



international bowel
ULTRASOUND GROUP

IUS Zooming into Crohn's Disease

Torsten Kucharzik

Lüneburg, Germany

1st Industry Workshop

Leuven, Belgium - December 15th, 2025



Disclosures

Consultancy

Abbvie, AlphaSigma, Amgen, Biogen, Boehringer, Bristol Myers Squibb, Celltrion, Celgene, Hospira, MSD Sharp & Dome GmbH, Mundipharma, Dr. Falk Pharma GmbH, Galapagos, Gilead, Janssen, Lilly, MSD Sharp & Dome GmbH, Novartis, Takeda Pharma GmbH

Speakers honoraria

Abbvie, Amgen, Bristol Myers Squibb, Celltrion, Celgene, Dr. Falk Pharma GmbH, Ferring Arzneimittel GmbH, Galapagos, Janssen, Lilly, MSD Sharp & Dome GmbH, Pfizer, Roche, Takeda Pharma GmbH, Vifor



IUS in Crohn's Disease

Current achievements

- Basic operating procedure for initial diagnostic, relapse and monitoring: reliability, accuracy, feasibility
- Implementation into guidelines and into clinical practice

Prospects

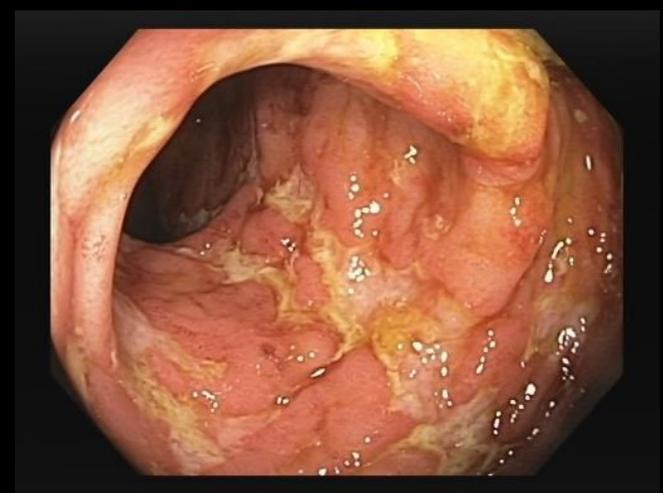
- Prediction of disease
- Assessing disease severity
- Optimization of treatment based on IUS findings
- Advanced IUS modalities
- Global implementation

IUS as an accurate tool to determine disease activity and location in CD

2D
79%
C 54
P Med
HRes



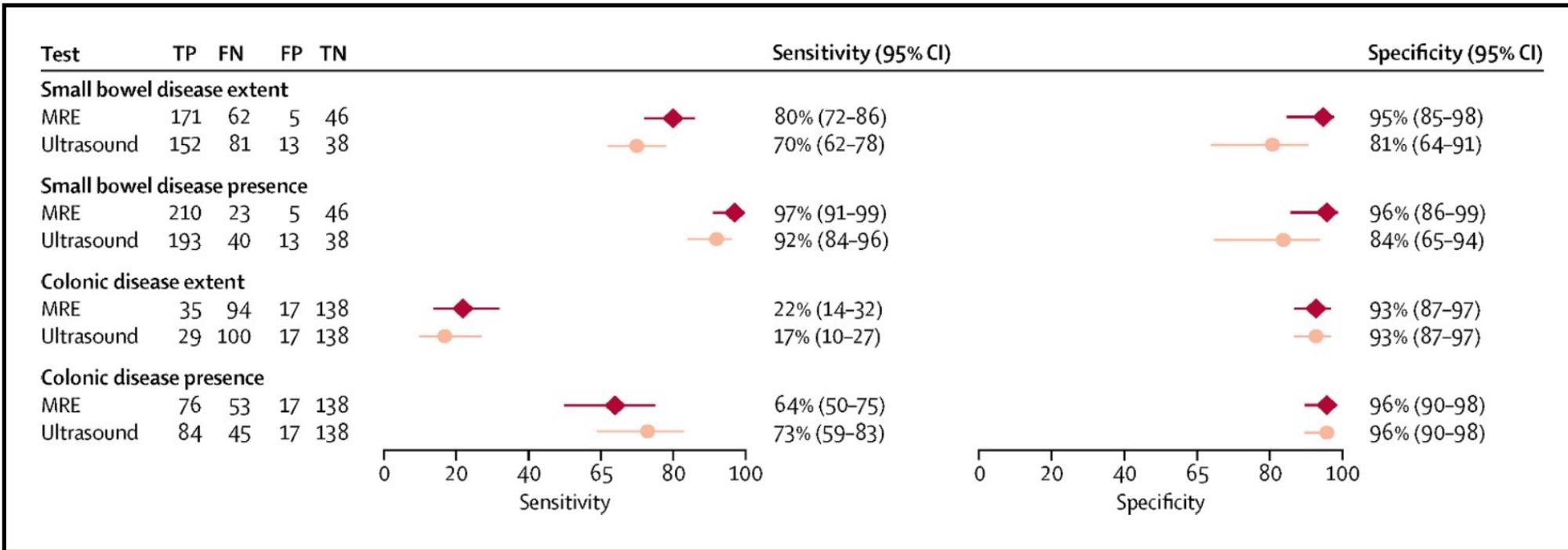
IUS diagnosis:
Active CD L1B1





METRIC-trial: High diagnostic accuracy of IUS in primary diagnosis and for relapse in CD

- Patients had newly diagnosed CD, or established disease with suspected relapse
- **284** patients completed the trial





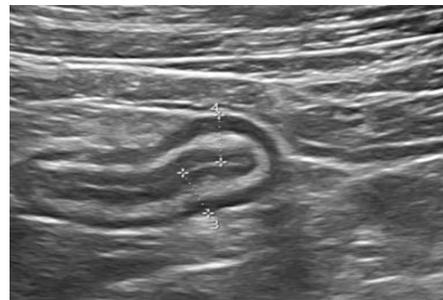
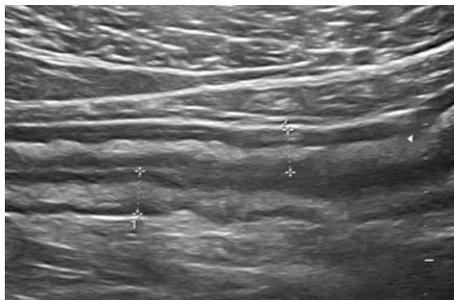
IUS Phenotyping of IBD Patients

Simple parameters - Standardization of measurement

Table 2. Core activity parameters, Delphi grading consensus

	Normal	Uncertain	Activity	
BWT	≤3 mm	NA	>3 mm	
i-fat	0 = Absent	1 = Uncertain	2 = Present	
CDS	0 = Absent [none]	1 = Short signals	2 = Long signals inside bowel	3 = Long signals inside & outside bowel
BWS	0 = Normal	1 = Uncertain	2 = Focal [≤ 3 cm]	3 = Extensive [>3 cm]

BWT, bowel wall thickness; i-fat, inflammatory fat; CDS, colour Doppler signal; BWS, bowel wall stratification; NA, not applicable.



Bowel wall thickness, ICC 0.96

Novak K et al. *JCC* 2021

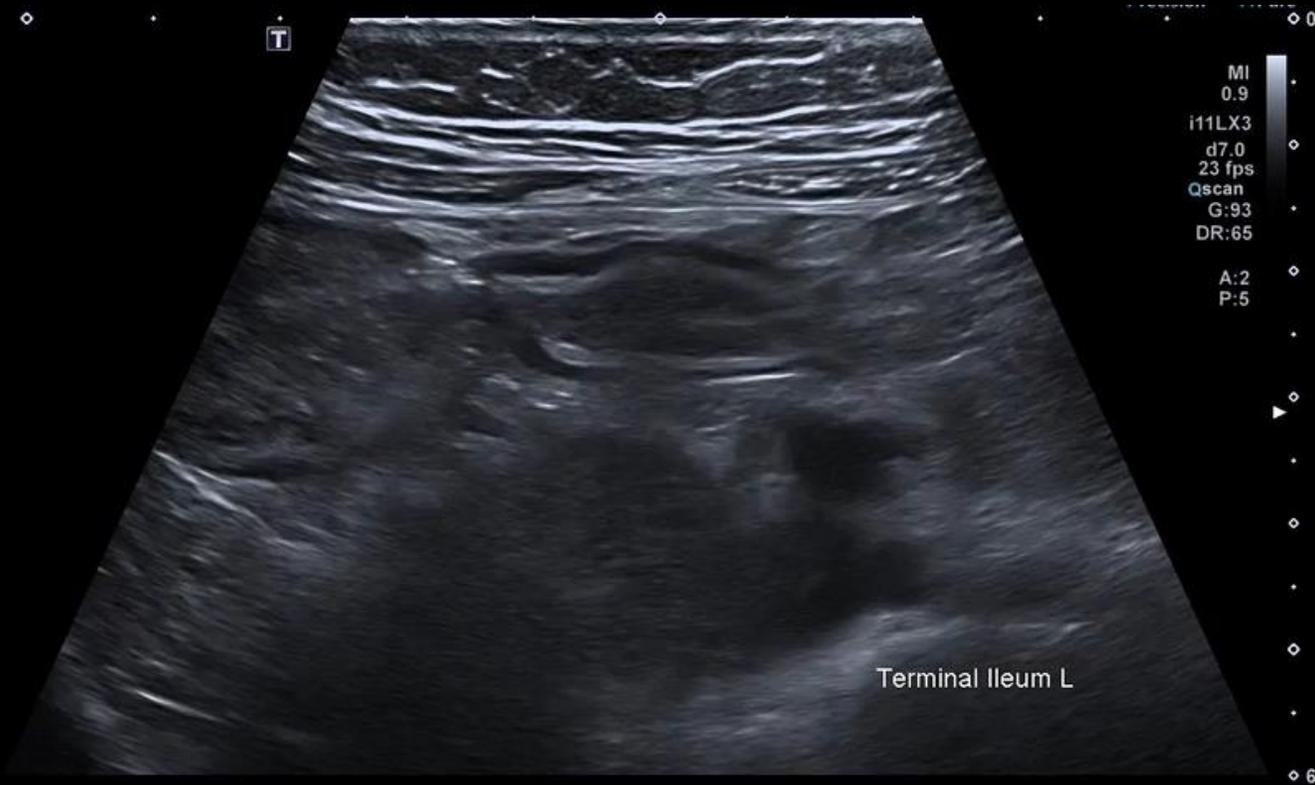


Reliability of Intestinal Ultrasound for Evaluating Crohn's Disease Activity Using Point-of-care and Central Reading

Thomas M. Goodsall,^{1,2} Yoon-Kyo An,^{3,4} Jane M. Andrews,^{2,5} Jakob Begun,^{3,4} Antony B. Friedman,⁶ Andrew Lee,⁷ Peter J. Lewindon,⁸ Paul Spizzo,⁹ Nick Rodgers,¹⁰ Kirstin M. Taylor,⁶ Lauren S. White,¹¹ Rune Wilkens,^{12,13} Emily K. Wright,¹⁴ Lily Zou,¹⁵ Bryan R. Maguire,¹⁵ Claire E. Parker,¹⁵ Julie Rémillard,¹⁵ Kerri L. Novak,¹⁶ Remo Panaccione,¹⁶ Brian G. Feagan,^{15,17,18} Vipul Jairath,^{15,17,18} Christopher Ma,^{13,15,19,§} and Robert V. Bryant^{1,2,§}

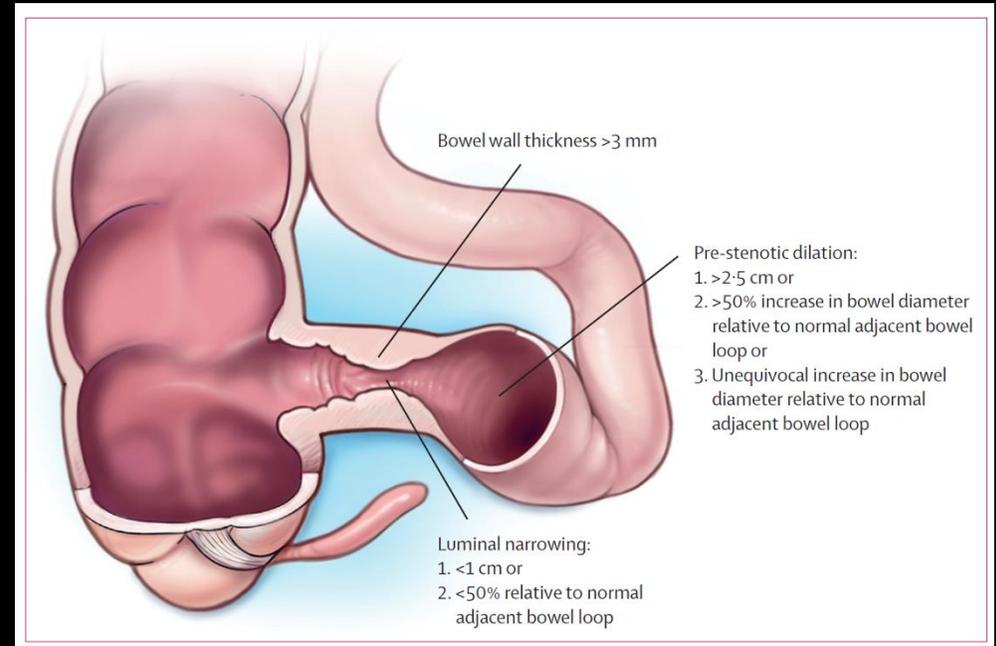
Five IUS parameters demonstrated at least moderate (ICC 0.41) inter- and intra-rater reliability when local and central reading was performed (BWT, CDS, i-fat, submucosal prominence and affected segment length)

Complications in CD

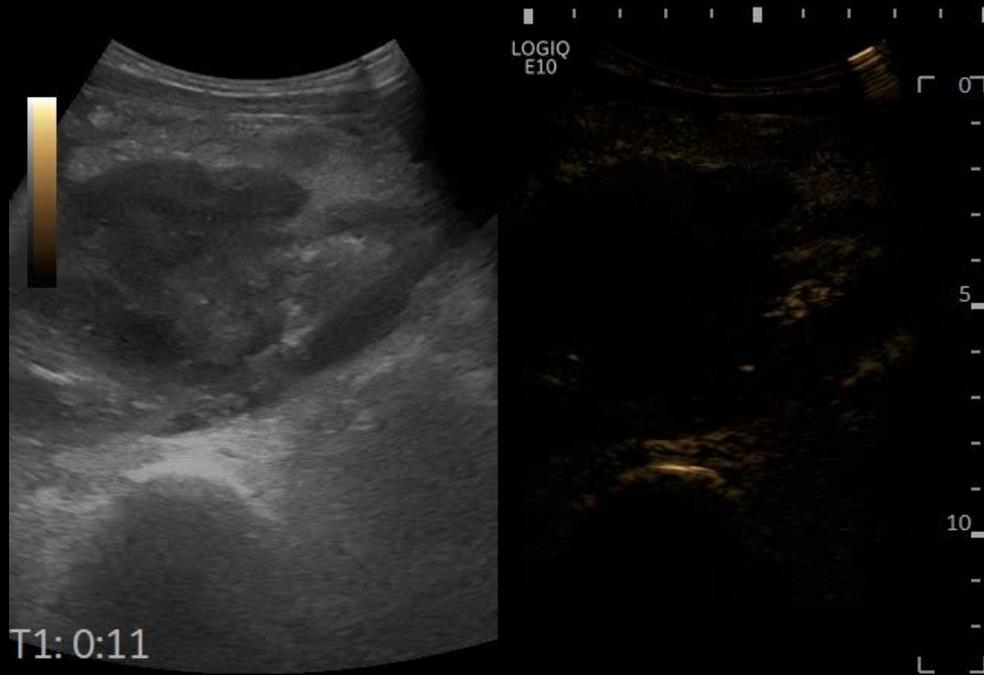


International expert guidance for defining and monitoring small bowel strictures in Crohn's disease on intestinal ultrasound: a consensus statement

Cathy Lu, Ryan Rosentreter, Claire E Parker, Julie Remillard, Stephanie R Wilson, Mark E Baker, Gauraang Bhatnagar, Jakob Begun, David H Bruining, Robert V Bryant, Britt Christensen, Brian G Feagan, Joel G Fletcher, Ilyssa Gordon, Gaylyn Henderson, Vipul Jairath, John Knudsen, Torsten Kucharzik, Kyle Lesack, Christian Maaser, Giovanni Maconi, Kerri Novak, Jordi Rimola, Stuart A Taylor, Rune Wilkens, Florian Rieder, on behalf of the Stenosis Therapy and Anti-Fibrotic Research (STAR) consortium



Complications in CD



CEUS: Abscess in CD A2L1B3



Fistula

Accuracy of IUS in CD related complications

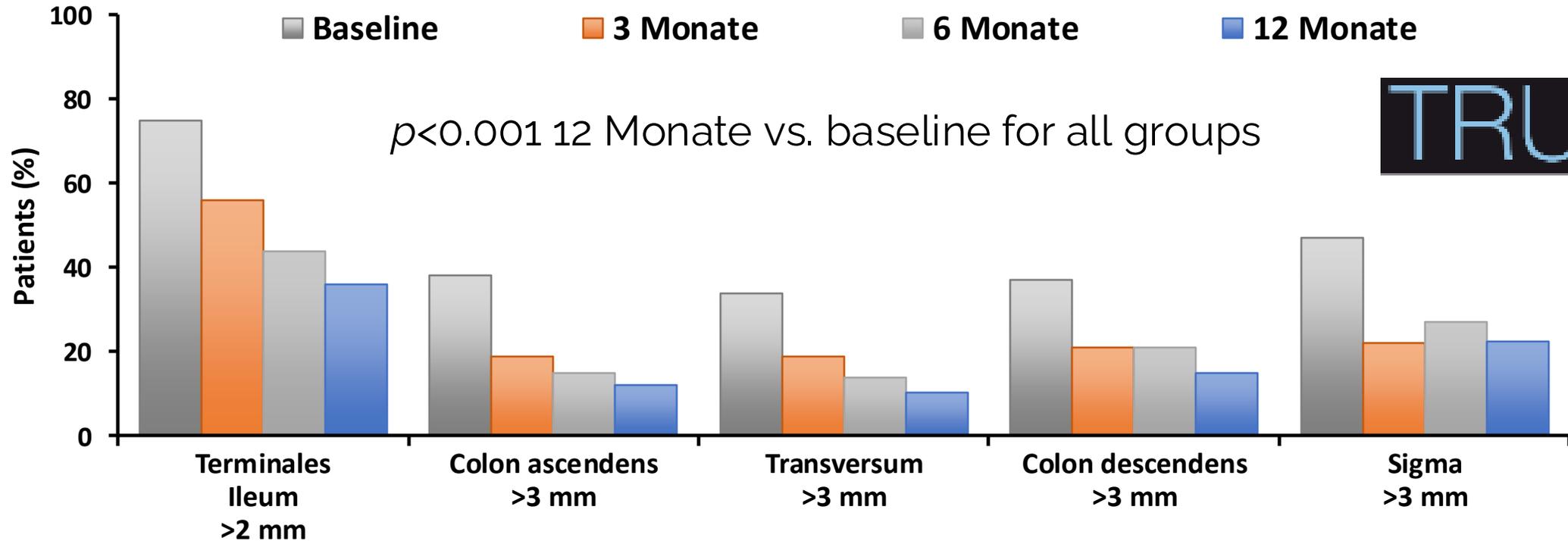
Systematic review and meta-analysis: 1970-2022, with 68 studies for the SR and 23 studies for the MA with 3863 patients

Complication	Exam type	Pooled sensitivity (95% CI)	I ² (%)	χ ²	Pooled specificity (95% CI)	I ² (%)	χ ²
Stricture	B-mode	0.84 (0.81-0.87)	75.3	68.74*	0.89 (0.87-0.90)	82.9	99.56*
	SICUS	0.94 (0.87-0.98)	0.0	2.42	0.95 (0.88-0.98)	55.2	6.7
Fistula	B-mode	0.67 (0.60-0.73)	65.6	34.91*	0.97 (0.96-0.99)	11.0	13.48
	SICUS	0.90 (0.78-0.97)	39.5	3.3	0.94 (0.87-0.98)	0.0	0.61
Inflammatory masses	B-mode	0.87 (0.78-0.93)	0.0	7.65	0.95 (0.92-0.97)	31.6	11.69
	SICUS	0.91 (0.72-0.99)	50.7	4.06	0.97 (0.92-0.99)	46.1	3.71



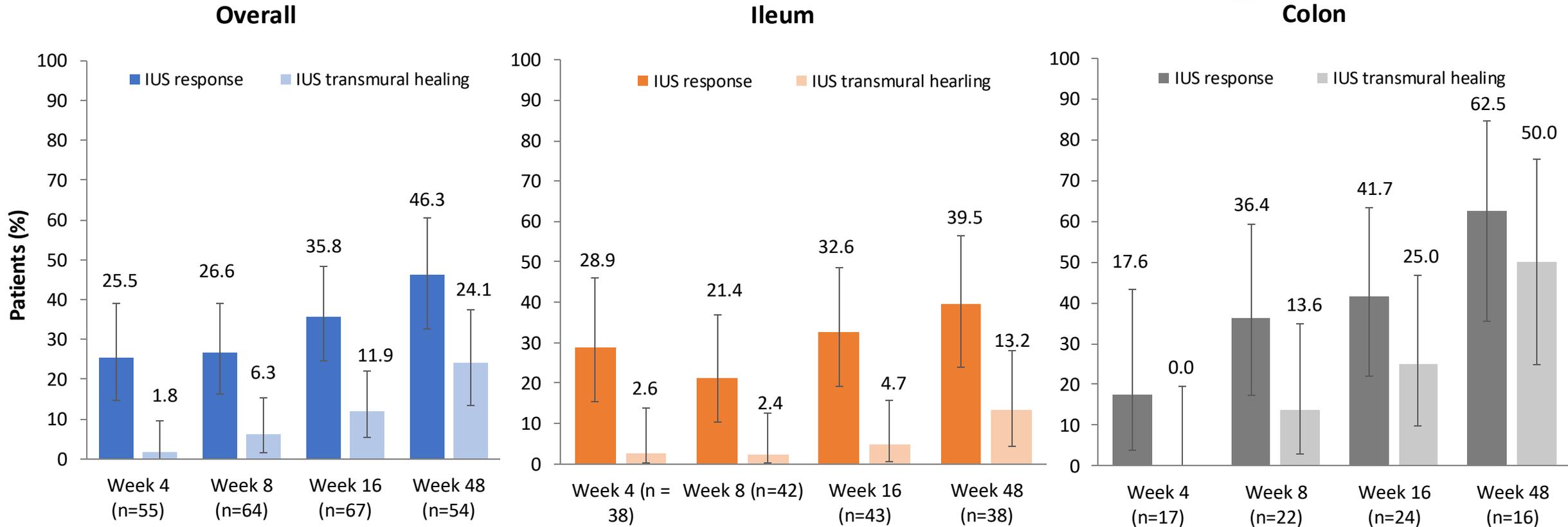
Use of IUS for monitoring Crohn's disease

Percentage of patients with normalization of BWT improves over time



n=243 patients

Transmural IUS Response and Remission in CD with UST



Effect more prominent in the colon compared to the ileum

Multi-Society-Diagnostic Guideline



Journal of Crohn's and Colitis, 2025, 19(7), ijaf106
<https://doi.org/10.1093/ecco-jcc/ijaf106>
Advance access publication 31 July 2025
ECCO Guideline/Consensus Paper



ECCO-ESGAR-ESP-IBUS Guideline on Diagnostics and Monitoring of Patients with Inflammatory Bowel Disease Part 1

Journal of Crohn's and Colitis, 2025, 19(7), ijaf107
<https://doi.org/10.1093/ecco-jcc/ijaf107>
Advance access publication 31 July 2025
Ecco Guideline/Consensus Paper



Part 1: initial diagnosis, monitoring of known inflammatory bowel disease, detection of complications

Torsten Kucharzik^{1,*}, Stuart Taylor², Mariangela Allocca^{3, ID}, Johan Burisch^{4,5,6, ID}, Pierre Ell Marietta Iacucci^{8, ID}, Christian Maaser⁹, Pamela Baldin¹⁰, Gauraang Bhatnagar¹¹, Shomron Ben-Horin¹², Dominik Bettenworth¹³, Mallory Chavannes^{14, ID}, Ann Emma Flanagan^{16, ID}, Frederica Furfaro¹⁷, Giovanni Maconi^{18, ID}, Konstantinos Karmiris^{19, ID}, Amelia Kellar^{20,21, ID}, Isabelle De Kock²², Konstantinos Katsanos²³, Uri Kopylov^{24, ID}, Cathy Olga Maria Nardone^{26, ID}, Nurulamin M Noor^{27, ID}, Kerri Novak^{28, ID}, Paula Borrhalho Nunes²

Patrick van Rhee^{24, ID}, Martina Schmalzer^{29, ID}, Bram Verstoep^{30, ID}, Roger Feakins^{31, ID}

European Society of Gastrointestinal and Abdominal Radiology (ESGAR), the European Society of Pathology (ESP), and the International Bowel Ultrasonography Group (IBUS)

22 recommendations related to IUS

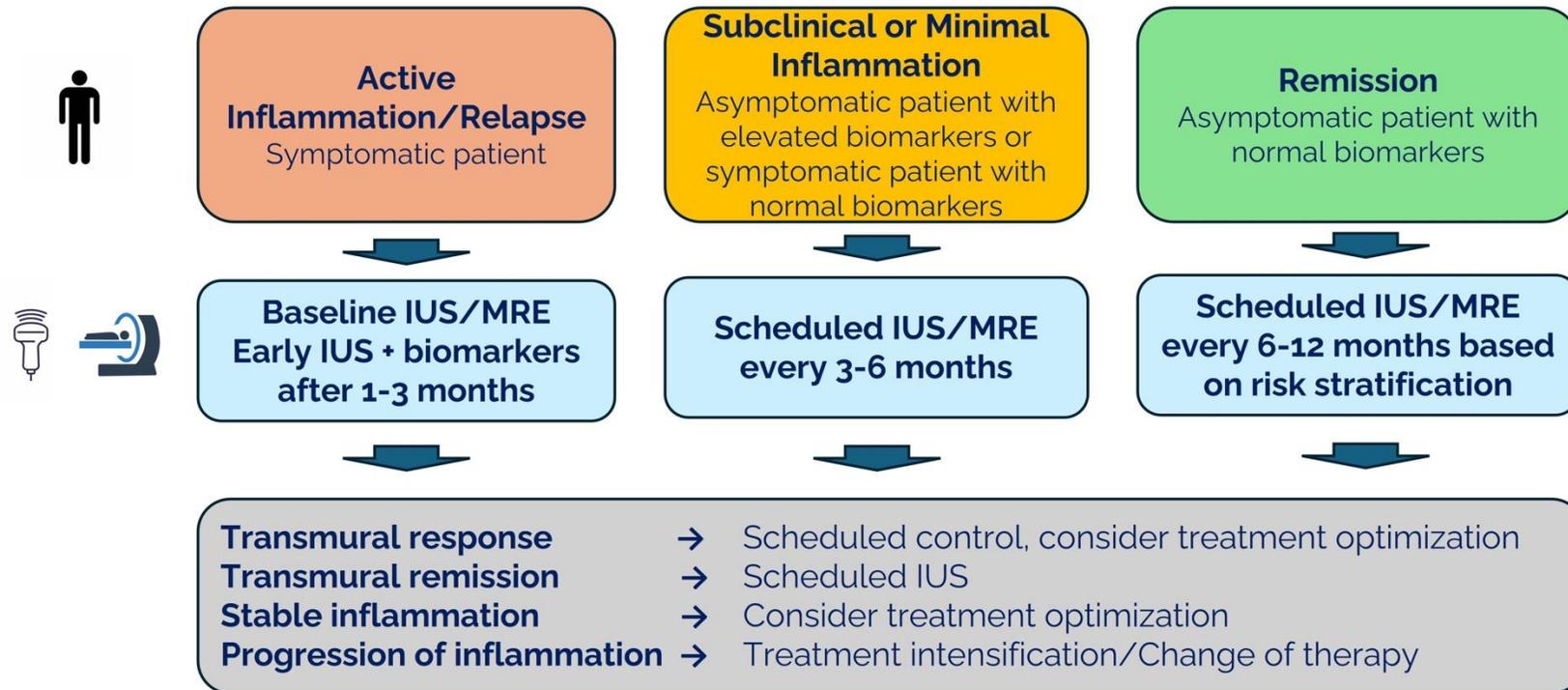
Kucharzik T, Taylor S, Yanai H, Feakins R; JCC 2025
Yanai H, Feakins R, Kucharzik T, Taylor S; JCC 2025

ECCO-ESGAR-ESP-IBUS Guideline on Diagnostics and Monitoring of Patients with Inflammatory Bowel Disease: Part 2

Part 2: IBD scores and general principles and technical aspects

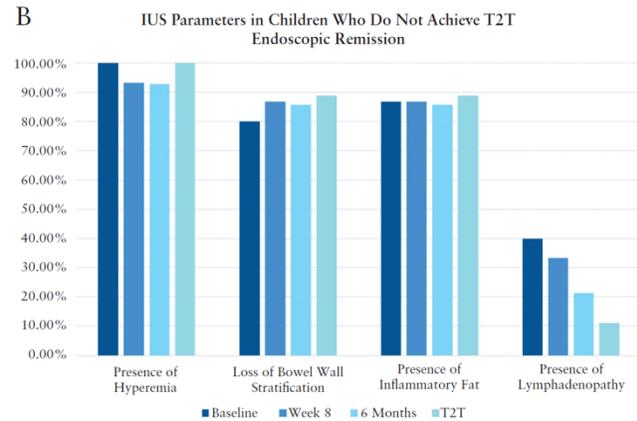
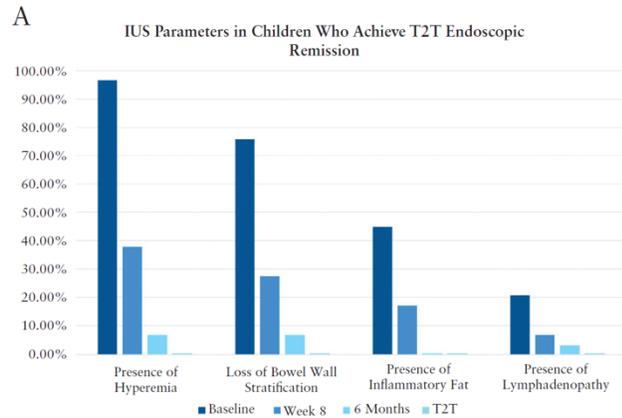
Patrick van Rhee^{24, ID}, Paula Borrhalho Nunes^{25, ID}, Kerri Novak^{26, ID}, Nurulamin M Noor^{27, ID}, Olga Maria Nardone^{28, ID}, Cathy Lu^{29, ID}, Uri Kopylov^{30, ID}, Konstantinos Katsanos^{31, ID}, Isabelle de Kock³², Amelia Kellar^{33,34, ID}, Konstantinos Karmiris³⁵, Giovanni Maconi^{36, ID}, Frederica Furfaro³⁷, Emma Flanagan^{38, ID}, Ann Driessen³⁹, Mallory Chavannes^{40, ID}, Dominik Bettenworth⁴¹, Shomron Ben-Horin⁴², Gauraang Bhatnagar⁴³, Pamela Baldin⁴⁴, Torsten Kucharzik^{45, †}, Stuart Taylor^{46, †}, on behalf of the European Crohn's and Colitis Organisation [ECCO], the European Society of Gastrointestinal and Abdominal Radiology [ESGAR], the European Society of Pathology [ESP], and the International Bowel Ultrasonography Group [IBUS]

Proposed diagnostic algorithm for the use of IUS in Crohn's Disease in clinical practice



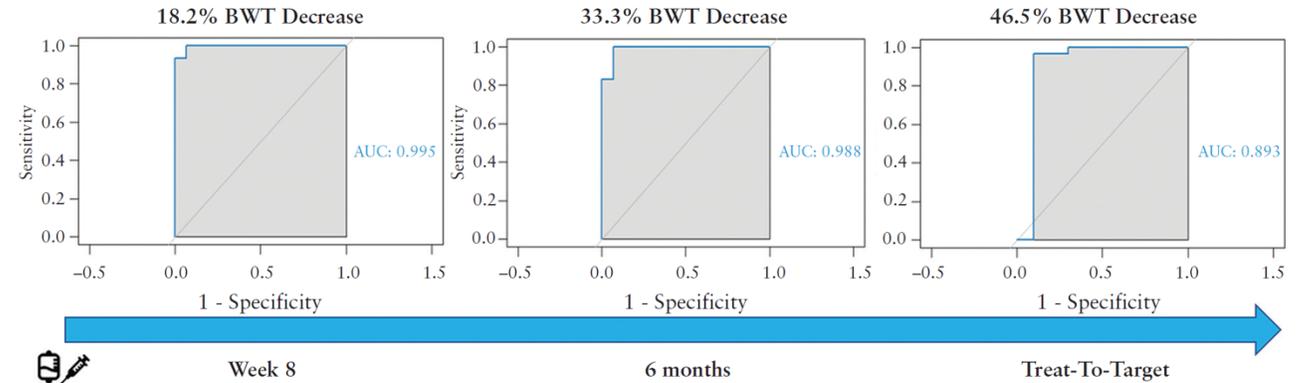
MRE: magnetic resonance enterography
IUS: intestinal ultrasound
PoC: point of care

Can we use IUS to predict outcome in patients with CD?



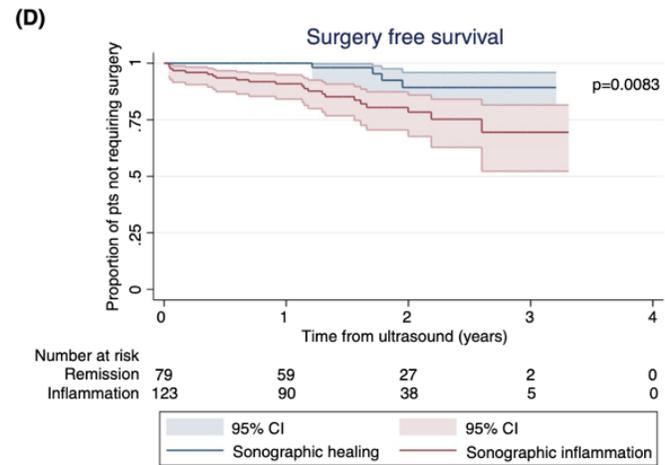
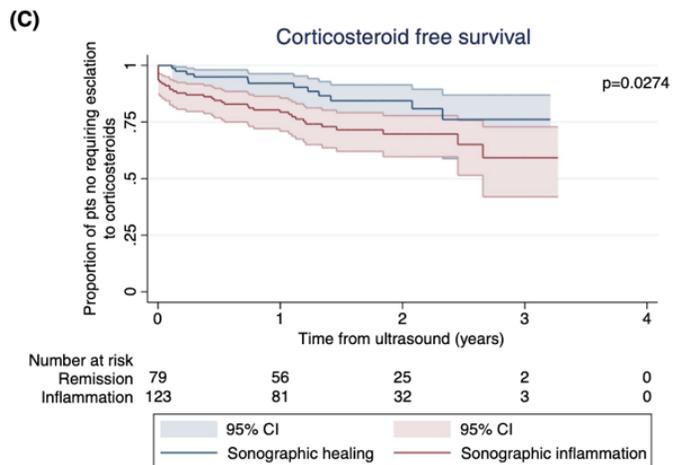
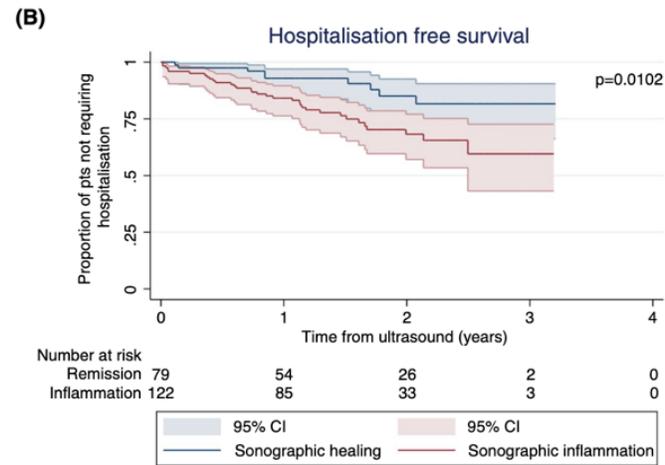
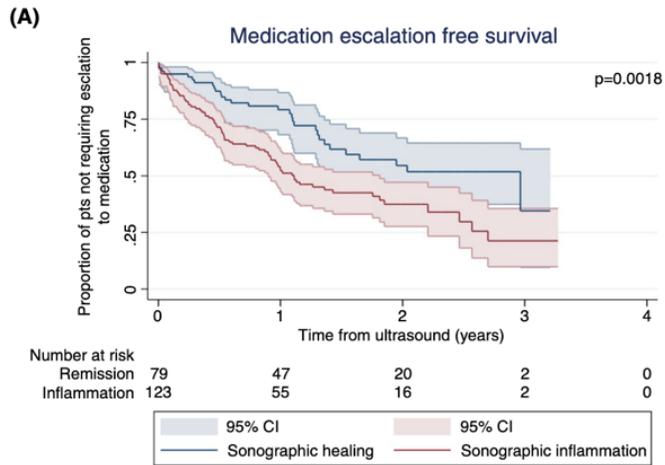
Single center prospective cohort study
n=44 patients with pediatric CD

Percentage Change in Bowel Wall Thickness from Baseline To Predict Endoscopic Remission



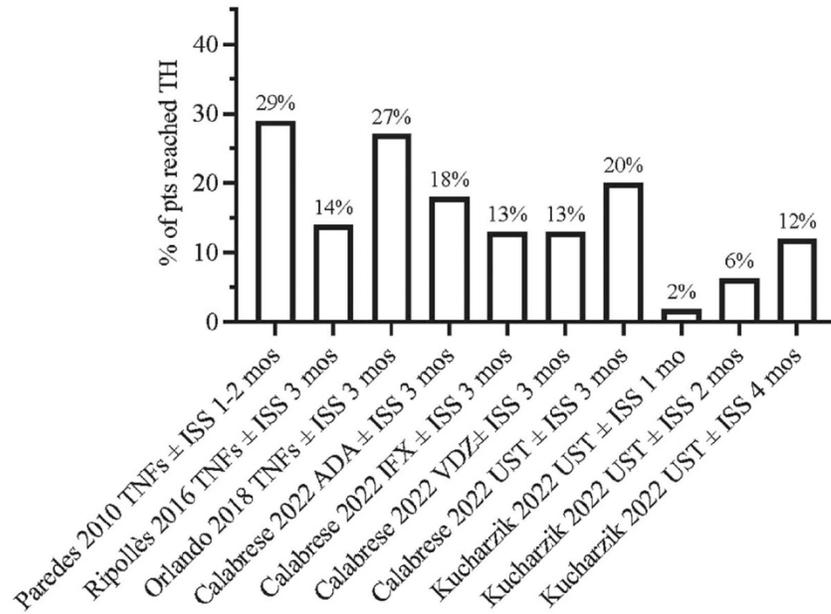


IUS remission in CD is predictive of long-term outcome



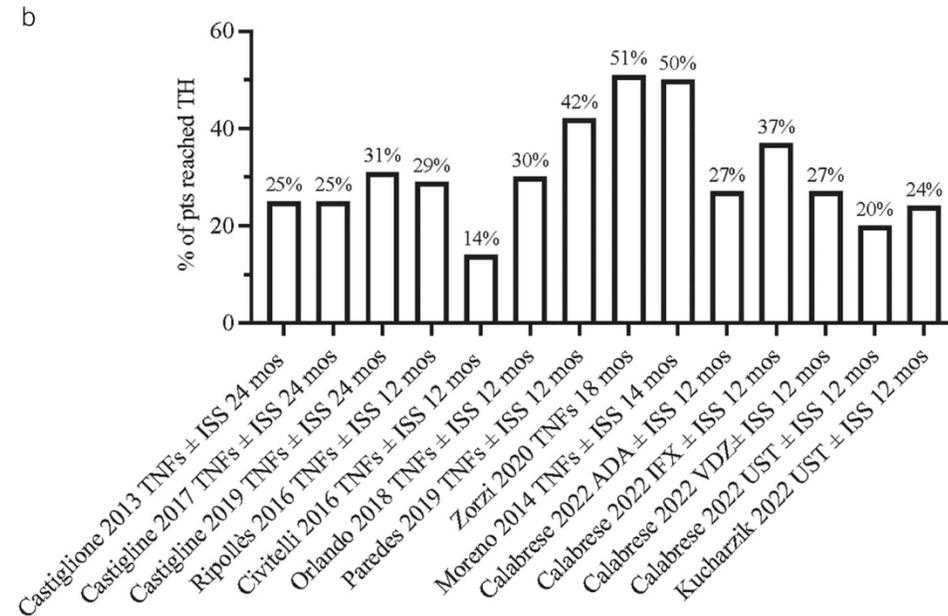
Transmural healing is influenced by treatment duration and by the therapeutic agent

Early IUS assessment at 1-4 months



NNT: 6.1

Delayed IUS assessment bw 12-24 months



NNT: 3.7



Prospects: Treat to target studies in CD with induction and optimization treatment according to IUS findings

Received: 30 November 2020 | First decision: 8 December 2020 | Accepted: 25 January 2021

DOI: 10.1111/apt.16288

AP&T Alimentary Pharmacology & Therapeutics WILEY

Inflammatory Bowel Diseases, 2025, 00, 1–14
<https://doi.org/10.1093/ibd/izaf196>
Review Article - Clinical



Standardisation of intestinal ultrasound scoring in clinical trials for luminal Crohn's disease

Thomas M. Goodsall¹ | Vipul Jairath²
Tran M. Nguyen² | Leonardo |
Britt Christensen³ | Antony B
Peter J. Lewindon⁴ | Christian M
Kirstin M. Taylor³ | Stuart A. Tay
Stephanie R. Wilson⁶ | Emily K. 1

Journal of Crohn's and Colitis, 2025, 19(9), ijaf170
<https://doi.org/10.1093/ecco-jcc/ijaf170>
Advance access publication 18 September 2025
Original Article

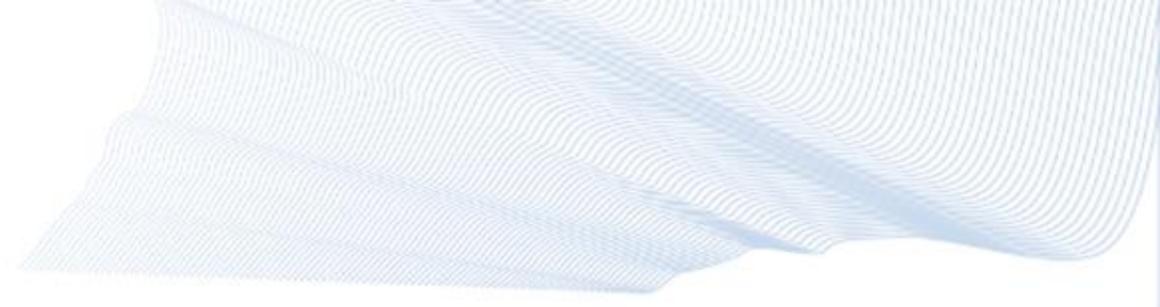
International consensus on the use of intestinal ultrasound in inflammatory bowel disease trials

Mariangela Allocca^{*1}, Vipul Jairath², Bruce E. Sands³, David T. Rubin⁴, Bénédicte Caron⁵, Valérie Laurent⁶, Kerri Novak⁷, Remo Panaccione⁸, Peter Bossuyt⁹, David H. Bruining¹⁰, Axel Dignass¹¹, Iris Dotan^{12,13}, Joel Fletcher¹⁴, Mathurin Fumery¹⁵, Federica Furfaro¹, Jonas Halfvarson¹⁶, Ailsa Hart¹⁷, Taku Kobayashi¹⁸, Noa Krugliak Cleveland⁴, Torsten Kucharzik^{19,20}, Andrea Laghi²¹, Peter L. Lakatos^{22,23}, Rupert W. Leong²⁴, Edward V. Loftus²⁵, Edouard Louis²⁶, Fernando Magro²⁷, Pablo A. Olivera^{28,29}, Shaji Sebastian³⁰, Britta Siegmund³¹, Stephan R. Vavricka³², Stephanie R. Wilson³³, Jaap Stoker³⁴, Jordi Rimola³⁵, Laurent Peyrin-Biroulet⁵, Silvio Danese¹

Integrating Intestinal Ultrasound to Clinical Trials in Patients With Crohn's Disease: Opportunities and Challenges

Vipul Jairath, MD, PhD^{1,2,*}, Shashi Adsul, MD^{3,†}, Mariangela Allocca, PhD⁴, Silvio Danese, MD, PhD⁴, Marla C. Dubinsky, MD⁵, Marcelo Freire de Oliveira, MD³, en Kucharzik, MD, PhD⁷, Kerri L. Novak, MD⁶, el Romo Bautista, MD³, Bruce E. Sands, MD⁵, 'ilkens, MD, PhD⁹, Christian Maaser, MD, PhD⁷





IUS in Crohn's disease – **What is already known?**

- IUS can be used accurately for initial diagnosis and relapse in CD to determine disease activity and location
- IUS can be used for accurate and frequent disease follow up in CD
- Early IUS can predict response to treatment
- Transmural healing on IUS is associated with improved mid- and long-term outcomes



IUS in Crohn's disease – Research gaps and Unmet needs

- CD IUS scores for responsiveness and prediction of outcomes need to be developed and validated
- Treat to target studies in CD with induction and optimization treatment according to IUS findings are required
- Validated IUS parameters for response and non-response in CD
- IUS for assessing disease severity in CD
- Differentiation of inflammation and fibrosis by IUS in CD lesions
- Cost-effectiveness data for IUS in comparison to MRE and endoscopy
- Global implementation of IUS to improve IBD care
- ...



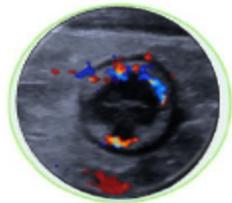
Future of IUS in CD



**Assessment of bowel damage in CD
modification-trials**



**Definition of targets based on IUS
imaging**



**Novel imaging techniques: stiffness
(elastography), motility, handhelds**



Artificial intelligence



international bowel
ULTRASOUND GROUP



Thank you for your attention!