SESSION 5
AI AND TECHNOLOGY IN IBD: WHAT, WHEN AND WHERE?

AI and IBD: Opportunities and Directions

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Objectives

- Have a common understanding of what defines artificial intelligence (AI)
- Consider AI benefits and risks in healthcare
- Appreciate the impact of a rapidly evolving global industry
- Discuss uses and potential applications for AI in IBD
- Plan, prepare, and expand use of AI technology in clinical practice

Abstract

Although artificial intelligence (AI) is a field of computer science that dates back to the 1950s, evolutionary developments in machine learning, deep learning, and most recently generative AI in 2021 have accelerated dramatic transformational change in all economic sectors. The Fourth Industrial Revolution defined by the World Economic Forum includes AI, gene editing, and advanced robotics among core technologies converging physical, digital, and biological worlds.[1] Governments, health systems, and providers are increasingly applying and exploring the use of AI to advance the Institute for Healthcare Improvement (IHI) Quintuple Aim in healthcare, to improve patient experience, enhance population health, reduce costs, support care team well-being, and advance health equity.[2] AI technologies offer a wide range of possibilities in inflammatory bowel disease (IBD) care and research including AI scribes, clinical decision support, workflow optimization, coding, billing, endoscopy, diagnostic imaging and histology reporting and image analysis, genomics, clinical decision support, biomarker and drug discovery, remote patient monitoring, and patient engagement.[3,4,5] In addition to understanding how this technology can safely and effectively improve outcomes, there are important privacy, data security, and medicolegal considerations.[6] Despite limited experience, recent surveys suggest evolving interest and positive attitudes towards use of AI in gastroenterology and endoscopy practice.[7,8,9] A successful future for AI and IBD depends on clinical leadership, stakeholder collaboration, education, careful monitoring of outcomes and unintended consequences.

References

1. Department for Business and Trade; Department for Business, Energy & Industrial Strategy. *Policy paper: Regulation for the Fourth Industrial Revolution*. London, UK; Government of United Kingdom. Published 11 June 2019. https://www.gov.uk/government/publications/regulation-for-the-fourth-industrial-revolution/regulation-for-the-fourth-industrial-revolution
2. Institute for Healthcare Improvement. Quintuple Aim. https://www.ihi.org/library/topics/quintuple-aim
3. Brooks-Warburton J, Ashton J, Dhar A, et al. Artificial intelligence and inflammatory bowel disease: practicalities and future prospects. *Frontline Gastroenterology*. 2021;13(4):325–31.
4. Ahmed M. Stone ML, Stidham RW. Artificial intelligence and IBD: Where are we now and where will we be in the future?. *Curr Gastroenterol Rep.* 2024;26(5):137-44.
5. Phillip G, Oreen M, Dan C, et al. AI-luminating artificial intelligence in inflammatory bowel diseases: A narrative review on the role of AI in endoscopy, histology, and imaging for IBD. *Inflamm Bowel Dis.* 2024;30(12):2467–85.
6. Canadian Medical Protective Association. *AI in medical practice*. Published October 2024. Available at: https://www.cmpa-acpm.ca/en/advice-publications/key-issues/ai-in-medical-practice
7. Wan N, Chan C, Tan JL, et al.Endoscopists' knowledge, perceptions, and attitudes toward the use of artificial intelligence in endoscopy: a systematic review. *Gastrointest Endosc*. 2025;102(2):160–69.
8. ASGE AI Task Force, Parasa S, Berzin T, et al.Consensus statements on the current landscape of artificial intelligence applications in endoscopy, addressing roadblocks, and advancing artificial intelligence in gastroenterology. *Gastrointest Endosc*. 2025;101(1):2-9.e1.
9. 9. Gross, SA. Scoping the future: What endoscopists really think about artificial intelligence. *Gastrointest Endosc*. 2025;102(2):170–71.