

AI Essentials: Lower GI (UEG Talks rewind)

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Podcast Episode

Endoscopy

August 20, 2025

Two gastroenterology AI researchers discuss fundamental AI concepts, development processes, and the current state of artificial intelligence applications in upper gastrointestinal endoscopy, emphasising that systems remain largely in the research phase with limited regulatory approval.

KEY POINTS

- The speakers distinguished core AI terminology: machine learning uses labelled data and human feedback to improve accuracy, while deep learning (a machine learning subset) can process unstructured raw data with minimal human intervention through neural networks that simulate brain decision-making.
- AI system development follows a structured path—identifying clinical need, collecting diverse annotated data, engineering deep-learning models through iterative training, validating with external unseen data, and obtaining regulatory approval—with each new system requiring separate approval even for the same clinical task.
- Robustness differs from generalisability: narrow AI systems solve only the specific task for which they were trained (a Barrett's dysplasia detector cannot assess gastric cancer), but a robust system should perform equally well across different centres, countries, and endoscope manufacturers.
- In upper gastrointestinal endoscopy, only one AI system has received approval as of 2024, with Barrett's lesion detection devices expected within 2–3 years; the speakers emphasised that the goal is elevating non-expert performance to expert level rather than surpassing expert endoscopists, and that distinguishing dysplasia from inflammation remains difficult for both humans and AI.

- The speakers cautioned that meta-analyses pooling heterogeneous AI trials must be interpreted carefully, that randomised trials suffer from unblinded Hawthorne effects, and that demonstrating patient-level superiority of AI-guided biopsies over meticulous standard-of-care protocols (including Seattle protocol) remains unproven.

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