

Going Beyond Image Interpretation

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When most radiologists consider artificial intelligence (AI) in medical imaging, they think of the attention-getting, brightly colored circles that indicate illnesses or abnormalities on an image. This reflects the current trend in radiology for AI to focus on image interpretation and analysis.

But AI can have an impact in other areas, such as in the triaging of studies, pulling up relevant prior exams, and arranging images according to physician preference.

“These steps and clicks are time-consuming and frustrating because there are so many of them,” says Sonia Gupta, MD, an abdominal radiologist at Radiology Associates of Florida. “This is where AI has the most potential to shine and make a significant impact on the workflow of radiologists to positively impact the growing challenge of burnout.”

Dr Gupta, senior medical director for Rad AI and a member of the

Applied Radiology editorial advisory board, made the comments at a recent roundtable discussion she led on the topic of “AI: Beyond Image Interpretation.” The discussion was the first segment of AI Insights, a series of webinars featuring experts discussing the growing use of AI in health care.

Other members of the panel were: Patrick Jamieson, MD, product manager of the IRIS data platform from InterSystems, Cambridge, MA; Jeff Chang, MD, co-founder of Rad AI, Berkeley, CA; and Woojin Kim, MD, chief medical officer at Equium intelligence, Philadelphia, PA.

Challenges in AI development

Although AI is a hot topic, a 2020 survey by the American College of Radiology showed that only about 30 percent of radiologists use AI in practice. However, 20 percent of respondents said they intend to purchase AI tools within the next five years.¹

“I think we are at the turning point,” said Dr Jamieson of InterSystems, which builds data-intensive and mission-critical AI applications.

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Patrick Jamieson, MD, InterSystems, Cambridge, MA

“Before, we were trying to build systems that would replace the decision-making capabilities of physicians. That clearly didn’t work. Now we’re focused on augmenting physicians’ capabilities by alerting them to what’s important for clinical decision making. Augmenting our physicians’ decision making essentially means re-focusing AI tools to work with us rather than as replacements.”

Dr Chang, whose company develops AI solutions for dictation and reporting to streamline workflow, noted that a primary challenge for facilities in adopting AI are incompatibilities between computer systems and aging hardware.

“Groups often have many different systems and lack sufficient IT bandwidth or resources, so the ability to roll out AI is often limited. It’s key to have a streamlined product that requires as few changes to the workflow as possible, and that’s as easy to install as possible,” he said.

AI for Smart Scheduling

Dr Kim of Equium intelligence, an AI solutions developer for physician scheduling, said a new approach to patient scheduling has the potential to alleviate physician burnout by transitioning from traditional rules-based auto-scheduling to one that improves radiologists’ sense of control and autonomy. Dr Kim’s application allows users to run “what if” scenarios that can predict and justify

staffing adjustments before staff are close to burnout.

“We use machine learning and other algorithms to increase scheduling flexibility to improve work-life balance and work-life integration. We’re using AI and predictive analytics to reduce understaffing and overstaffing, and we’re incorporating fairness metrics into our scheduling application. In the end, we’re trying to create a more intelligent data-driven physician scheduling application,” Dr Kim said.

He noted that many users still manually schedule radiologists using spreadsheets, which isolates the process from data that can create a smarter scheduling application.

“That’s where AI can really play a role because it gathers data from other systems, analyzes volume data, and schedules staff according to predicted demand,” he explained. “When we start sharing these ideas with radiologists, you can see their eyes light up because one of the things that’s contributing to burnout is workflow. I think AI can really help in this area.”

AI to Simplify Reporting

After 10 years as an ER night radiologist, Dr Chang said, he recognized that AI could help improve radiology workflow. Rad AI’s dictation tool automatically builds out impressions for radiologists.

“By using machine learning to automatically generate customized impressions for each radiologist, we can save them time and allow them to dictate about one-third fewer words every day,” he says, adding that such solutions are popular with radiologists because they don’t change the existing workflow.

“There’s no new software for them to learn, and they don’t have to go into a different application. We automatically generate an impression as soon as the radiologist gets to the impression section in all of the major recognition platforms,”

he said. “We’re tracking where they are in the report at all times. It works within their existing habits, and they don’t need to learn a new way of working, so it’s very easy for them to adopt.” Currently, Rad AI is being used by 14% of US radiologists, he said.

AI to Reduce Burnout

According to the Medscape National Physician Burnout & Suicide Report 2021, burnout is at a critical level for physicians, with 36% of radiologists reporting symptoms.²

“Burnout negatively affects physicians, but it has a downstream effect where it can negatively impact patient care and increase healthcare costs. When you look at it from a global perspective, it is a serious health crisis,” said Dr Kim.

Dr Jamieson agreed, saying that burnout could impact patient care. “One aspect of burnout is that physicians might take their eye off the ball. AI can help to make sure they’re alerted to things that could cause an adverse event for the patient,” he said.

For example, one InterSystems customer uses AI to monitor a patient’s renal function prior to contrast injection. “That’s something that would be easy for somebody who’s burned out to potentially miss, but AI helps make sure those things are noticed,” Dr Jamieson said.

Dr Chang said his company focuses on simplifying workflow to address burnout in radiologists. “Anything we can introduce to simplify the workflow will save radiologists time and decrease the number of steps in a process to help reduce burnout,” he said.

Dr Kim added that flexible schedules can reduce burnout and increase job satisfaction. If you can use technology to improve your scheduling so that you have more autonomy over your own schedule, it can potentially lead to reduced burnout,” he said.

The Future of AI in Improving Patient Care

Dr Jamieson said he believes future AI applications will focus more on reducing administrative burden, such as reporting and scheduling, while enabling them to work more closely with patient data. “I think the promise of AI is to make better decisions by taking into account the diverse data sources in a hospital patient’s record,” he said.

Dr Chang said he expects a greater focus on streamlining workflow to reduce or prevent burnout, while achieving time savings and efficiency gains by removing repetitive and tedious steps. He said he also believes a renewed focus on quality of care will help drive reduced error rates and improved follow-up.

“We are seeing AI adoption happening much faster, and it is going to accelerate,” he predicted.

Dr Kim said radiologists have suffered from “tunnel vision” that has prevented them from using AI beyond image interpretation, but that is changing. “As radiologists, we do far more than image interpretation, so I think more people are realizing there are other use cases when it comes to AI that have a positive impact on efficiency and also potentially reducing physician burnout,” he said.

Dr Gupta shared her hopes for the future of AI, which include widespread use of tools to support radiologists and patients.

“I hope we see it spread where the focus becomes on making our jobs easier so that we can do what we want to do, which is take care of patients,” she said.

References

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