



AI in GI: Societal Implications

AI is evolving quickly, and it has the potential to advance medicine to optimize identification and treatment of health issues for patients.

Yet in gastroenterology – as in other fields both inside and outside health care – there’s an obligation for AI developers and users to understand how to employ the technology ethically.

That responsibility begins with ensuring AI was trained and built on a rich data set, and it also includes understanding how the AI performs each task. A basic level of understanding can help ensure that health care goals are achieved without negative social implications.

During a recent *Inside Perspectives: A Closer Look at AI in GI* podcast, Dr. Folasade May, a health services and health equity researcher, explained: “AI decisions are

not always intelligible to humans. So just explaining the basic design and outcomes of an AI algorithm can help with understanding and can help create trust in those algorithms.”

Among the key ethical concerns with AI in health care is the potential for bias. Dr. May explains, “As AI becomes more and more common, researchers and experts are beginning to acknowledge the many mechanisms by which it might actually worsen health outcomes for some population subgroups, particularly medically underserved or racial or ethnic minority groups.”

Dr. Michael Sandel, a philosopher, seconded this concern in *The Harvard Gazette*: “Part of the appeal of algorithmic decision-making is that it seems to offer an objective way of overcoming human subjectivity, bias, and prejudice. But we are discovering that many of the algorithms ... replicate and embed the biases that already exist in our society.”¹

Researchers' bias can become a part of AI when it influences which topics are made a priority and when research targets majority populations, or populations who seek care in quaternary or tertiary health care facilities. Dr. May explains, "How data are collected is really important. AI models that are developed in academic health centers alone, for example, might

perform reliably for the patient populations that seek care in those settings. But they might have adverse consequences when applied to other settings where patients are largely people of color." She notes the importance of prioritizing funding for AI research that impacts medically underserved populations in addition to majority populations.

To overcome implicit bias and address other issues related to the ethics of developing technologies, the World Health Organization (WHO) has issued six principles:²

1 Protecting autonomy

Ensure that physicians and patients are driving decisions about health care, not AI, and protect patient data.

2 Promoting human well-being, human safety, and the public interest

Continuously monitor AI to ensure no harm is being done.

3 Ensuring transparency, explainability, and intelligibility

Be transparent about how AI tools are designed so physicians can understand how decisions are being made.

4 Fostering responsibility and accountability

Have clear accountability when something goes wrong with AI.

5 Ensuring inclusiveness and equity

Ensure AI has been trained on diverse sets of data to reduce opportunities for racial bias, and share technology widely to encourage equitable use and access.

6 Promoting AI that is responsive and sustainable

Choose AI tools that can be easily updated at any time and that minimize ecological impact.

As AI continues to become part of our everyday lives, including health care, the potential rewards are enormous – but without clear attention to ethics, the risks can be too. Dr. Tyler Berzin, clinical advanced endoscopist at Beth Israel Deaconess Medical Center and associate professor at Harvard Medical School,

posits, "When it comes down to clinical care, it is just so crucial that we proceed in a thoughtful, careful way so we get this right, from the very start. And I think that clearly has to be a priority as we begin incorporating AI."

Detail on the two sets of guidelines can be found here:

Ethics and governance of artificial intelligence for health – WHO guidance: [who.int/publications/i/item/9789240029200](https://www.who.int/publications/i/item/9789240029200)

Good machine learning practice for medical device development – Guiding principles: [fda.gov/medical-devices/software-medical-device-samd/good-machine-learning-practice-medical-device-development-guiding-principles](https://www.fda.gov/medical-devices/software-medical-device-samd/good-machine-learning-practice-medical-device-development-guiding-principles)

In addition, the U.S. Food and Drug Administration (FDA), Health Canada, and the United Kingdom’s Medicines and Healthcare products Regulatory Agency (MHRA) have worked together to issue 10 guiding principles for machine learning:³

1. Multidisciplinary expertise is leveraged throughout the total product life cycle.
2. Good software engineering and security practices are implemented.
3. Clinical study participants and data sets are representative of the intended patient population.
4. Training data sets are independent of test sets.
5. Selected reference data sets are based upon best available methods.
6. Model design is tailored to the available data and reflects the intended use of the device.
7. Focus is placed on the performance of the human-AI team.
8. Testing demonstrates device performance during clinically relevant conditions.
9. Users are provided clear, essential information.
10. Deployed models are monitored for performance, and retraining risks are managed.

Guided by the principles that leading health organizations have established, AI developers and health care providers can continue to make informed decisions about what’s best for patients. A strong partnership between the two will be essential, with explainability – understanding how AI was developed, what inputs it uses, and how it develops outputs – as one key part of ensuring GI and other health care fields move ahead in a way that has positive outcomes.

This article is a summary of a physician podcast discussion around AI in health care. The contents and conclusions of this article are solely those of the speakers, unless otherwise cited. The speakers received funding from Covidien LP, a Medtronic company, for this engagement.

1. Pazzanese C. [Great promise but potential for peril](#). *The Harvard Gazette*. October 26, 2020.
2. WHO. [Ethics and governance of artificial intelligence for health – WHO guidance](#). June 28, 2021.
3. FDA. [Good machine learning practice for medical device development: Guiding principles](#). October 27, 2021.

Listen to the podcast.



To learn more about the ethical, legal, and societal implications of AI in patient care, listen to Dr. Fola May and Dr. Tyler Berzin’s discussion on the Inside Perspectives: A Closer Look at AI in GI podcast.



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