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Multisociety AI Radiology Ethics Framework Announced

Summary: With AI moving into radiology at lightning speed, international imaging and informatics societies have worked together to produce a paper on ethics guidance.



The development of artificial intelligence (AI) in radiology has prompted leading radiological societies in AI technology to issue a statement on a new ethical framework.

The statement was authored by the European Society of Radiology (ESR), the American College of Radiology® (ACR), European Society of Medical Imaging Informatics (EuSoMII), Canadian Association of Radiologists (CAR), Radiological Society of North America (RSNA), American Association of Physicists in Medicine (AAPM), and the Society for Imaging Informatics in Medicine (SIIM).

Published simultaneously in Radiology, the Journal of the American College of

Radiology, the Canadian Association of Radiologists Journal, and Insights into Imaging, the statement took into account comments from patients, regulators, radiologists, legal experts and other stakeholders on AI use.

With artificial intelligence's fast-expanding use in radiology, there are growing concerns that the lack of regulations or standards for deployment may cause more harm than good. Indeed, experts are of the opinion that reliance on AI-based intelligent and autonomous systems can increase the risk of systemic errors with high consequences.

The international multisociety statement emphasises that ethical use of AI

in radiology should promote wellbeing and minimise harm, and that the benefits and challenges of using the technology should be shared amongst stakeholders while respecting human rights, including dignity and privacy.

A summary of this consensus statement has been published by J. Raymond Geis, MD, senior scientist at the American College of Radiology Data Science Institute, and co-authors. Since AI carries potential pitfalls and inherent biases that may impact patient safety, radiologists "have a moral obligation to consider the ethics of how we use and appreciate data, how we build and operate decision-making [AI] machines, and how we

conduct ourselves as professionals," write Dr. Geis et al.

Ethics of Data

The ethics of data should promote trust in acquiring, managing, and assessing data. Collection and use of data for AI tool development must take into consideration informed consent, privacy and data protection, as well as ownership and transparency of the data. While using the data will benefit patients, through improved diagnosis and treatment of diseases, a key challenge is how to thwart those who will attempt to unethically capitalise on data – which may harm patients or the common good.

In addition, bias may exist in the data set used to train and test AI algorithms. Gender, ethnic, social, environmental, or economic factors are common sources of bias, although radiology AI may also be biased by clinically confounding attributes such as comorbidities and by technical factors such as data set shift and covariate shift due to subtle differences in raw and postprocessed data that come from different scanning techniques. "What are the possible risks that might arise from biases in the data?" and "What steps have been taken to mitigate these biases?" are among questions about the ethics of data that AI implementers should be able to answer.

Ethics of Algorithms and Trained Models

Classification tasks are one area where radiology AI performs at its best. It is important to remember, however, that an AI tool is a computer programme "envisioned, built, and monitored by humans." Fairness and equality are concepts not attributed to AI; such insights can only be within the purview of humans. Thus, radiologists must be able to anticipate how rapidly changing AI models may perform incorrectly or be misused and protect against unethical outcomes, ideally before they occur.

Meanwhile, newer techniques such as automated machine learning mean creating AI models has become relatively

easier, thus fuelling fears that some naive or unprofessional actors may be encouraged to produce AI-based solutions for research and commercial purposes. There is also the growing threat of malicious attacks on AI tools and data, which increases risks of harm to patients. With these developments, there is all the more reason to extend existing ethical codes in medicine, statistics, and computer science to consider situations unique to radiology AI.

Ethics of Practice

AI tools are not doctors; their utility is meant to enhance doctors' ability to provide the best care for patients. To what degree can clinicians delegate the task of diagnosing medical conditions to intelligent or autonomous systems without exposing themselves to increased liability for malpractice if the system makes an error? This and other questions about AI-caused harm will arise with ever-increasing frequency as these tools become pervasive.

With radiology AI turning into a complex ecosystem of clinical care, conscientious ethical values will be essential in making decisions about when to use AI, define metrics to describe appropriate and responsible AI, and recognise and alert the community to unethical AI. In addition, AI developers ultimately need to be held to the same 'do no harm' standard as physicians.

Establishing codes of ethics and practice for radiology AI should start now, which will ensure the safety of patients and their data, according to Dr. Geis and co-authors. Such codes of conduct must be continually updated to keep pace with new ethical issues that will appear rapidly and regularly.

Importantly, an ethical framework will help radiologists with implementing AI tools to make best decisions and actions for patients. Radiologists will after all remain responsible for patient care. ■

To read the report, go to: <https://iii.hm/zpx>

KEY POINTS



- Now is the time for the international radiology community to devise codes of ethics and practice for AI.
- Ethical use of AI in radiology should promote well-being and reduce the risk of harm.
- Transparency in AI deployment in radiology is of critical importance to prevent bias and to ensure responsibility and accountability lies with humans.
- The responsibility for patient care should remain with radiologists who will need to develop skills for best outcomes in a new AI ecosystem.



REFERENCES

Geis JR et al. (2019) Ethics of Artificial Intelligence in Radiology: Summary of the Joint European and North American Multisociety Statement. Available from doi.org/10.1148/radiol.2019191586