

# AI: The Next Generation Radiology Extenders?

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As radiology has evolved from a back-office specialty, with radiologists isolated in dark rooms, to the central node of health care, information technology (IT) has evolved along with it. Today's IT devices provide us with immediate and remote access to images, improving our productivity and increasing our value to the healthcare enterprise.

But as the number of studies and images per study continue to grow, radiologist workloads have risen proportionately. Radiologists are fielding an ever-increasing number of questions, especially from non-imaging specialists; as a result, atop delivering a higher volume of reports, radiologists must now deal with the lower efficiency and higher risk of errors that accompany these interruptions.

The good news is that IT is helping us to meet the ever-increasing expectations of referring physicians. Software tools, some fueled by artificial intelligence (AI), already have the ability to serve as radiologist

“extenders” that can automatically deliver imaging results to clinicians. This is especially useful where access to radiologists may be limited.

Indeed, AI can provide the powerful assistance radiologists need to satisfy the demands of the healthcare ecosystem for anywhere, anytime, access to imaging specialists. This can enable us to focus on more complex, specialized tasks, and help us avoid countless interruptions.

But for this to occur on a more widespread scale, AI must be adopted by the healthcare enterprise beyond radiology. Most AI tools currently available to radiologists have been developed primarily for radiologists and make only a minor impact on day-to-day practice. However, when they can be accessed by other specialists viewing a radiological exam when no radiologist is available, they can be immensely useful.

Take the emergency department, for example. Musculoskeletal radiographs may be reviewed first by

emergency physicians to help them determine their treatment approach to a particular case. Only afterward will radiologists review the images; a formal report may not be returned until hours, days, or rarely even longer after the patient has been seen.

This has important ramifications for patient care. Emergency physicians are not experts in image analysis. They can miss fractures and/or lesions outside of their principal focus. Radiologist input is necessary even when delayed. But it goes without saying that this is not only an inefficient process, but one that may put patients at risk for being discharged with significant lesions.

Artificial intelligence and computer aided detection and diagnosis (CAD) technology can improve upon this process and minimize its risks by enhancing the diagnostic performance of non-expert readers in fracture detection<sup>1</sup> and empowering them to treat patients based on the additional information provided by the software.




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This has two beneficial outcomes. The first is that it gives the physician access to more accurate imaging information at the time of patient contact. Combined with the clinical examination and the physician's own judgment, this input can help render a more correct diagnosis and treatment approach the first time.

Second, AI-powered imaging technology may provide other medical professionals such as nurses or paramedics with the data they need to triage patients and deliver initial care

more safely, effectively saving valuable time in the treatment pathway.

Moreover, by implementing radiology AI tools at enterprise level and getting them into everyone's hands, I believe we will be able to measure positive impacts on hard clinical outcomes and health economics, beyond mere radiological diagnostic performances.

There should be no fear that AI will put us radiologists out of work. Our tasks extend far beyond visual analysis of imaging studies.<sup>2</sup>

In my view, diagnostic support does not compete with radiologists no matter where it comes from; on the contrary, AI support has the potential to improve the flow of care, reduce interruptions on our work, and increase our focus on complex, high-added-value tasks. The automation offered by AI is not intended to replace radiologists, but rather to augment their efficiency and value they provide to the healthcare system.

Given our expertise in medical imaging and health IT, radiologists are in the best position to identify and implement the appropriate AI software to support non-radiologists in any circumstance. Imaging specialists are also the best suited to monitor and maintain these tools for quality, performance, and safety.

By offering AI-based diagnostic support as a service, radiologists can boost their value to the healthcare enterprise and reduce the risk that incorrect clinical decisions will be made. This will improve efficiency and satisfaction among our referring physicians.

Indeed, by taking the lead in this transformation, we radiologists can strengthen our relevance and central position in health care in the era of artificial intelligence.

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## References

- 1) Guermazi A, et al. Improving radiographic fracture recognition performance and efficiency using artificial intelligence. *Radiology*. 2022;302(3):627-636.
- 2) Langlotz CP. Will artificial intelligence replace radiologists? *Radiology Artif Intell*. 2019;1(3):e190058.