

FROM CHAT TO CARBON CUT: PILOT STUDY OF CHATGPT O4-MINI FOR APPROPRIATE ENDOSCOPY AND ENVIRONMENTAL IMPACT REDUCTION

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UEG Week Berlin 2025

Poster

October 7, 2025

ChatGPT-o4 Mini demonstrated high accuracy (AUC 0.91, sensitivity 99%, specificity 84%) in assessing endoscopy appropriateness compared to expert gastroenterologists, with potential to reduce unnecessary procedures and carbon emissions.

KEY POINTS

- In a prospective study of 126 endoscopy referrals (60% colonoscopies, 39% upper GI endoscopies), expert review deemed 21% of procedures inappropriate (20% of colonoscopies, 20.4% of upper GI endoscopies).
- ChatGPT-o4 Mini's appropriateness assessments showed excellent agreement with expert gastroenterologists (Cohen's kappa 0.87) when evaluated against European and American guidelines.
- In a simulated model, AI-driven triage avoided 14 colonoscopies and 8 upper GI endoscopies, resulting in a total carbon footprint reduction of 142.84 kg CO₂.
- The authors conclude that with targeted training on clinical guidelines, AI tools could potentially act as autonomous triage filters to streamline resource allocation and enhance sustainability, though further real-world validation is needed.

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