What We Have Learned About Peer Review & Peer Learning

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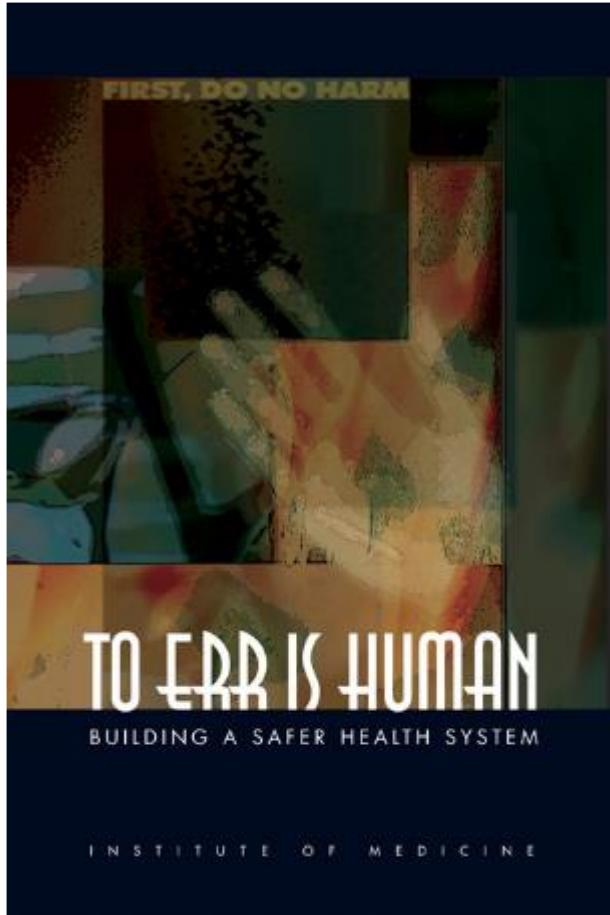
Disclosures

- Chair, ACR GRID Committee

- Member, ACR Q&S Planning Committee

- **I just check the box on peer review**

Overview

- **Features of score-based peer review**
- Experience with scoring-based peer review
- The idea of peer learning
- Practice experiences with peer learning

1999

FIRST, DO NO HARM

TO ERR IS HUMAN

BUILDING A SAFER HEALTH SYSTEM

INSTITUTE OF MEDICINE

2000

ABMS: MOC

1. Professional standing (eg, licensure status)

2. Lifelong learning

3. Cognitive expertise (eg, standardized tests)

4. Performance in practice

Lainhart N, Hagen MD. The evolution of maintenance of Certification for Family Physicians (MC-FP) Part IV, Performance in Practice. Ann Fam Med. 2014 Jul;12(4):384-5

2002

Patient Safety Task Force

Core concept:
Each follow-up interpretation is a peer review
Apply scoring & tabulation
Voilà: Compliance!

Table 3. RADPEER Scoring System (Effective May 2016)

Score	Meaning	Optional
1	Concur with interpretation	
2	Discrepancy in interpretation/ not ordinarily expected to be made (understandable miss)	a. Unlikely to be clinically significant b. Likely to be clinically significant
3	Discrepancy in interpretation/ should be made most of the time	a. Unlikely to be clinically significant b. Likely to be clinically significant

Borgstede JP, Lewis RS, Bhargavan M, Sunshine JH. RADPEER quality assurance program: a multifacility study of interpretive disagreement rates. J Am Coll Radiol. 2004 Jan;1(1):59-65

Jackson VP, Cushing T, Abujudeh HH, Borgstede JP, Chin KW, Grimes CK, Larson DB, Larson PA, Pyatt RS Jr, Thorwarth WT Jr. RADPEER scoring white paper. J Am Coll Radiol. 2009 Jan;6(1):21-5

Goldberg-Stein S, Frigini LA, Long S, Metwalli Z, Nguyen XV, Parker M, Abujudeh H. ACR RADPEER Committee White Paper with 2016 Updates: Revised Scoring System, New Classifications, Self-Review, and Subspecialized Reports. J Am Coll Radiol. 2017 Aug;14(8):1080-1086

2020

Features of RadPeer

- Culture of compliance
- Randomized case selection
- Single reviewer
- Score-based
- Not anonymized
- Feedback to radiologist?

Overview

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General Limitations

Rating systems are flawed:

- Skewed miss rates due do disease prevalence/demographics on reading lists

- Case selection and sampling error (when cases reported by radiologists)

- Influence of clinical factors (access to histories)

- Inter-observer rating variation

- Truth in diagnosis and verification

Cascade PN, Kazerooni EA, Gross BH, Quint LE, Silver TM, Bowerman RA, Pernicano PG, Gebremariam A. Evaluation of competence in the interpretation of chest radiographs. Acad Radiol. 2001 Apr;8(4):315-21

Score-based Review Issues

- Discoverability

- Being graded

- Use for decredentialing

- Not anonymous

- Lack of vendor system integration

Abujudeh H, Pyatt RS Jr, Bruno MA, Chetlen AL, Buck D, Hobbs SK, Roth C, Truwit C, Agarwal R, Kennedy ST, Glenn L. RADPEER peer review: relevance, use, concerns, challenges, and direction forward. J Am Coll Radiol. 2014 Sep;11(9):899-904.

Low Inter-Rater Agreement

Kappa < 0: Poor
Kappa 0.01-0.2: Slight
Kappa 0.21-0.4: Fair
Kappa 0.41-0.6: Moderate
Kappa 0.61-0.8: Substantial
Kappa 0.81-0.99: Perfect

Reviewer Subspecialty	Case Type	Raw Agreement	κ
Dichotomized scoring system			
All reviewers	All cases	0.60	0.20
Body imaging–emergency radiology	All cases	0.61	0.23
	Body imaging–emergency radiology	0.61	0.13
	Neuroradiology	0.61	0.17
Neuroradiology	All cases	0.60	0.20
	Neuroradiology	0.64	0.25
	Body imaging–emergency radiology	0.56	0.11
Standard four-category scoring system			
All reviewers	All cases	0.40	0.10
Body imaging–emergency radiology	All cases	0.44	0.13
	Body imaging–emergency radiology	0.38	0.07
	Neuroradiology	0.50	0.10
Neuroradiology	All cases	0.35	0.09
	Neuroradiology	0.41	0.14
	Body imaging–emergency radiology	0.30	0.01

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 Dec;199(6):1320-7

Statements about Peer Review

"Waste of time"

44%

"Merely done to meet hospital and regulatory requirements""

58%

Eisenberg RL, Cunningham ML, Siewert B, Kruskal JB. Survey of faculty perceptions regarding a peer review system. J Am Coll Radiol. 2014 Apr;11(4):397-401.

Lack of Workflow Integration

"If peer review and routine peer feedback software were available, specified by radiologists and tailored to their needs, it would beneficially change the attitude of the radiologists towards such activity. *They would engage willingly by choice and for interest,* rather than often deeming it a pointless, potentially threatening, and time-wasting necessity only undertaken to comply with guidelines for administrative reasons."

Strickland NH. Quality assurance in radiology: peer review and peer feedback. Clin Radiol. 2015 Nov;70(11):1158-64.

PACS Integration

"In this single institutional retrospective analysis, integrating peer review in PACS resulted in a **fivefold increase** in reported significant discrepancies. *These results suggest that peer review data are influenced by the design of the tool used including PACS integration, randomization, and blinding.*

Yacoub JH, Obara P, Bova D. Integration of Peer Review in PACS Results in a Marked Increase in the Discrepancies Reported. AJR Am J Roentgenol. 2019 Dec 17:1-5.

Lack of Learning Yield

*"A workstation-embedded random radiology peer review program had a **very low yield in identifying learning opportunities** and declining usage over time."*

Trinh TW, Shinagare AB, Khorasani R. Yield of Learning Opportunities From a Radiology Random Peer Review Program. AJR Am J Roentgenol. 2018 Sep;211(3):630-634.

Overview

- Features of score-based peer review
- Experience with scoring-based peer review
- **The idea of peer learning**
- Practice experiences with peer learning

Key Elements of Peer Learning Theory

1. Scoring-based peer review does not result in improvement, is painful, and is toxic to the culture

2. Peer learning can utilize peers to reinforce and improve the culture, improve processes, provide a better experience to the radiologists, and results in real learning

Larson DB, Nance JJ. Rethinking peer review: what aviation can teach radiology about performance improvement. Radiology. 2011 Jun;259(3):626-32.

Improvement Opportunities

- **Improvement:**
  - Encourage the Use of RADPEER in Practice Quality Improvement Projects
  - Ensure Notification of Correct Interpretation
- **Culture:**
  - Create a Culture of Acceptance
  - Establish an Appeals Process
  - Define Which Cases Will Be Reviewed
  - Decide If Outside Radiologists Will Be Reviewed
  - Eliminate Incentives

Larson DB, Nance JJ. Rethinking peer review: what aviation can teach radiology about performance improvement. Radiology. 2011 Jun;259(3):626-32.

Learning Points & Outcomes

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.

The Royal College of Radiologists. Quality assurance in radiology reporting: peer feedback. http://www.rcr.ac.uk/quality-assurance-radiology-reporting-peer-feedback.

Process, Participation, Team, Transparency

Standard 1	Regular participation, 50% attendance rate, public
Standard 2	Meet every 2 months
Standard 3	Formal recording: (1) Consensus discussion, (2) Learning/action points, (3) Critical communication
Standard 4	Shared summary to department
Standard 5	Formal process for confidential feedback
Standard 6	Bi-annual report of key learning points/recurrent error patterns
Standard 7	Formal process for electing meeting convener

Feedback, Leaning, Improvement

Table 2

Important Cultural Values for Continuous Learning Health Care Systems, as Set Forth in the IOM Report

Value	Details
Celebration of success	If excellence is to be pursued with vigor and commitment, its attainment needs to be valued within the organizational culture.
Absence of complacency	Learning organizations value innovation and change—they are searching constantly for new ways to improve their outcomes.
Recognition of mistakes as opportunities to learn	Learning from failure is a prerequisite for achieving improvement. This requires a culture that accepts the positive spin-offs from errors, rather than seeking to blame. This does not imply a tolerance of (a) routinely poor or mediocre performance from which no lessons are learned or (b) reckless disregard for safe practices.
Belief in human potential	It is people who drive success in organizations, by using their creativity, energy, and innovation. Therefore, the culture within a learning organization values people and fosters their professional and personal development.
Recognition of tacit knowledge	Learning organizations recognize that individuals closest to processes have the best and most intimate knowledge of their potential and flaws. Therefore, the learning culture values tacit knowledge and shows a belief in empowerment (the systematic enlargement of discretion, responsibility, and competence).
Openness	Because learning organizations try to foster a systems view, sharing knowledge throughout the organization is one key to developing learning capacity. "Knowledge mobility" emphasizes informal channels and personal contacts over written reporting procedures. Cross-disciplinary and multifunction teams, staff rotations, on-site inspections, and experiential learning are essential components of this informal exchange.
Trust	For individuals to give their best, take risks, and develop their competencies, they must trust that such activities will be appreciated and valued by colleagues and managers. In particular, they must be confident that should they err, they will be supported, not castigated. In turn, managers must be able to trust that subordinates will use wisely the time, space, and resources given to them through empowerment programs—and not indulge in opportunistic behavior. Without trust, learning is a faltering process.
Looking outward	Learning organizations are engaged with the world outside as a rich source of learning opportunities. They look to their competitors for insights into their own operations and are attuned to the experiences of other stakeholders, such as their suppliers. In particular, they are focused on obtaining a deep understanding of clients' needs.

Larson DB, Donnelly LF, Podberesky DJ, Merrow AC, Sharpe RE Jr, Kruskal JB. Peer Feedback, Learning, and Improvement: Answering the Call of the Institute of Medicine Report on Diagnostic Error. Radiology. 2017 Apr;283(1):231-241.

Feedback, Leaning, Improvement
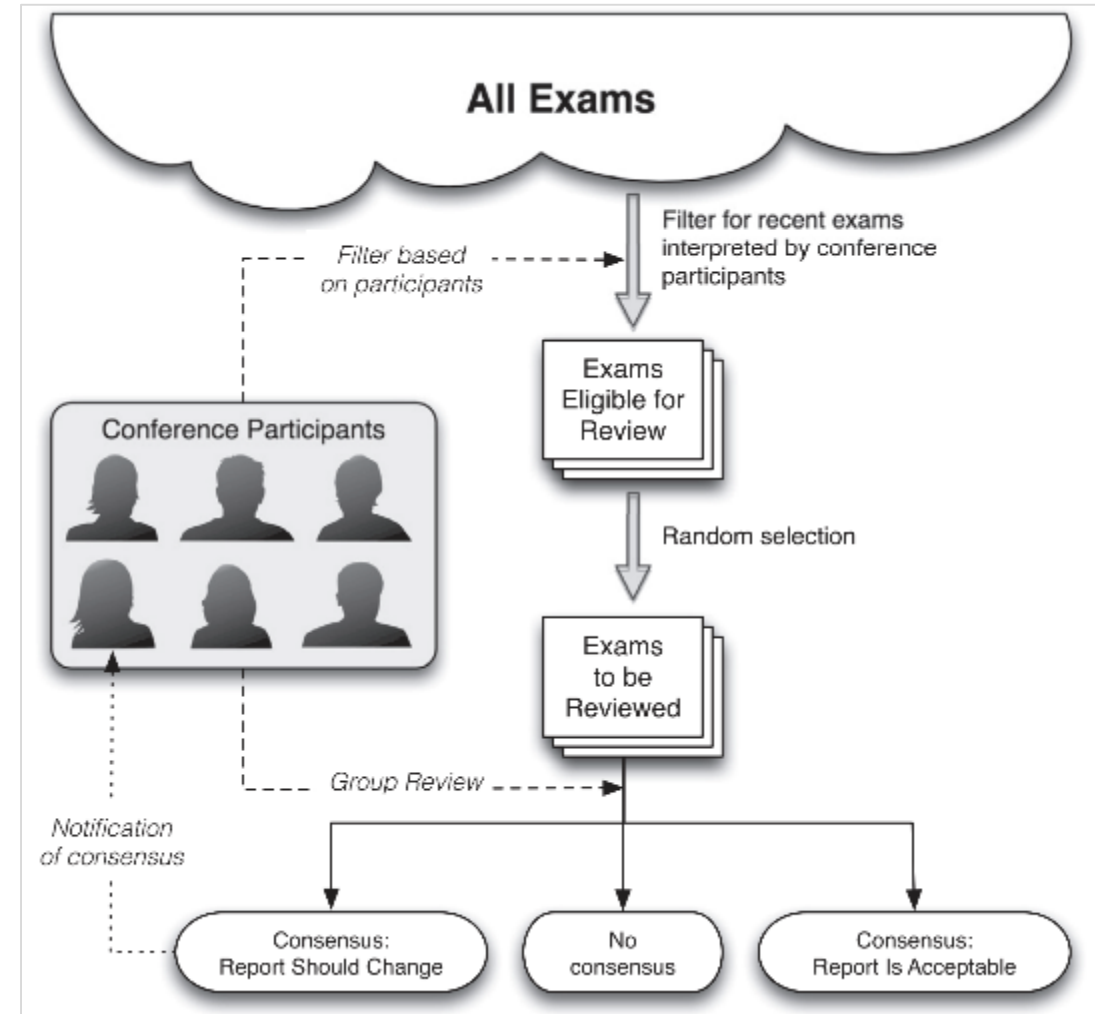
New definition of Peer Learning:

- **Primary goal: Improvement**

- Culture: Sharing knowledge with peers

- Process: Constructive, non-judgmental, timely

- Outcomes: Improving diagnosis & interpersonal relations

Larson DB, Donnelly LF, Podberesky DJ, Merrow AC, Sharpe RE Jr, Kruskal JB. Peer Feedback, Learning, and Improvement: Answering the Call of the Institute of Medicine Report on Diagnostic Error. Radiology. 2017 Apr;283(1):231-241.

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- **Practice experiences with peer learning**

Group Consensus Peer Review

- Emphasis on group learning
- Recent cases
- Real-time feedback
- Includes good performance

Alkasab TK, Harvey HB, Gowda V, Thrall JH, Rosenthal DI, Gazelle GS. Consensus-oriented group peer review: a new process to review radiologist work output. J Am Coll Radiol. 2014 Feb;11(2):131-8.

Meaningful Ratings

Please provide your peer rating:

○ [1] Concur

● [2] Constructive feedback/improvement opportunity

☑ (a) Wrong study/protocol

  ☐ i) Does not answer the question posed

  ☐ ii) Other study would answer clinical question better

  ☐ iii) Other study would answer clinical question cheaper with the same diagnostic yield

  ☐ iv) Other study would answer clinical question without radiation exposure with the same diagnostic yield

☑ (b) Reports content

  ☐ i) Impression does not address the question in the indication

  ☐ ii) Vague and non-specific content

  ☐ iii) Grammar, spelling, typos

☑ (c) Recommendations

  ☐ i) No recommendation specified

  ☐ ii) Recommendation is not consistent with department algorithm / guidelines

  iii) Non-specific recommendations

    ☐ 1) Wording (suggest vs consider vs recommend vs warranted)

    ☐ 2) Specific exam and protocol not specified

    ☐ 3) Timing not specified

☑ (d) Communication

  (i) No communication of the results documented

    ☐ 1) Wording (suggest vs consider vs recommend vs warranted)

    ☐ 2) Specific exam and protocol not specified

  ☐ (ii) Documentation of critical results communication is incomplete

○ [3] Discrepancy

Kruskal JB, Eisenberg RL, Brook O, Siewert B. Transitioning from peer review to peer learning for abdominal radiologists. Abdom Radiol. 2016 Mar;41(3):416-28

Group Discussion of Learning Points

- Emphasis on group learning
- Recent cases
- Real-time feedback
- Includes good performance
- **Better elucidate sources of error**
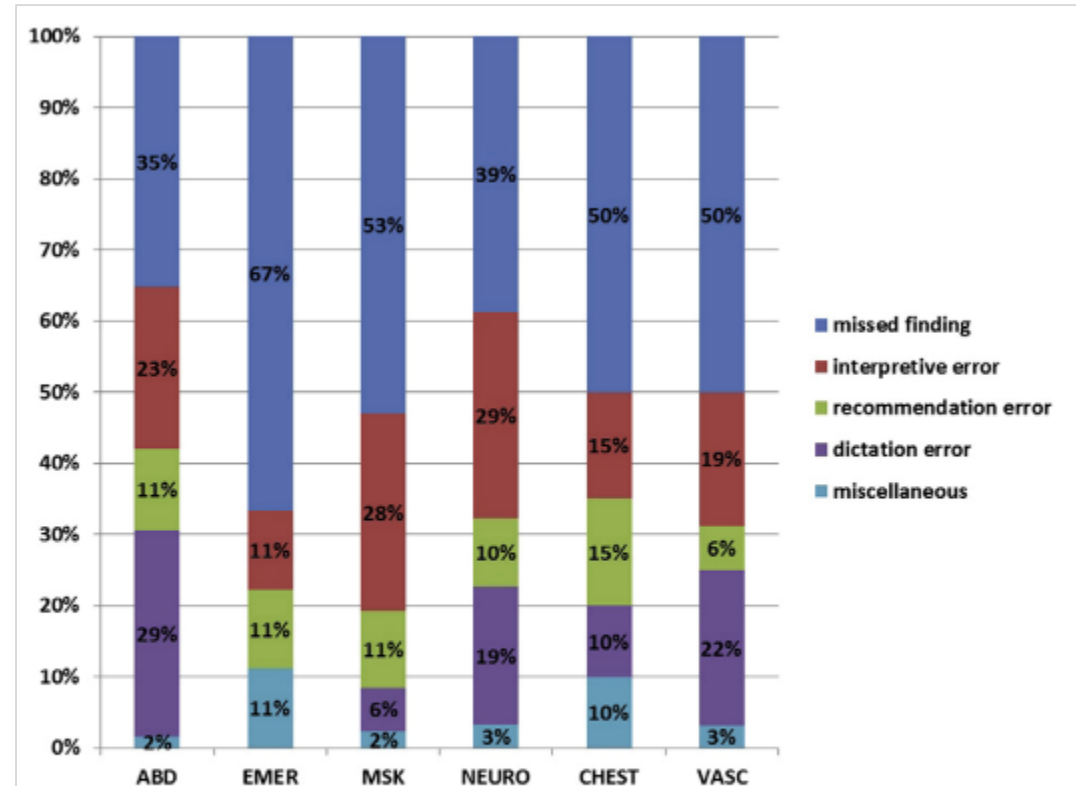
- BUT: Random case selection

Fig 2. Source of discordance for cases resulting in report should change outcome, by division.

Peer Learning: Higher Engagement

- **Participating radiologists increased from 5.0 to 35.2**
- **Submissions increased from 3.0 to 36.0**

- Monthly learning opportunity increased from 18 to 352
- Monthly CME credits earned increased from 7.7 to 50.6

Sharpe RE Jr, Huffman RI, Congdon RG, Plunkett LA, Tschumper BA, Stewart DT, Bode EK. Implementation of a Peer Learning Program Replacing Score-Based Peer Review in a Multispecialty Integrated Practice.
AJR Am J Roentgenol. 2018 Nov;211(5):949-956
Donnelly LF, Dorfman SR, Jones J, Bisset GS 3rd. Transition From Peer Review to Peer Learning: Experience in a Radiology Department. J Am Coll Radiol. 2018 Aug;15(8):1143-1149.

Non-Randomized: Higher Learning Yield

*"The overall PLT report **addendum rate** was 11.2% (23 addenda/206 reports) versus 0.27% (13 addenda/4861 reports) for SBPR (p = 0.03), a **41-fold difference** (11.2/0.27).*

*The potential **learning opportunity** rate for PLT was 50.0% (206 clinical follow-up alerts among 412 total alerts) versus 0.53% (26 scored 3 or 4 among 4861 reports reviewed) for SBPR (p = 0.00003), a **94-fold difference** (50/0.53)"*

Trinh TW, Boland GW, Khorasani R. Improving Radiology Peer Learning: Comparing a Novel Electronic Peer Learning Tool and a Traditional Score-Based Peer Review System. AJR Am J Roentgenol. 2019 Jan;212(1):135-141

Brook OR, Romero J, Brook A, Kruskal JB, Yam CS, Levine D. The complementary nature of peer review and quality assurance data collection. Radiology. 2015 Jan;274(1):221-9
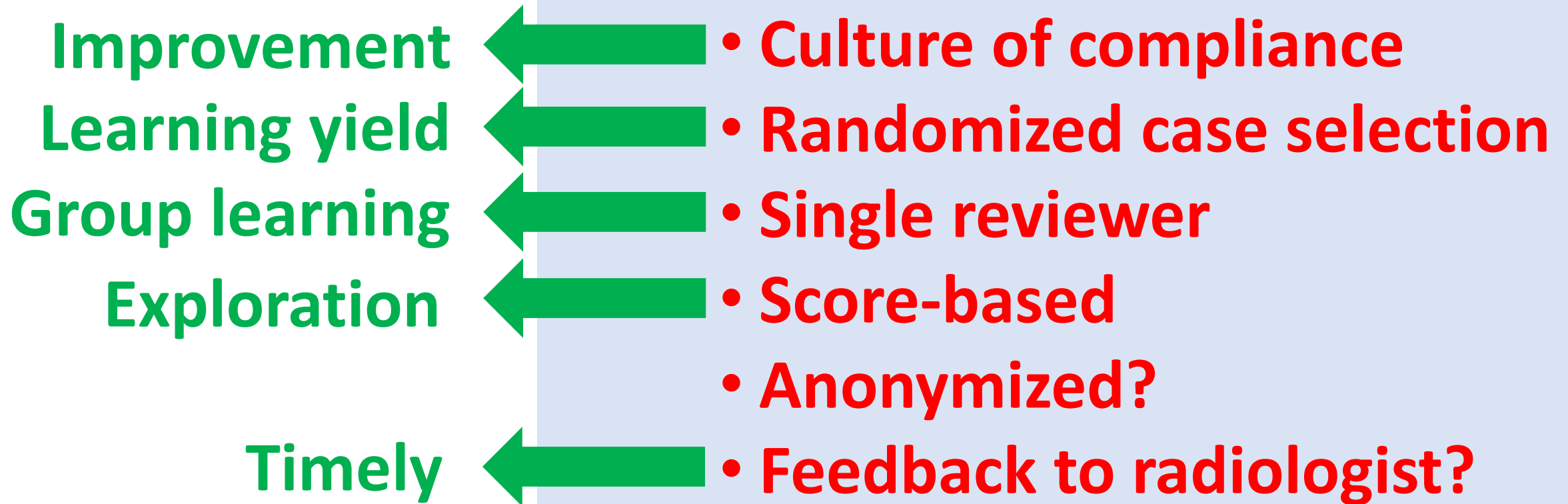
Itri JN, Donithan A, Patel SH. Random Versus Nonrandom Peer Review: A Case for More Meaningful Peer Review. J Am Coll Radiol. 2018 Jul;15(7):1045-1052

Multi-Institutional Web-Based

- Participants reported presenting the following cases:
  - "Great call" 32/48 (66.7%)
  - Learning opportunity 32/48 (66.7%)
  - New knowledge 41/49 (83.7%)
  - "Zebras" 46/49 (93.9%)
  - Procedural-based 16/46 (34.8%)
  - **100% of responders reportedly gained new knowledge**

Armstrong V, Tan N, Sekhar A, Richardson ML, Kanne JP, Sai V, Chernyak V, Godwin JD, Tammisetti VS, Eberhardt SC, Henry TS. Peer Learning Through Multi-Institutional Web-based Case Conferences: Perceived Value (and Challenges) From Abdominal, Cardiothoracic, and Musculoskeletal Radiology Case Conference Participants. Acad Radiol. 2019 Dec 14.

Thank you.

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