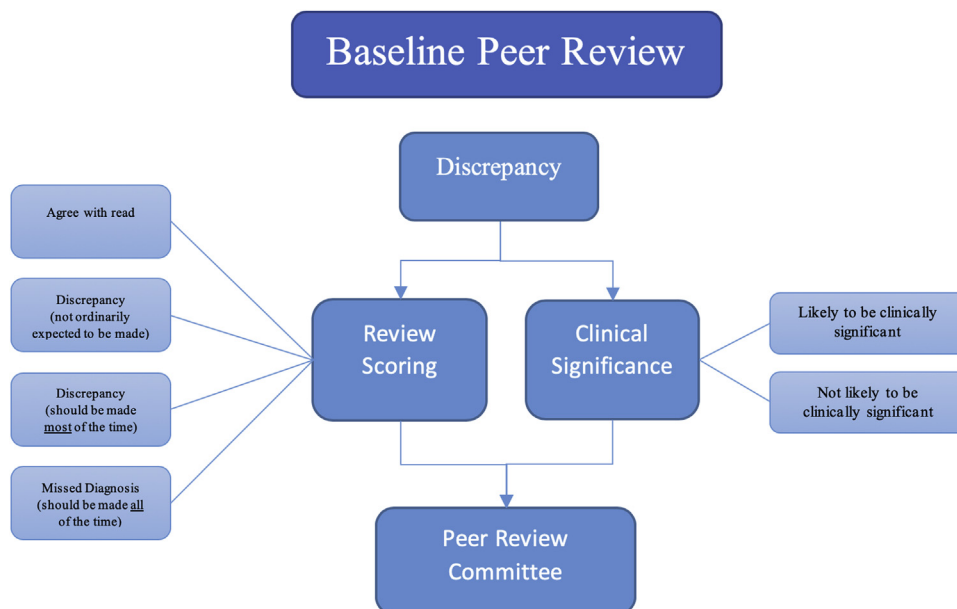


Fig 2. Early implementation of peer learning.

subspecialty resulted in long gaps between presentation of other subspecialty cases. Although this was mitigated to some degree by the increasing frequency of conferences with the new approach, the overall feedback was that presenting a cross section of different types of cases within each conference resulted in a more rounded educational experience, and so this format was ultimately retained. Additionally, this prevented any potential long latency period before a case with more profound repercussions would be discussed.

**Current Implementation of Peer Learning.** The current iteration of our peer learning implementation involved primarily changes in workflow and logistics (Fig. 3). Although the peer learning categories were retained without changes, the subcategories “clinically significant” and “not clinically significant” were eliminated as it was felt this determination should be assessed by the PRC and furthermore simplified workflow for the radiologists.

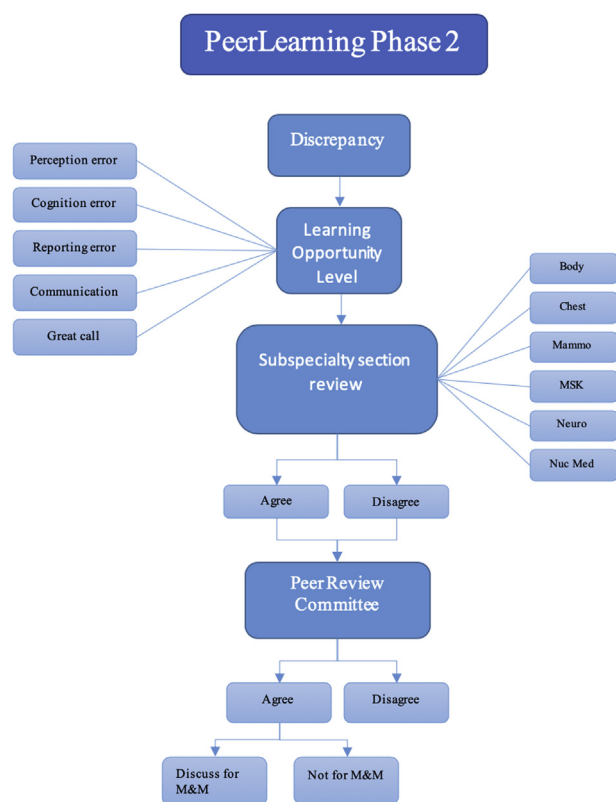
The other major change involved how the peer-reviewed cases submitted by the radiologists were to be vetted. Peer learning cases were sorted into each subspecialty, and each section head was tasked to review those cases with its division to decide which cases should be submitted to the PRC. The vetting process was primarily performed at the

subspecialty level, and the PRC acted as the body overseeing this process. Because there continued to be a radiologist from each subspecialty on the PRC, any interesting cases to report or issues uncovered during the subspecialty reviews deemed noteworthy could be brought up and discussed during the committee meetings.

## RESULTS

The total number of reported significant peer learning events increased with the new peer learning process compared with the baseline peer review system. In a 1-year period, only five significant discrepancies were identified (defined as IIb or higher) with the traditional peer review system. In contrast, 416 total discrepancies were identified with the new peer learning system. These 416 total discrepancies consisted of 45.0% perception errors, 35.1% great calls, 8.4% cognition errors, 6.7% reporting errors, and 0.5% communication errors (Table 1). This represented an average of 16.64 peer learning events per radiologist in the intervention period.

A total of 22 of 22 participating diagnostic radiologists responded to the survey (Fig. 4). Of those 22, 16 (73%) radiologists either agreed or strongly agreed with the statement that the peer learning system contributed more to their development as a radiologist compared with the traditional peer review system, with 5 radiologists who were neutral, and 1 radiologist who disagreed. Of the 22, 9 (41%) radiologists either agreed or strongly agreed with the statement that the baseline peer review process was easier to use than the new peer learning process, with 7 radiologists who were neutral, 5 radiologists who disagreed, and 1 radiologist who strongly disagreed. Of the 22, 17 (77%) radiologists either agreed or strongly agreed with the statement that peer learning provided more opportunity for learning compared with the traditional peer review system, with 5 radiologists who were neutral.



**Fig 3.** Current implementation of peer learning. Mammo = mammography; M&M = morbidity and mortality; MSK = musculoskeletal; neuro = neuroradiology.

## DISCUSSION

The adoption of the peer learning methodology resulted in dramatically increased engagement and participation by radiologists as evidenced by the significantly increased number of peer learning events (416) in the intervention period (Table 1), compared with only 5 total significant reviews in the baseline peer review period. The peer learning system in generating many opportunities for learning dramatically increased the number of interesting cases presented at M&M conferences, in turn requiring an increase in frequency of M&M conferences that doubled under the new system. These new M&M conferences were extremely well received with each conference including a

**Table 1.** Types of learning opportunities

Learning Opportunity Type	Total Number	Total Percentage
Great call	146	35.1
Cognition	35	8.4
Communication	2	0.5
Perception	187	45.0
Reporting	28	6.7
Other	18	4.3

cross section of interesting cases from each subspecialty generating stimulating discussions. This is likely the basis for the 77% of radiologists who felt the new peer learning process contributed to increased educational opportunities compared with the baseline peer review system (Fig. 4). The typical M&M conference reviewed 8 to 10 cases per subspecialty and frequently went over the 1 hour allotted slot of the conference.

Nevertheless, despite the success of peer learning in improving radiologist engagement and creating an educational environment, the transition to peer learning presented significant challenges with physician acceptance, compliance, informatics, and workflow.

### Physician Buy-In

The survey results demonstrate that staff radiologists felt the peer learning system is superior from an educational perspective compared with our baseline peer review process. Despite this, introducing the new system did result in some concerns. The new peer learning grading system resulted in complaints initially by several radiologists accustomed to the traditional grading system. Sweeping changes introduced into a long-standing workflow can potentially trigger such reactions, and as such this was not unexpected. Furthermore, the software interface was more complex than the baseline peer review interface. This can be seen with the significant number of radiologists (41%) who found the placing of peer learning reviews to be more complicated compared with the baseline peer review system (Fig. 4). This was in part due to the increasing granularity of information being recorded. For example, a new check box indicating whether the case was a trauma case or not was added. Another field was created to identify if the peer learning event was placed on a staff radiologist or radiology resident. Over time, this interface was gradually simplified and streamlined. Fields in the interface were scrutinized to determine if the information was truly needed or if the

same information could be obtained elsewhere. For example, the field that indicated whether the review was on a staff radiologist or resident was eliminated because this information could be obtained elsewhere in the interface. As described previously, the box requiring indication of either “clinically significant” or “not clinically significant” was removed. Over time, these small changes together resulted in a smoother and more refined interface.

A more serious concern from several radiologists was how the information from the peer learning process would be used. The motivation behind peer learning is to improve the educational worth of the peer review process, and to this end, the switch was enthusiastically supported by the radiologists. At the same time, however, there was anxiety that these data could also be used to assess radiologist performance.

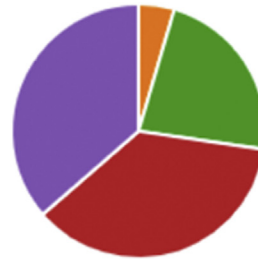
In theory, the baseline peer review process was designed for the purpose of assessing radiologist performance, because error rates for significant discrepancies were routinely generated. In reality, the small numbers of significant discrepancies generated demonstrated that this process was more to document compliance, and its utility in assessing true performance was poor. The new peer learning system in generating significantly more discrepancies resulted in angst that the data could more robustly be used for performance review. This fear was mitigated by the department chair emphasizing that the new peer learning process was meant to improve the educational value of peer review and would not be used in generating error rates for performance review. Ultimately, buy-in of senior leadership was critical to the acceptance of peer learning as a legitimate educational tool. This highlighting of education as opposed to performance review assuaged radiologist apprehension and paved the way for the engagement that ultimately resulted. The expansion of the PRC to include radiologists from each subspecialty as well as the expanded role of radiologists in their own subsections increased transparency, underscored educational importance, and contributed to radiologist acceptance.

### Compliance and Ongoing Professional Practice Evaluation

Our baseline peer review system satisfies credentialing bodies such as the Joint Commission requirements for ongoing professional practice evaluation (OPPE) and is one of the reasons for its widespread use among radiology departments. Calculating error rates using the numerical grading system on the surface fulfills a quantitative method of assessing radiologist performance but in reality is of questionable value. The peer learning methodology by emphasizing education and encouraging placement of a review whenever a discrepancy was found is by definition a

1. In comparison to the old peer review process (RADPEER), the new peer review process (PeerLearning) contributes more to my development as a radiologist.

● Strongly disagree	0
● Disagree	1
● Neither agree or disagree	5
● Agree	8
● Strongly agree	8



2. The old peer review process (RADPEER) was easier to use than the new peer review process (PeerLearning).

● Strongly disagree	1
● Disagree	5
● Neither agree or disagree	7
● Agree	6
● Strongly Agree	3



3. There is more opportunity to learn in the new peer review process (PeerLearning), in comparison to the old peer review process (RADPEER).

● Strongly disagree	0
● Disagree	0
● Neither agree or disagree	5
● Agree	8
● Strongly agree	9



Fig 4. Survey responses comparing the old peer review process to the current peer learning system.

nonrandom process, and as such the data cannot be used in the same fashion as data obtained from our baseline peer review process. Furthermore, it was decided that this peer learning data would not be used in direct performance reviews of radiologists. These factors together at first glance seem to be problematic when using the peer learning format with respect to OPPE Joint Commission requirements.

However, upon closer inspection of the Joint Commission documents [7], we believe that it is in fact possible to satisfy OPPE requirements using the peer learning

methodology. The Joint Commission describes an outline for designing a process for OPPE but leaves considerable latitude in the details of that implementation. In our implementation of the peer learning system, the responsibilities for data review and frequency of review required by the Joint Commission are satisfied by the radiologist reviews and workflow through the PRC.

The Joint Commission further subdivides the types of data that can be collected into qualitative and quantitative types. Our peer learning process satisfies the qualitative

assessment by documenting participation in the process, including documentation of the minimal number of reviews required each month as well as attendance at M&M conferences. One weakness of the peer learning methodology is the lack of quantitative data that our baseline peer review system previously incorporated. However, it is notable that the Joint Commission allows for the use of either qualitative or quantitative data (or both) to satisfy OPPE requirements, provided it satisfies the appropriate committees at the institution [7]. The peer learning process we have implemented satisfies the qualitative data requirements and furthermore has acceptance by the PRC and department leadership and thus fulfills Joint Commission requirements. If so desired, separate quantitative data can also be collected, such as final report turnaround time for each radiologist. Nevertheless, each department should review their process to ensure it complies with regulatory and institutional requirements.

### Informatics Considerations

A significant limiting factor in implementing the peer learning methodology in our department was the availability of IT support, exacerbated in the later phase of implementation because of the coronavirus disease 2019 pandemic. The initial implementation of peer learning resulted in increased number of mouse clicks compared with what was previously needed using the baseline peer review system. Experimentation with different iterations of the software interface to improve efficiency required significant backend coding changes by an already overworked IT team and often resulted in long periods before modifications were incorporated. This was further complicated by having other review workflows in the system including those for radiology resident discrepancies. Although we have made significant strides in streamlining these different workflows, much remains to be done to improve integration and optimize efficiency of the peer review process.

Generating feedback to the reviewer and reviewee has been an unexpected issue in using our peer learning system. With our baseline peer review system, generating feedback to the original reading radiologist was not an issue, because due to the infrequent significant discrepancies placed, notification could be given manually. With the new peer learning workflow resulting in many reviews being placed, this manual feedback loop closure was no longer practical. As a result, the IT team is working on a workflow that will automatically send both reviewer and reviewee a notification once a review has been vetted.

Another weakness in our implementation of the peer learning methodology is the lack of anonymization of the reviewer, reviewee, and patient. By nature of how a review is

placed in the system, the reviewer can discern the identity of the reviewee and vice versa. This in turn can influence whether a review is placed or not, although this is mitigated by making education and not compliance the focus of this process. One future goal is to implement better anonymization between reviewer and reviewee, while keeping this information available to the PRC. As an aside, the absence of anonymization of our review process should not invalidate protection of these peer reviews from discovery such as is granted by the Peer Review Protection Act in Pennsylvania (PRPA) [8]. Although a discussion regarding what is protected under this legislation is beyond the scope of this article, because these reviews are generated by and for physicians and reviewed by a hospital committee for the purposes of improving quality, our process follows the legislative intent for protection under the PRPA. Nevertheless, recent controversial decisions by the Pennsylvania Superior Court have potentially narrowed the scope of protection of the PRPA [8], and it behooves each department to review their peer review process with their legal department.

### Workflow

The success of our implementation of peer learning to improve radiologist engagement was evident given the increase in significant peer reviews compared with our baseline peer review process. Despite this dramatic increase, the average number of events placed per radiologist at 16.64 was below the threshold originally set at 24 (2 reviews per month). This was attributed primarily to the various changes in workflow as it was being optimized, undoubtedly at times resulting in confusion and frustration in placing reviews, which in turn resulted in fewer reviews being placed. As the workflow is continually improved, we expect the number of peer reviews will continue to increase in the future.

Nevertheless, during the initial iteration of our peer learning workflow, the increase in reviews overwhelmed the PRC. At one point, the committee had to meet weekly to vet the reviews in a timely fashion, leaving little time to address other committee responsibilities. This issue was addressed by modifying the workflow as described previously, in which each subspecialty reviewed cases in their discipline and subsequently forwarded their findings to the PRC. In addition to improving the workflow of the PRC, this modification had the benefit of increasing radiologist engagement, because all radiologists in theory would be part of a group review process within their section. In practice, the complexities of scheduling make it challenging to have radiologists in a section to all be available at the same time, and there is still opportunity to improve this process.



In summary, the transition from our baseline peer review process to peer learning presented many different challenges. Issues arose from physician anxiety, regulatory concerns, informatics difficulties, and workflow struggles. Each of these issues threatened to derail and possibly abort the implementation of peer learning. We tackled these challenges by accounting for the viewpoints of each stakeholder: radiologist both as a reviewer and reviewee, department leadership, informatics team, and regulators. Considering these varied viewpoints was key in our initial transition to the peer learning system as well as its subsequent optimization to its current form. As is the case for any quality project, the current iteration is not meant to be final but part of a process that will continue to evolve as we continue to learn more. Although there are still issues to resolve, we consider our implementation of peer learning to date a success because it has increased radiologist engagement, improved education, and streamlined workflow.

### TAKE-HOME POINTS

- Challenges can arise when transitioning from a traditional peer review process to the peer learning; however, these challenges can also represent opportunities for improvement.
- Challenges from transitioning to peer learning include physician anxiety, regulatory concerns, informatics difficulties, and workflow struggles.

- Solutions must involve consideration for the radiologist (both as a reviewer and reviewee), department leadership, informatics team, and regulators.
- Peer learning increased radiologist engagement and improved education.

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