PEER LEARNING IS BOTH PREFERABLE AND LESS EXPENSIVE THAN SCORE-BASED PEER REVIEW: INITIAL EXPERIENCE AT A TERTIARY ACADEMIC CENTER

Presented by Sachin Seetharam, MD

University of Chicago Medicine

Diagnostic Radiology Department

PURPOSE AND BACKGROUND

To examine radiologist experiences and perceptions during a transition from score-based peer review to a peer learning program, and to assess differences in time-cost efficiency between the two models of quality improvement.

Score Based Peer Review (Old)	Shortcomings

• Previously interpreted studies randomly reviewed by peer radiologists in the subspecialty of interest.
• Cases determined to be concordant or discordant, scored via the ACR RADPEER scoring approach[9,10].
• Cases reviewed at monthly conference
  • Clinical Context
  • Discordant finding
  • Severity of finding/Final score
	• Score-based peer review model focused on individual error rates and had not been shown to improve performance or change practice patterns[2].
	• Viewed mostly as a means to meet regulatory requirements.
	• Fostering culture of shame, anxiety
	• Increased risk of underreporting errors, limiting value[2,3].

INTERVENTION: PEER LEARNING SYSTEM

2015 Institute of Medicine (IOM) report acknowledged the prevalence of diagnostic error in medicine and highlighted the importance of creating a non-punitive organizational culture to promote open communication and learning with the overarching goal of reducing diagnostic error[1].

Peer Learning Program (New)

- Previously reported studies selected in an ad-hoc manner, encouraged to submit five cases per quarter.
- Accessed from within existing PACS, 8-part form.
- Cases mostly identified from consultation with referring clinicians, review of comparison studies, multi-multidisciplinary conferences.
- Selection of both discrepant cases as well as "good-calls"

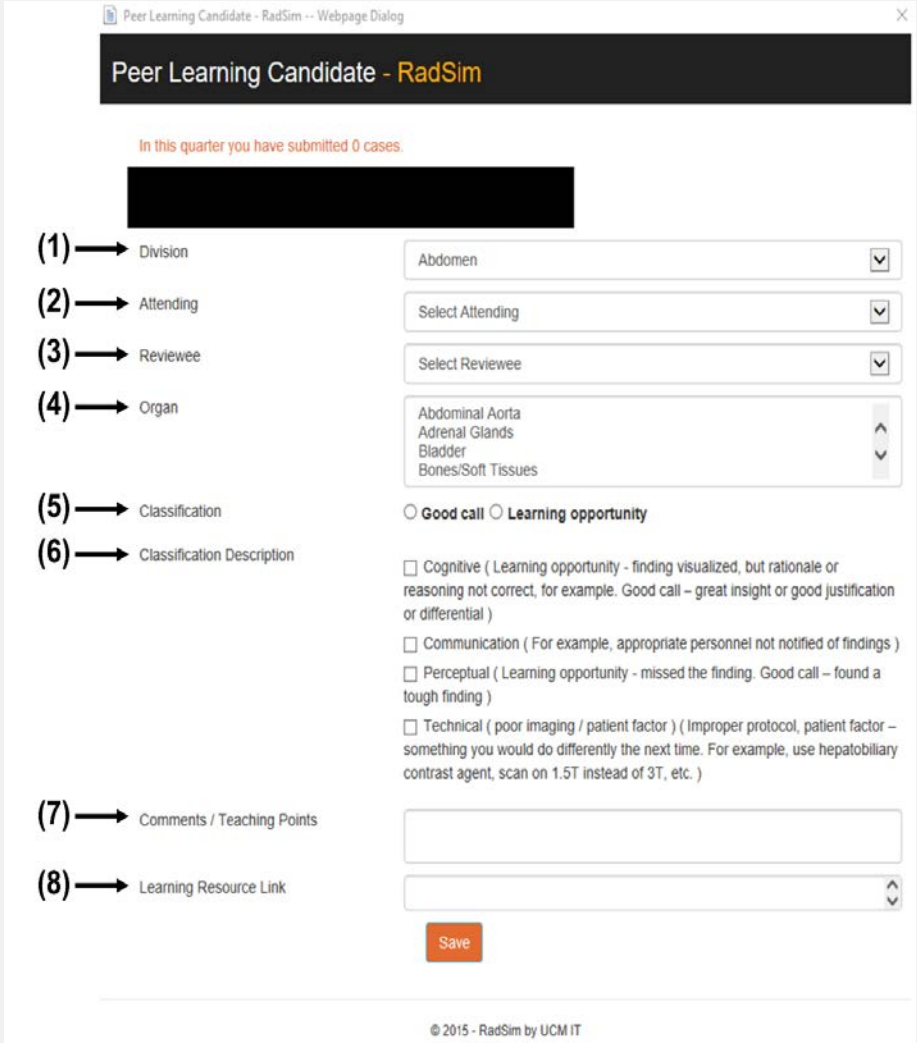

Figure 1. Peer Learning submission form

INTERVENTION: PEER LEARNING CONFERENCE

- Used anonymized cases, emphasize EBM, learning opportunities for the team as a whole.
- Transition of selection criteria from discordance to potential for greatest learning opportunity
- Changes in language
  - Discourage problematic: ("negligence", "malpractice")
  - Encourage supportive: ("good call")
- No scoring system

PEER LEARNING CONFERENCE: STRUCTURE

CONFERENCES LED BY SECTION CHIEF, ALL SECTION RADIOLOGISTS INVITED TO SUBMIT CASES AND ATTEND CONFERENCE

CLINICAL CONTEXT, LEARNING OPPORTUNITY VS. "GOOD CALL" IDENTIFIED

COGNITIVE, COMMUNICATION, PERCEPTUAL, AND/OR TECHNICAL FACTORS AS WELL AS POSSIBLE DOWNSTREAM CLINICAL IMPLICATIONS INVOLVED

CRITICAL LEARNING POINTS SUMMARIZED, ADDITIONAL QUESTIONS/CONCERNS ADDRESSED AS AS A GROUP

PERTINENT ACADEMIC RESOURCES

METHODOLOGY

Faculty radiologists (*N* = 27) were requested to anonymously complete identical 5-point Likert scale surveys prior to and 1-year following the transition to the new peer learning programing

Survey Questions Related to Former Peer Review or New Peer Learning	Positive vs. Negative
The (former peer review) or (new peer learning) program is effective overall.	Positive
The (former peer review) or (new peer learning) program has improved our group's practice.	Positive
The (former peer review) or (new peer learning) program has improved my practice as a clinician.	Positive
The (former peer review) or (new peer learning) program promotes trust, openness, and celebration of success among peers.	Positive
The (former peer review) or (new peer learning) program helps identify errors and develop strategies to avoid such errors.	Positive
The (former peer review) or (new peer learning) program encourages reporting of errors or discrepancies.	Positive
The (former peer review) or (new peer learning) program is worth the time I invest.	Positive
The (former peer review) or (new peer learning) program engages my colleagues.	Positive
The (former peer review) or (new peer learning) program is disruptive to my workflow.	Negative
The (former peer review) or (new peer learning) program has had a negative impact on me as an individual.	Negative

Table 1. Pre- and Post-Intervention Survey Questions

- Demographic Questions
  - Number of years post-training (0-5 years, 6-10 years, 11-15 years, 16-20 years, 21+ years),
  - Academic rank (assistant, associate, full professorship)
- Additional questions
  - Time per month used to complete peer learning exercises (0, 0.5, 1, 2 hours)
  - Program preference (former peer review; new peer learning; not applicable - I was not part of the former peer review program)
  - Free text responses
    - What aspects of the peer learning program do you like more than the peer review program (if any)?
    - What suggestions do you have for improving the peer learning program?

DEMOGRAPHICS

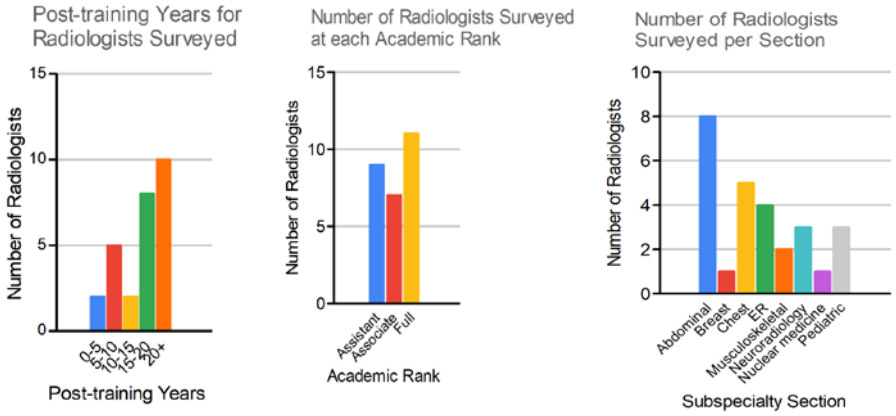

Figure 2. Subspecialty training and experience characteristics of radiologists surveyed in this study. **(a)** Distribution of radiologists by post-training years. **(b)** Academic rank of surveyed radiologists. **(c)** Subspecialty training of surveyed radiologists.

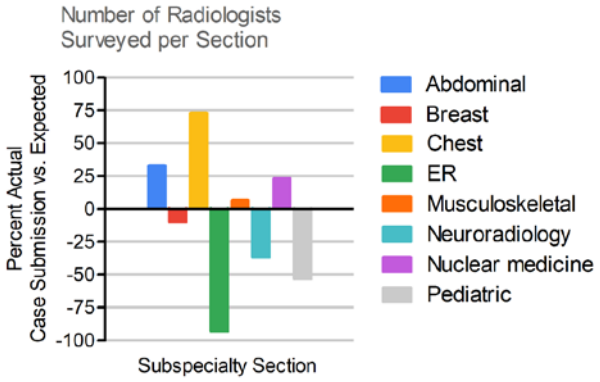

Figure 4. Percent differences between expected and actual case submissions for each subspecialty section over the course of the study (Total Actual Case Submissions – Total Expected Case Submissions) ÷ (Total Expected Case Submissions) × 100%)

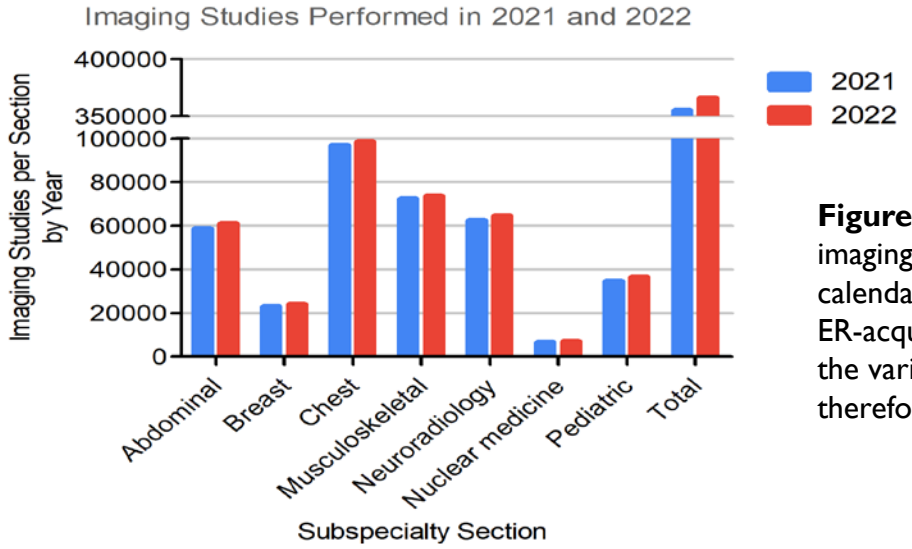

Figure 3. Total and subtotal number of imaging studies performed by subsection in calendar years 2021 and 2022. Note that ER-acquired imaging is represented under the various other subsections and therefore a subtotal is unavailable.

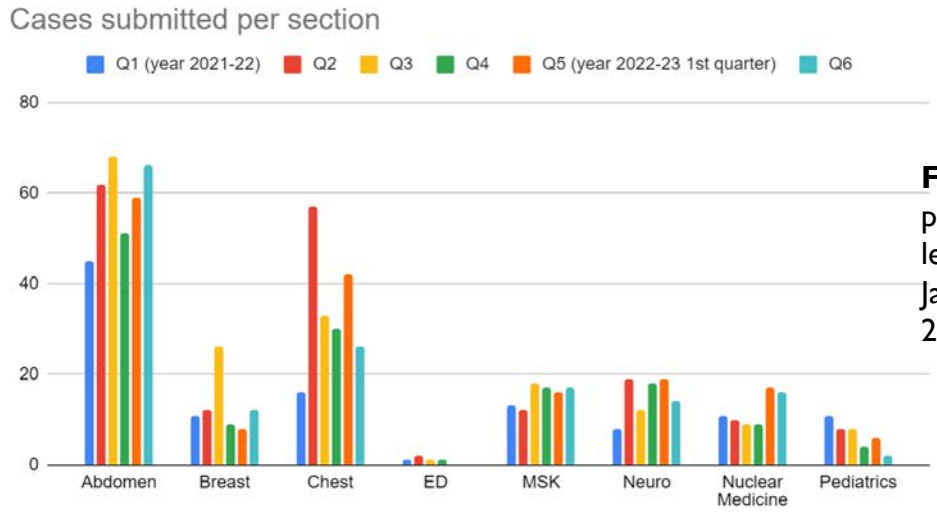

Figure 5. Cases submitted per section through the peer learning program between January 2021 to December 2022.

RESULTS

- Respondents were generally neutral toward the peer review program with average Likert responses ranging from 2.1 ("The current peer review program engages my colleagues") to 3.0 ("The current peer review program has improved our group's practice")
- All positive impacts were consistently rated higher for the peer learning program.

- "Worth investment" was the only significantly correlated variable and the one with the greatest effect on preference for the peer learning program (*Beta* = 1.11, p = 0.02)
- 70.4% (19 of 27) of radiologists preferred the new program, 25.9% (7 of 27) preferred the old program, and 3.7% (1 of 27) did not respond.
- Ancillary benefits: Time/Cost savings
  - Peer Review (1.71 ± 1.84 hours, N = 34) vs Peer Learning (0.76 ± 0.45 hours, N = 27), p=0.011.
  - The direct time-cost saving from a productivity perspective was $3,469.39 per year per radiologist when utilizing the peer learning program.

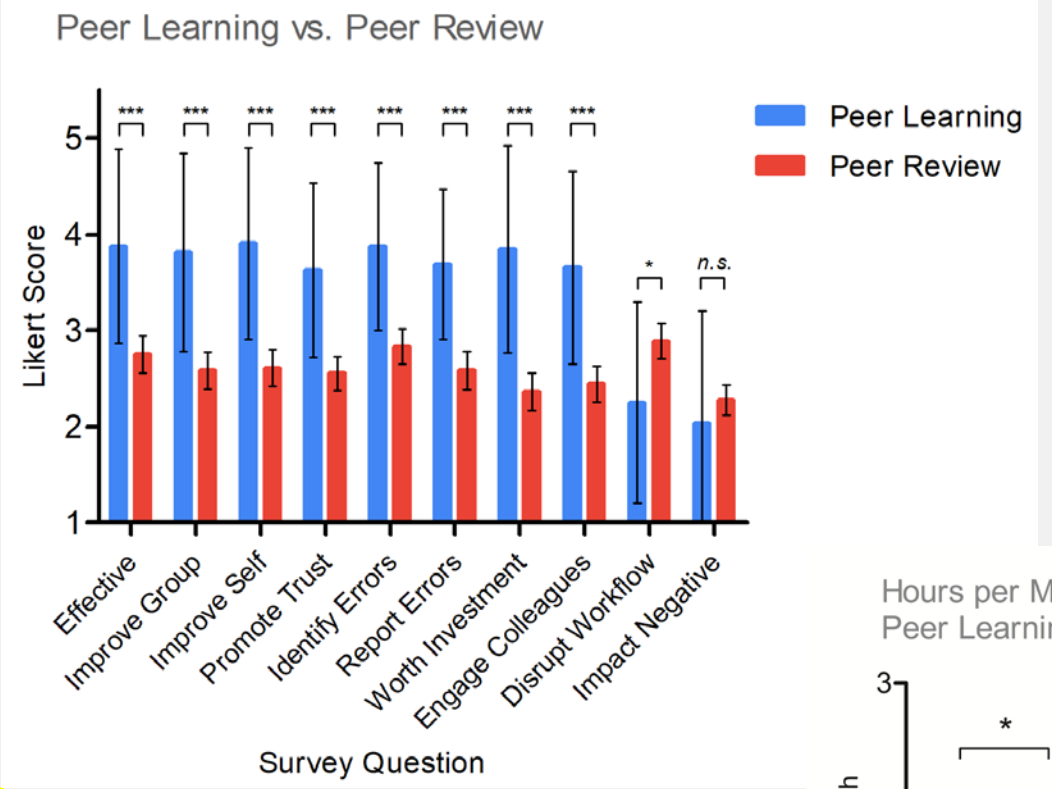

Figure 6. 5-point Likert scale survey results between the peer review and peer learning program s before and after implementation of the peer learning program.

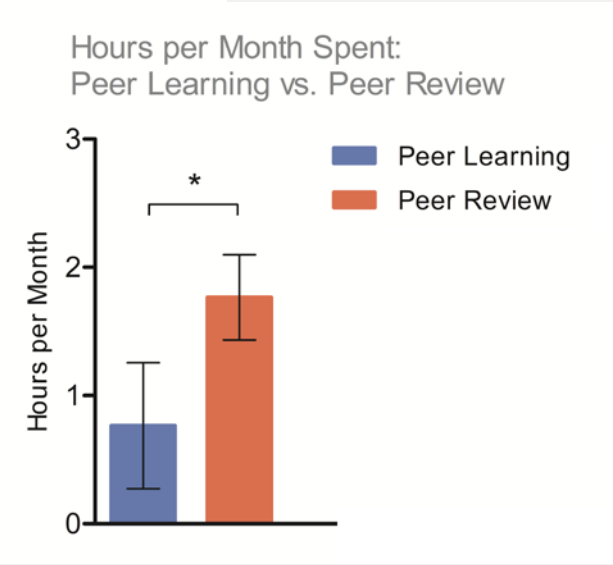

Figure 7 Hours per month spent for case submissions using the Peer Learning and Peer Review programs.

DISCUSSION/CONCLUSION

- One year after implementation, peer learning program rated consistently higher than the peer review program in all measures of positive impacts
- Significantly lower rating with respect to workflow disruption for the peer learning program which translates to time and cost savings.
- Results consistent with prior investigations into experience with peer learning programs[4,23,24]
- Peer learning program is in line with 2015 IOM report goal to "adopt policies and practices that promote a nonpunitive culture that values open discussion and feedback on diagnostic performance."
- Limitations: Subjectivity, Likert scale, short intervention period, alternative feedback avenues, sample size.
  - Further study is warranted regarding implementation and incentivization to address subspecialty disparities in engagement
- Expansion of learning programs with multi-institutional, multisociety, online case conferences may be promising.

REFERENCES

1. Balogh EP, Miller BT, Ball JR. Improving diagnosis in health care. 2015.

2. Larson DB, Donnelly LF, Podberesky DJ, Merrow AC, Sharpe Jr RE, Kruskal JB. Peer feedback, learning, and improvement: answering the call of the Institute of Medicine report on diagnostic error. Radiology. 2017;283(1):231-241.

3. Lee CS, Neumann C, Jha P, et al. Current status and future wish list of peer review: a national questionnaire of US radiologists. American Journal of Roentgenology. 2020;214(3):493-497.

4. Donnelly LF, Dorfman SR, Jones J, Bisset III GS. Transition from peer review to peer learning: experience in a radiology department. Journal of the American College of Radiology. 2018;15(8):1143-1149.

5. Donnelly LF, Larson DB, III REH, Kruskal JB. Practical suggestions on how to move from peer review to peer learning. American Journal of Roentgenology. 2018;210(3):578-582.

6. Sharpe Jr RE, Huffman RI, Congdon RG, et al. Implementation of a peer learning program replacing score-based peer review in a multispecialty integrated practice. American Journal of Roentgenology. 2018:949-956.

7. Sharpe Jr RE, Tarrant MJ, Brook OR, et al. Current state of peer learning in radiology-A survey of American College of Radiology members. Journal of the American College of Radiology. 2023.

8. "QuickFacts: Chicago city IUSCB, July 2022, https://www.census.gov/quickfacts/chicagocityillinois. Accessed 30 May 2023.

9. Goldberg-Stein S, Frigini LA, Long S, et al. ACR RADPEER committee white paper with 2016 updates: revised scoring system, new classifications, self-review, and subspecialized reports. Journal of the American College of Radiology. 2017;14(8):1080-1086.

10. Jackson VP, Cushing T, Abujudeh HH, et al. RADPEER™ scoring white paper. Journal of the American College of Radiology. 2009;6(1):21-25.

11. Catino M. A review of literature: individual blame vs. organizational function logics in accident analysis. Journal of contingencies and crisis management. 2008;16(1):53-62.

12. Jamadar DA, Carlos R, Caoili EM, et al. Estimating the effects of informal radiology resident teaching on radiologist productivity: What is the cost of teaching? 1. Academic radiology. 2005;12(1):123-128.

13. Abujudeh H, Pyatt Jr RS, Bruno MA, et al. RADPEER peer review: relevance, use, concerns, challenges, and direction forward. Journal of the American College of Radiology. 2014;11(9):899-904.

14. Eisenberg RL, Cunningham ML, Siewert B, Kruskal JB. Survey of faculty perceptions regarding a peer review system. Journal of the American College of Radiology. 2014;11(4):397-401.

15. Kruskal J, Eisenberg R. Focused professional performance evaluation of a radiologist—a Centers for Medicare and Medicaid Services and Joint Commission requirement. Current Problems in Diagnostic Radiology. 2016;45(2):87-93.

16. Schmidt E, Lo HS, Saghir A. Peer learning in emergency radiology: effects on learning, error identification, and radiologist experience. Emergency Radiology. 2022;29(4):655-661.

17. Abujudeh HH, Boland GW, Kaewlai R, et al. Abdominal and pelvic computed tomography (CT) interpretation: discrepancy rates among experienced radiologists. European radiology. 2010;20:1952-1957.

18. Wong WS, Roubal I, Jackson DB, Paik WN, Wong VK. Outsourced teleradiology imaging services: an analysis of discordant interpretation in 124,870 cases. Journal of the American College of Radiology. 2005;2(6):478-484.

19. Ruma J, Klein KA, Chong S, et al. Cross-sectional examination interpretation discrepancies between on-call diagnostic radiology residents and subspecialty faculty radiologists: analysis by imaging modality and subspecialty. Journal of the American College of Radiology. 2011;8(6):409-414.

20. Blane CE, Desmond JS, Helvie MA, et al. Academic Radiology and the Emergency Department:: Does It Need Changing? Academic radiology. 2007;14(5):625-630.

21. Chow RA, Tan N, Henry TS, Kanne JP, Sekhar A. Peer learning through multi-institutional case conferences: abdominal and cardiothoracic radiology experience. Academic Radiology. 2021;28(2):255-260.

22. Peer Learning Real Time: National Shared Learnings from Pediatrics. American College of Radiology MW.

23. Kruskal JB, Eisenberg RL, Brook O, Siewert B. Transitioning from peer review to peer learning for abdominal radiologists. Abdominal Radiology. 2016;41:416-428.

24. McEvoy FJ, Shen NW, Nielsen DH, Buelund LE, Holm P. Online radiology reporting with peer review as a learning and feedback tool in radiology; implementation, validity, and student impressions. Journal of digital imaging. 2017;30:78-85.