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The Chessboard of Radiology: Learning from Each Move through Peer Review

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key points

- In the precise and critical field of radiology, peer review embodies the philosophy of continuous improvement.
- Like chess grandmasters who meticulously analyse every move to enhance their gameplay, radiologists engaged in peer review explore their diagnostic decisions, learning from each case to improve patient outcomes.
- Peer review assesses the imaging report for continuous learning through feedback to improve and maintain the quality and diagnostic accuracy.
- By embracing a culture of continuous improvement, characterised by meticulous peer review and the leveraging of cutting-edge technology, Affidea is setting a benchmark for the healthcare industry.

In 1972 the legendary World Chess Championship Bobby Fischer faced off against Boris Spassky. Fischer's victory was not just a triumph of talent over experience but a showcase of meticulous preparation, strategic foresight, and the ability to adapt under pressure. Fischer's approach to the match was a masterclass in learning from others' moves. He delved deep into Spassky's previous games, analysing his playing style and preferences in various phases of the game. Fischer's preparation was not just about studying Spassky; it was about understanding the entire body of chess knowledge available to him, identifying patterns, and devising counter-strategies. This historic match underscores the essence of precision and accuracy.

This continuous cycle of performance review and refinement mirrors the peer review process in radiology, where each diagnostic interpretation can be seen as a move on the board, contributing to the overall outcome of patient care or, in the case of chess, the result of the game and learning from each case.

In the world of chess, mastery is achieved not just through individual skill and strategic acumen but significantly through the study and analysis of others' strategies. Each game of chess, with its myriad of moves and counter-moves, offers invaluable lessons on strategy, foresight, and adaptability.

Similarly, in the precise and critical field of radiology, peer review embodies this philosophy of continuous improvement. Learning from each 'move'—each diagnosis and interpretation—enhances the collective expertise, leveraging the unique expertise and experiences of various colleagues and sub-speciality groups to synergise their efforts towards improving clinical outcomes.

Peer review is defined as the anonymised and blinded process by which a reviewing radiologist assesses a scan and compares his interpretation of the images to a report previously written and authorised by the primary radiologist. All discrepancies identified are discussed and debated during discrepancy meetings, and, if appropriate, targeted actions are implemented to improve the results. These actions include educational plans if areas of knowledge gaps are identified, training in focused subspecialties in radiology, training support in pattern recognition and repetition, and improvement of reporting conditions.

Grandmasters spend countless hours reviewing past games, not just their own but those of their peers, to identify areas for improvement and to adapt their strategies for future matches.

So, what does this have to do with radiology?

Peer review allows the assessment of the imaging report for continuous learning through feedback to improve and maintain the quality and diagnostic accuracy of the radiology report. Moreover, peer review improves the doctors' and patients' confidence and trust in the clinical services provided and also ensures radiologists' accountability.

The American Journal of Radiology reports that diagnostic error rates in radiology can range from 3% to 5%[1] for everyday clinical practice and may be higher in complex cases, highlighting the potential for improvement in diagnostic accuracy.

Chess Masters and Radiologists: A Comparative Lens

The analogy between chess masters and radiologists extends beyond the pursuit of excellence. Both disciplines require a keen eye for detail, a relentless pursuit of precision, and a commitment to continuous improvement.

Like grandmasters who meticulously analyse every move to enhance their gameplay, radiologists engaged in peer review explore their diagnostic decisions, learning from each case to improve patient outcomes. This relentless pursuit of precision and quality mirrors the intellectual rigour and strategic depth of chess, underscoring the shared ethos of excellence that defines both fields.

Safety and precision are paramount for patient care. Therefore, Affidea has implemented a comprehensive peer review program in radiology across 11 countries and across MRI and CT examinations, with plans to expand further, setting a new standard for diagnostic accuracy and patient care.

Affidea's peer review process involves a systematic evaluation of radiological interpretations by other expert radiologists within its network, ensuring that deficiencies are identified, and amendments are made swiftly when discrepancies arise. The findings reveal a notably low incidence of inconsistencies within radiology reports, especially when contrasted with various other studies, and these are regularly monitored every month. Future directions entail expanding the peer review mechanism to include additional procedures like mammography (where not double read) and X-rays alongside Nuclear Medicine evaluations. This expansion aims to broaden the spectrum of clinical services subjected to thorough verification.

The drawback of conducting peer review is that it adds to already heavy workload of radiologists, who are in limited supply, and it might not be conducted in nearly real-time. This could lead to delays in identifying discrepancies, which need to be managed. However, the learning experience for radiologists, from this feedback, is a key pillar of their ongoing learning. In the end, this initiative is about fostering a culture of continuous improvement and excellence in diagnostic accuracy.

Integrating AI into Peer Review: The Next Frontier

The future of radiology peer review lies in the integration of Artificial Intelligence (AI). Just as chess engines like Stockfish or AlphaZero have revolutionised the way chess players prepare and improve, AI technologies have the potential to transform radiology by enhancing diagnostic accuracy and efficiency, supporting radiologists in their clinical practice.

AI can serve as an invaluable tool in the peer review process by providing a second layer of analysis, flagging potential discrepancies for review by human radiologists. This dual-layer review system combines the irreplaceable critical thinking skills of experienced radiologists with the pattern recognition and data processing capabilities of AI. Studies have shown that AI can detect anomalies with precision, acting as a powerful adjunct to traditional peer review methods.

This synergy of human expertise and technological innovation holds the promise of setting new standards in diagnostic precision, much like the evolution of strategic play in chess through the use of algorithms, advanced analytics and AI.

Conclusion: Embracing a Future of Precision and Continuous Improvement

By embracing a culture of continuous improvement, characterised by meticulous peer review and the leveraging of cutting-edge technology, Affidea is setting a benchmark for the healthcare industry. As we look to the future, inspired by the chess analogy, strategic foresight, meticulous preparation, and the embrace of technological advancements will continue to guide the quest for diagnostic precision in radiology, promising a new era of quality and safety in patient care.

[1] Berlin L. Radiologic errors and malpractice: a blurry distinction. AJR. 2007;189:517–522.