ACG 2024

ITERATIVE HEALTH

Research Highlights Opportunity for Machine Learning (ML) to Address Shortcomings in GI Endoscopic Assessments

Five abstracts presented at ACG from key members in the GI scientific community showcasing the promise of machine learning (ML) models to advance GI clinical research, address unmet patient needs, and lay the foundation for future innovation in drug development and endpoint assessment

Challenges in Endoscopy

Opportunities to Advance Endoscopic Assessment of IBD

Trial efficacy demonstrated by endoscopic effect size in trials[2] and notable differences in endoscopic treatment effect between phase 2 and phase 3 trials for investigational new drugs[3]

Opportunity

Promise of machine learning (ML) enabled disease assessments

Rapidly assess disease activity in a quantitative, unbiased manner

Inform novel, advanced insights on disease activity

"Our ongoing research with Iterative Health shows the immense potential of their machine learning tools to refine endoscopic assessments and thereby enhance the drug development process, ultimately improving long-term patient outcomes."

David T. Rubin, MD

Director of the Inflammatory Bowel Disease Center at the University of Chicago Medicine

Real World Evidence

Topics

- Retrospective analysis
- AI-endoscopic video analysis paired with EHR data

Research Goal

- Real-world evidence generating novel insights on endoscopic assessments impact on treatment selection for targeted IBD therapies to improve understanding of clinical care in a diverse community setting

Clinical Insights

Topics

- 4 abstracts
- Evaluation of root-causes of variability in human assessments
- Head-to-Head Evaluation of multiple ML models
- Systematic Review and recommendations

Research Goal

- Advance the science of machine learning assessments of endoscopy in ulcerative colitis (UC) and the it's impact on clinical trials

Impact to GI Scientific Community

Iterative Health's recently publications showcase our ongoing partnerships with renowned researches and leading life science organizations to transform traditional endpoints to provide advanced, actionable insights and shift the paradigm in evidence generation for GI diseases

Scientific Publications Presented at ACG 2024

Clinical Insights

Machine Learning Assessments of the Endoscopic Mayo Score in Ulcerative Colitis: A Systematic Review on Testing of Video-Level Assessment Models

Authors:
David Rubin, Walter Reinisch, Neeraj Narula, Daniel Colucci, William Eastman, Klaus Gottlieb, Ana Lacerda, Stephen Laroux, Irene Modesto, Emma Navajas, Charles Owens, Yeli Wang, Shrujal Baxi

Methodology:
Systematic review

Academic & Clinical Partners:
University of Chicago
University of Vienna
McMaster University

Life Science Partners:
Eli Lilly, AbbVie, Pfizer

Key Findings:
Five studies reporting data from six unique test cohorts showcased accuracy in predicting ordinal eMS grades (0, 1, 2, 3) ranging from 56.8-83.3%

Machine Learning Assessments of the Endoscopic Mayo Score in Ulcerative Colitis: A Systematic Review on Training of Video-Level Assessment Models

Authors:
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Methodology:
Systematic review

Academic & Clinical Partners:
University of Chicago
University of Vienna
McMaster University

Life Science Partners:
Eli Lilly, AbbVie, Pfizer

Key Findings:
Seven studies outlined ML training to predict endoscopic scores in ulcerative colitis (UC) with varying model architecture and data labeling strategies

PRESIDENTIAL POSTER AWARD WINNER

Head-to-Head Evaluation of Two Machine Learning Algorithms for Predicting Endoscopic Mayo Score in Ulcerative Colitis

Authors:
Chakib Battioui, Pavel Brodskiy, Klaus Gottlieb, Mohammad Haft-Javaherian, Evan Yu, Shrujal Baxi (lead/sr investigator)

Methodology:
Head-to-head product evaluation

Life Science Partners:
Eli Lilly

Key Findings:
Machine learning models developed by Iterative Health accurately assess endoscopic response (81 -88%) and remission (92 - 96%)

The Role of Video Quality in Central Reader Disagreement in Assessment of the Endoscopic Mayo Score in Ulcerative Colitis Trials

Authors:
Edward V. Loftus, Jr., David T. Rubin, Nayantara Coelho-Prabhu, Walter Reinisch, Chakib Battioui, Abbey Brinkey, Daniel Colucci, William Eastman, Hannah Thompson, Yeli Wang, Shrujal Baxi

Methodology:
Retrospective analysis

Life Science Partners:
Eli Lilly

Key Findings:
Concluded association with poor quality of bowel preparation with disagreement in endoscopic assessments

Real World Evidence

Investigating the Relationship Between Endoscopic Characteristics and Treatment Choice for Patients with Ulcerative Colitis Using a Real-world Data Set Linked to Endoscopic Videos Evaluated with Computer Vision

Authors:
Shrujal Baxi,P arambir S Dulai, Ronen Arai, Darren Thomason, Megan Gower, Maggie McCue, Chris Blair, Lisa Young, Vijay Yajnik

Methodology:
Retrospective analysis

Academic & Clinical Partners:
University of Chicago
University of Vienna
McMaster University

Life Science Partners:
Eli Lilly, AbbVie, Pfizer

Key Findings:
Five studies reporting data from six unique test cohorts showcased accuracy in predicting ordinal eMS grades (0, 1, 2, 3) ranging from 56.8-83.3%

"The goal of our partnership with Iterative Health is to facilitate more evidence-based decision-making on therapy utilization in the real world, and ultimately get a step closer to precision medicine in IBD."

Dr. Vijay Yajnik
Vice President, Head of Gastroenterology, US Medical Affairs, Takeda

Technology and Services Empowering Research

Data & Insights is a technology and service offering from Iterative Health leveraging advanced AI capabilities and multimodal research data to generate novel insights that inform optimal clinical development and post-marketing strategies

- Largest community-based GI clinical research site network across US and Europe
- Cutting-edge machine learning (ML) disease severity models
- Linked dataset of endoscopic videos with EHR data

Let's Partner

SCAN ME

Interested in joining our scientific roadmap or learning more on our technology?
Get in touch with the Data & Insights team.

ITERATIVE HEALTH

About Iterative Health
Iterative Health is a healthcare technology & services company on a mission to provide timely access to a higher standard of gastroenterology care. With deep expertise in artificial intelligence and clinical research, we're empowering healthcare professionals to provide consistently high-quality colorectal cancer screenings and supporting clinical research teams and study sponsors to expand and accelerate patient access to novel therapeutics.

1. Hashash JG, Yu Ci Ng F, Farraye FA, Wang Y, Colucci DR, Baxi S, et al. Inter- and Intraobserver Variability on Endoscopic Scoring Systems in Crohn's Disease and Ulcerative Colitis: A Systematic Review and Meta-Analysis. Inflamm Bowel Dis. 2024 Mar 28;izae051.
2. Reinisch W, Pradhan V, Ahmad S, Zhang Z, Gale JD. Alternative Endoscopy Reading Paradigms Determine Score Reliability and Effect Size in Ulcerative Colitis. J Crohns Colitis. 2024 Jan 27;18(1):82–90.
3. Wils P, Jairath V, Sands BE, Magro F, Reinisch W, Rubin D, et al. Comparison of treatment effect between phase 2 and phase 3 trials in patients with inflammatory bowel disease. United Eur Gastroenterol J. 2023 Oct;11(8):797–806.