

Artificial Intelligence in Radiology: Ethics Concerns

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Abstract

When the subject is ethics, considering health research, the issue has always been challenging and requires constant updates and reassessments. The brief definition of research ethics is the set of specific principles, rules, guidelines and norms of behavior that a research community has decided are appropriate and fair, emphasizing that research must be valid, reliable, legitimate and representative. This study brings some ethical concerns that must be considered within the scientific community, given the number of studies and development of new artificial intelligence tools, especially in radiology. Therefore, the radiology community should promote discussions; establish ethical standards for practice and new AI tools development.

Keywords: Health; Community; Radiology; Artificial intelligence; Ethical standards

Introduction

When the subject is ethics, it can be considered that in health research, the subject has always been a challenge that requires constant updates and reevaluations. Research ethics could be briefly defined as the set of specific principles, rules, guidelines and norms of behavior related to research that a research community has decided are appropriate and fair and emphasizing that research must be valid, reliable, legitimate and representative.

Technology is increasingly changing the way professionals in different disciplines work. In healthcare, digital technology will have implications for every medical specialty as well as users of healthcare services. Already, the radiology specialty is feeling the implications of artificial intelligence. The labor intensive and time intensive aspects of radiology work, such as examining CT images, have become increasingly accompanied by AI tools, which mean that radiologists have to adapt and dedicate their work to higher level tasks that require more complex cognitive skills. While this is usually a good thing, there are certain ethical concerns that come with developing and using AI algorithms. Addressing these concerns is important to avoid moral issues that can arise with the significant increase in researches and AI tooling over the last 10 years. This article analyzes the main ethical concerns that arise from this perspective.

Description

The ethics of data

There is a lot of patient data in radiology. The ethics of data surrounds the acquisition, management and assessment of data. Some of the most important areas of data ethics to consider include informed consent, ownership of data, transparency, objectivity, privacy/data protection, ensuring moral and meaningful access to data, as well as the resource to ensure data management [1]. It is the moral duty of researchers and radiologists to ensure that the data they use patient data for the good of everyone involved. Such data should be used to improve radiology practice and serve patients. Unfortunately, there are ways that data can be unethically used, for instance, for commercial purposes. There are also instances where bias arises when handling patient data. AI may be biased by subsets of data based on ethnicity, gender or economic factors. It may also be biased by clinical attributes such as comorbidities or technical factors. It is important to consider all potential sources of bias to reduce their impact on the decisions that AI may make.

It is also important to consider questions surrounding the ownership of patient data [2]. For instance, who owns the data that can lead to the creation of highly profitable intelligence products? Also, who owns the intellectual property of the analysis that emerges from aggregated data? Deeper discussions are needed to understand commercial and academic data practices to create policies that balance benefit with greater good without harming patients.

The ethics of algorithms

Decision making is part and parcel of medicine and healthcare. It involves selecting a course of action from different alternatives. When people make decisions, they use their beliefs, knowledge, preferences and values. AI makes a decision depending on the features of input data. This means that human values, beliefs and preferences will often be transferred to AI, yet it is the source of human bias. Although AI products are not human, they are envisioned, built and evaluated by them. The responsibility for equality and fairness, therefore, are human concepts [3]. In other words, it is possible for AI models to be misused by humans. It is imperative to ensure that there is transparency in how decisions are made to promote provider and patient trust in AI. Some of the ethical concerns here to consider include those of safety, transparency and value alignment. When it comes to safety, it is important for AI systems to be safe and secure when in operation. They should be verifiable. When it comes to transparency, it is important to establish that it may not be easy to know why an algorithm came to a certain conclusion even though it is easy to see what it is doing. There is a need to understand why or what happened when an AI systems brings harm [4]. Apart from the usual root cause analysis, there is a need to come up with new analysis

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procedures while considering the nature of algorithms. As for value alignment, it is about optimizing the work of AI. The responsibility of researchers and radiologists is to optimize AI for patient benefit [5].

The ethics of practice

AI in radiology is complex because it brings together clinical care, business, economics, technology and mathematics. Yet, moral behavior is intellectually uncertain. There are instances where innovations unintentionally cause harm and engage in unprincipled activities. There is a need to engage in conscientious ethical values when making decisions on where to involve AI, define what responsible AI ought to be, and raise alarm when AI is behaving unethically [6,7].

Conclusion

In the era of big data the seven requirements to consider the research ethics proposed by Emanuel EJ, does not provide enough subsidies in the face of practice and research involving artificial intelligence. In other words, debates and discussions on the subject are needed frequently.

It is clear that the several benefits that come from incorporating AI into radiology are significant. Most importantly, AI will take over in the coming years especially the more routine aspects of radiologist work, freeing radiologists to engage in higher level tasks that require more complex cognitive skills. However, there are a number of ethical and moral concerns that emerge, which need a candid conversation. As evident above, they revolve around the ethics of data, ethics of algorithms, conflict of interest and ethics of practice.

Conflict of Interest

With nascent, evolving markets like those involving radiology AI, it is expected and quite normal that radiologists involved in patient care would also sometimes hold positions in AI startups or more established commercial entities positioning themselves to compete for

position in health care. Similar to when an investigator evaluating a new drug has a financial interest in its success, radiologists or administrators who have COI's (Conflict of Interest) related to AI products may be managed through remedies such as public disclosure, institutional oversight, divestment, or other measures.

When dealing with AI in health care, those in positions to facilitate disclosures of patient or subject data to third parties not pursuant to patient care, purchase AI agents, or implement models in clinical workflows should be especially careful to manage their conflicts, which may in some cases require them to recuse themselves from such activities.

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