S43-The Future Of Artificial Intelligence In The Imaging Sciences

Objectives

1. Explain How Artificial Intelligence (AI) Can Improve Patient Care

2. Evaluate How AI Affects Workflow For Radiologists

How Artificial Intelligence Can Improve Patient Care

AI uses various algorithms and datasets to identify patterns and generate responses based on input. For example, to train AI to read mammograms, technicians input information from hundreds of thousands to millions of mammograms (Conner, 2026). The AI then creates its own "idea" of what a mammogram without breast cancer and with breast cancer looks like and uses that algorithm to look for abnormalities in a mammogram.

By the year 2030, it is estimated that the global healthcare AI marked will be worth around $188 billion (Garrett, 2024). Healthcare providers are already finding new, helpful, and even life-saving uses for AI. Providers are using AI to find the most effective drugs for a patient, allowing providers to be able to administer said drug far quicker than previously able. It is also being used to detect slight changes in patient conditions that may go unnoticed by the human eye, allowing doctors to administer possibly life changing treatment right away. With how quickly the market is growing, there will be many more uses for AI in the healthcare field discovered and implemented.

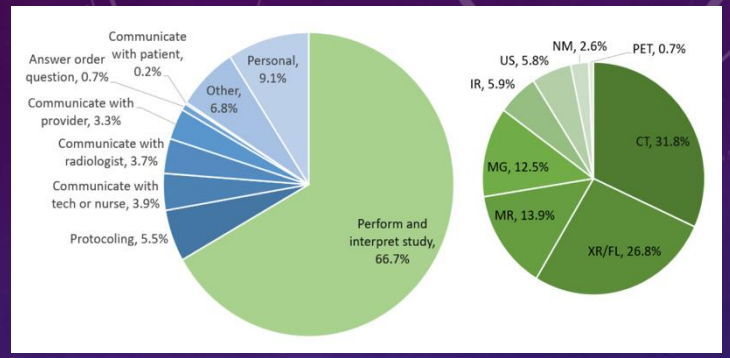

Figure 1: "A breakdown of how radiologists spend their time on various tasks, as well as adjusted interpretation times from U.S. federal data" (Landlord, 2025).

AI Product	↑↓	Task Affected	Base Case	Range
AI for order-entry decision support	↓	volume (CT/MR/NM/US/PET)	3%	0% - 6%
AI to summarize the medical record	↓	interpretation time	2%	0% - 4%
AI to summarize the medical record	↓	communicate with tech, provider	30%	10% - 50%
Automated protocoling systems	↓	protocoling time	60%	30% - 70%
Image reconstruction	↓↑	interpretation time (CT, MR, PET)	0%	1% - +5%
Imaging study delegation	↓	need for a human in the loop (MG)	50%	30% - 60%
Imaging study delegation	↓	need for a human in the loop (XR)	40%	30% - 50%
Imaging study delegation	↓	need for a human in the loop (other)	3%	1% - 5%
Detection algorithms	↓	interpretation time (XR)	5%	0% - 15%
Detection algorithms	↓↑	interpretation time (other)	0%	5% - +5%
Imaging study triage	↓	interpretation time	1%	0% - 5%
Classification algorithms	↓	interpretation time	1%	0% - 5%
Opportunistic screening	↑	interpretation time (CT, XR)	+2%	0% - +5%
Radiology report drafting	↓	interpretation time	20%	10% - 30%
Nonroutine communication	↓	communicate with provider	30%	20% - 50%
Radiology report explanation	↓	communicate with patients	30%	10% - 50%

How AI Affects Workflow For Radiologist

In a study done in 3 hospitals observing and categorizing tasks radiologist spent time doing. The most time-consuming task was preforming and analyzing studies at 66.7% (Landlord, 2025). The rest of the categorizes can be seen in figure 1. They also made categories of how AI can affect certain procedures. Pre-procedure is helping decide on with tests to be ordered, reviewing patient history, and tailoring the image protocol. Intra-procedure is image reconstruction in the imaging device itself or a specialized software. Post-procedure is mostly for helping the radiologist in reading the image. AI can help with making a draft of the report, explain reports to patients and other staff, and interpretation of the images for the radiologist. The use of AI in a radiologist workspace could increase their efficiency by reducing their need to select or determine what imaging would need to be done. 69% of studies can be selected with 95% accuracy (Landlord, 2025). The study showed that AI would reduce a radiologist work hours by 35% (Landlord, 2025). Figure 2 is a more detailed explanation on how AI has affected workflow.

Figure 2: "A summary of model assumptions. Numbers in red indicated situations in which AI may increase the work of radiologists."

Conclusion

AI has found many uses in the world of healthcare, with the market of AI in healthcare growing rapidly. There are improvements being made to patient care, with many uses already discovered and more on the way. AI has also improved work hours for radiologists, although this change could be affected by an increase in imaging needs.