

Are workforce radiologists concerned about ethical issues in artificial intelligence use?

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Artificial intelligence (AI) in medical practice is increasing. No one denies its significant benefits: a futuristic vision of tools that can provide more accurate and faster diagnoses of pathologies that medical professionals face daily. Radiology has had a major impact on AI due to its interaction with digital images. The number of publications on AI applied to different imaging modalities has increased significantly over the last 10 years, from 100 to 150 articles per year to around 800 per year in 2017¹. AI with deep learning algorithms has been studied and used to diagnose breast and colon cancer, detect lung nodules, and Alzheimer disease, among others². Other AI applications include the importance given to oncological imaging in nuclear medicine studies to assess tumor aggressiveness, treatment response, and prognosis³.

AI is on everyone's lips. Something about AI is shared almost daily on various social media platforms, to the point that it overwhelms us. Due to the extensive information and research being conducted by numerous developers of these systems, there has been considerable discussion regarding the ethical issues that arise when using AI in radiology. There is a consensus in Europe, the United States, Canada, and other countries⁴ that researchers are concerned about the honest use of AI in patient care. Particular attention has been paid to questions such as: Who owns the data? Were the patients whose data was used informed

that their images and data would be used for an AI algorithm? How was this data used? And, very importantly, how was it acquired and by whom? Is it those who are financial stakeholders, even if they have no medical knowledge? In other words, do you have access to the data if you have the necessary funds? Another bias that has been considered is explainability, reliability, and the infamous black box where no one knows exactly how the decision-making process was conducted. Some speak of an oracle that makes decisions without justification due to the convoluted nature of this process⁵.

We cannot overlook liability, i.e., when at the end of the decision-making process to conclude a radiology report using AI for diagnosis, an error occurs because AI has overdiagnosed a pathological entity, or vice versa, when the AI interprets an opacity as a composite image, and, after months, it turns out to be a neoplasm. The radiologist confirms this diagnosis without discussing the findings and gives the result, which is not wrong. Who is responsible? The radiologist who trusted the algorithm, the person who bought the tool for the institution, the person who sold it, the person who developed it, or the person who used the data to arrive at the final diagnosis⁶. In the end, we will all be held accountable.

While, as previously mentioned, much has already been written about the consensus and ethical measures to be considered regarding data use, information gathering,

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the black box, and the fair and beneficial use of AI in its implementation and application in daily practice, we are left with another question. Are radiologists who are responsible for the day-to-day tasks prepared for the integration of AI into their daily work? We are not talking about using a tool that we know we can learn to operate by pressing a button, selecting a region of interest, and learning the different patterns to interpret the information the tool gives us. Ultimately, that's our job: to interpret imaging information so that we can make a diagnosis that's useful for the patient, allowing doctors to make informed treatment decisions. That's not what we're getting at. The question is whether we are aware of the ethical dilemmas that surround this process. Those who write about ethics know this, of course, but the radiologist, who does their best every day to dictate numerous examinations that sometimes exceed their capacity due to the time devoted to each exam, is where diagnostic errors can occur...is the radiologist aware of this? Perhaps an administrator has not considered using an AI tool available from one of the many companies that claim to be better than the competition. Have they asked the physician who will be using it which tool would be most useful for that facility's operations that best fits their daily work?

Hospitals are competing and promoting the use of AI, but is this competition a genuine concern for the benefit of patients, or is it just business? Is it about being the first in town or the first in the country? It is clear that medicine is a business, but it must be conducted honestly and in accordance with the basic principles of bioethics. Reference is made to a survey of radiologists and residents that attempted to determine the level of knowledge of bioethical principles. The result was that the level of knowledge was in the middle range, which is representative of what can occur in the field of radiology⁷.

Despite all the excellent observations and recommendations mentioned in the various consensus reports and publications, there is one aspect we consider fundamental, education before implementation. In our view, this would be the basis for the ethical use of AI, because in hospitals, someone makes the decision to implement AI for the radiology group, and it turns out that they did not consider implementing a methodology to educate the ethics of using diagnostic tools. AI should not replace the radiologist's work, but rather complement it, and it should always be under their supervision. Unfortunately,

some colleagues believe that AI will make their work easier and faster, allowing them to work less and continue to be paid while someone else does their work without supervision. It has been considered that a conflict of interest could arise by rushing into this technology without assessing its scope and responsibility. We need to act responsibly, knowing that technology is constantly evolving and prone to errors. We must protect ourselves from unethical situations before they arise.

As many AI models are relatively easy to create and train, AI-supported research and commercial solutions can be produced by sometimes naïve or unprofessional actors⁴.

Conscious ethical values should guide decisions about when to use AI, define metrics to describe it appropriately and responsibly, and warn the community about the risks of unethical AI⁴. In our opinion, there is an urgent need to demonstrate knowledge of AI; otherwise, you are obsolete. There is a need for it to happen, but we don't know how. There's a need not only to buy AI, but also to sell it, justifying that it benefits patients without knowing whether it is a tool whose development has been guided by bioethical principles.

Radiologists, who are the workforce, need to be trained in the ethical use of AI tools; otherwise, we will make mistakes that could put patients at risk. What training and skills are needed to decide whether to use AI on patients and to use it safely and effectively when appropriate?⁴ This is a foundation for implementing AI in institutions. We need to be cautious about patients who are at risk due to the need for a diagnosis, so they are not subjected to interventions that may not be warranted but incur costs that many may not be willing to authorize if asked. We believe we are ready for AI. We want it. However, most radiologists are not ready to use it with the knowledge of the bioethical principles that enable us to use it responsibly, fairly, and ethically.

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