international bowel ULTRASOUND GROUP

IBUS HYBRID module 1

7-8TH NOVEMBER, 2025
MILAN, ITALY

IUS 2025 What hot in IUS in UC?

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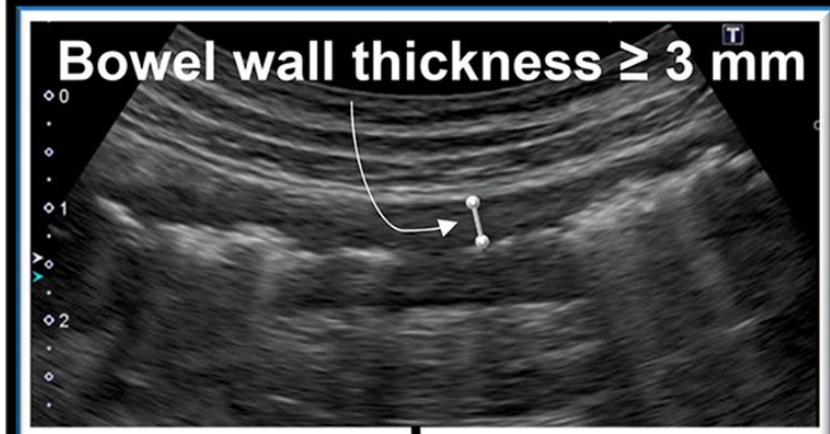
Disclosures

Speaker, consultant or advisory board member

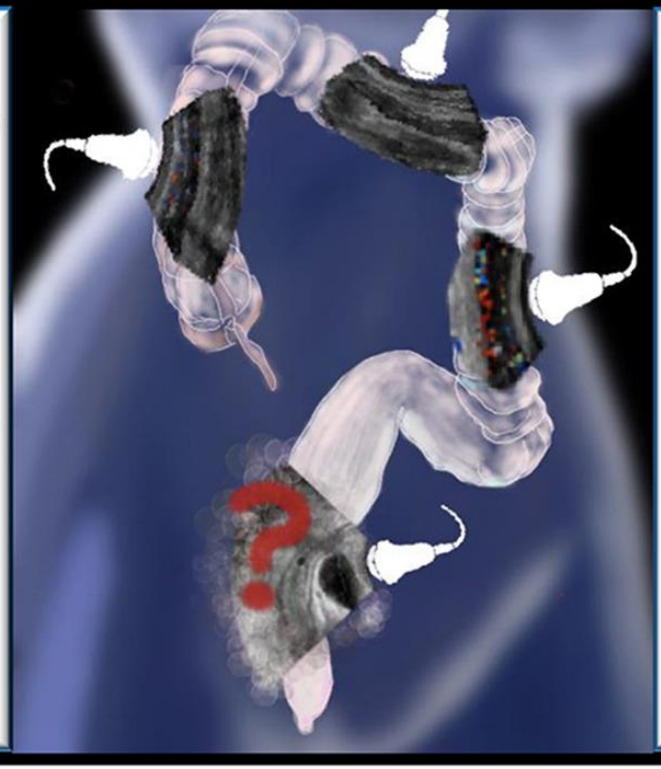
for Alfa Sigma, AbbVie, Celltrion, Eli Lilly, Ferring, Galapagos, Gilead, Johnson & Johnson, MSD, Pfizer,Takeda, Galapagosand Takeda

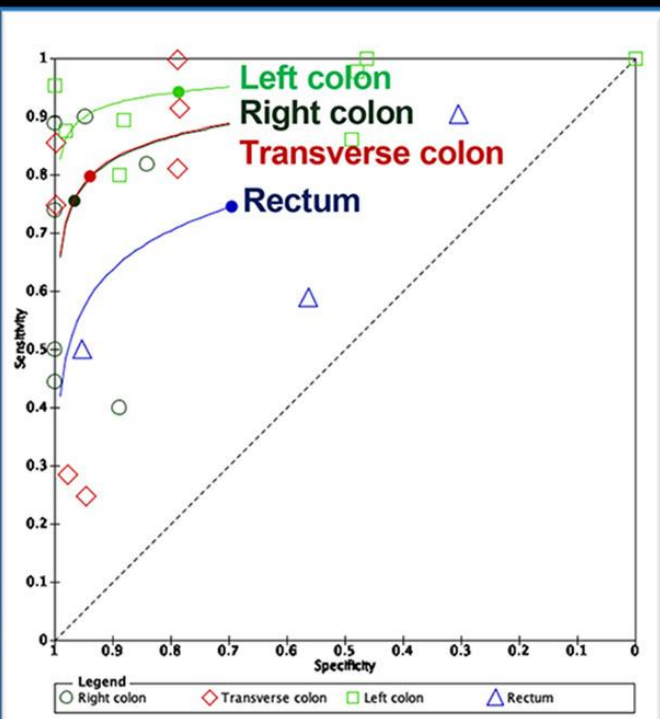
IUS is Accurate in Detecting Inflammation

Systematic review and meta-analysis: Accuracy of ultrasound for the evaluation of colorectal segment in inflammatory bowel disease



Diagnostic accuracy detecting active disease in inflammatory bowel disease were high overall colon, but lower in the rectum.



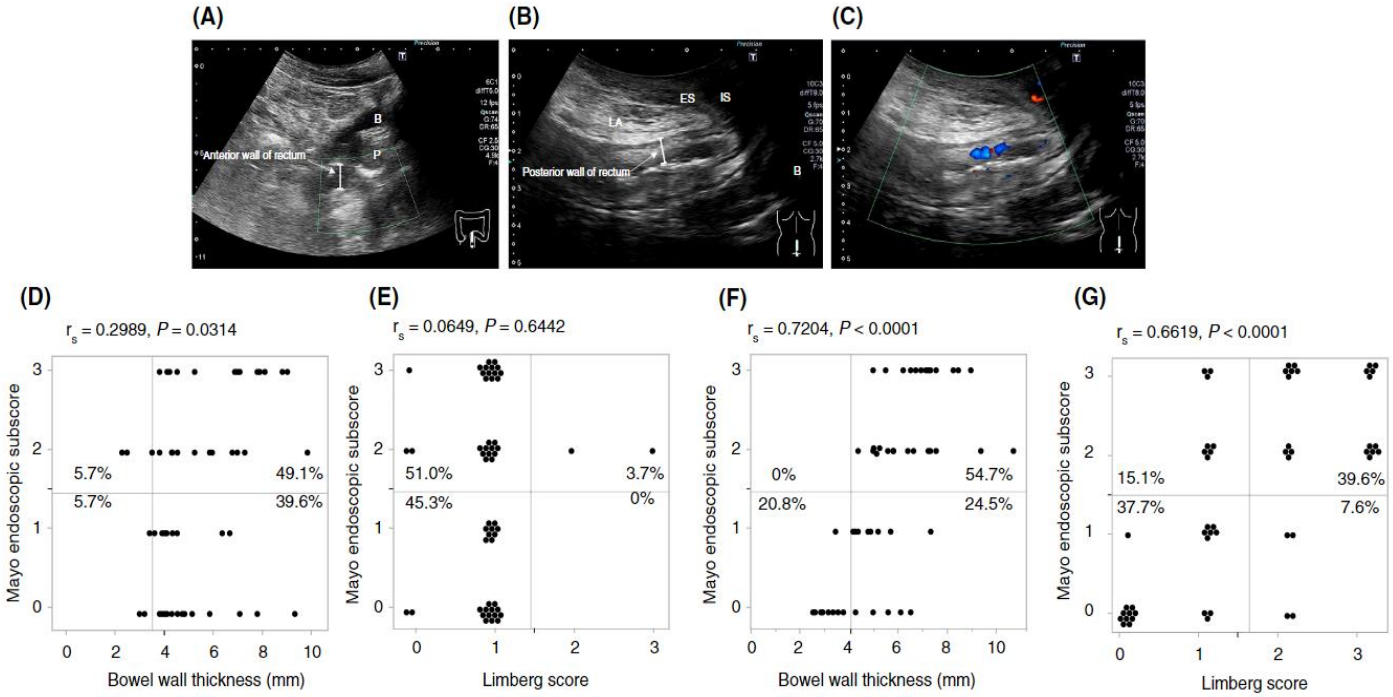


504 patients, 420 with UC

Sagami et al, CGH 2021

TPUS is accurate in detecting proctitis

Single-center cross-sectional cohort: 53 consecutive patients with UC going through colonoscopy, TPUS and biopsy sampling



BWT ≤ 4 mm predicted:

Endoscopic healing (AUC = 0.90)
Histological healing (AUC = 0.87–0.89)

***BWT** and **Limberg score** correlated well with rectal **MES** and **histological indices**.*

Sagami, Aliment Pharmacol Ther. 2020

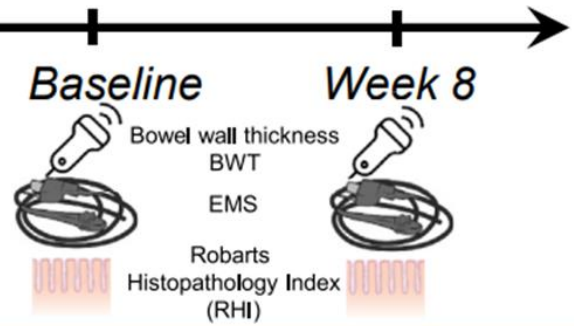
IUS can Define Endoscopic Response & Remission in UC

Intestinal ultrasound is accurate to determine endoscopic response and remission in patients with moderate to severe ulcerative colitis

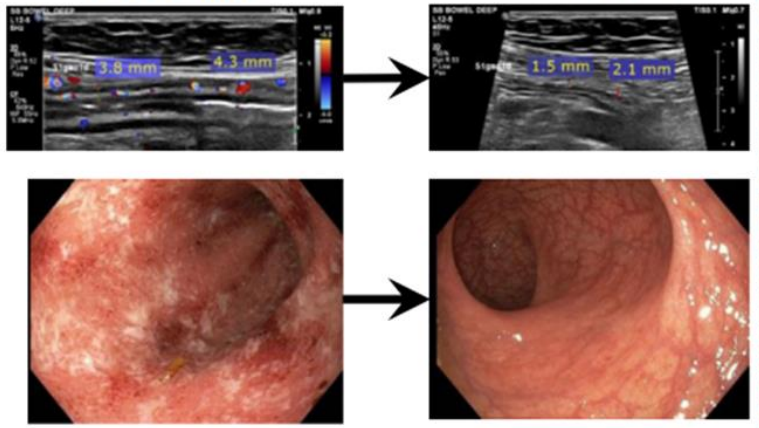
Cohort and design

n=30 starting tofacitinib

endoscopic Mayo score (EMS) ≥ 2



Results



Remission EMS=0 } **BWT** 2.8 mm

Improvement EMS≤1 } 3.9 mm

Response EMS≥1 decrease } 32% decrease

ρ=0.49: RHI vs BWT

Gastroenterology

ACCURATE

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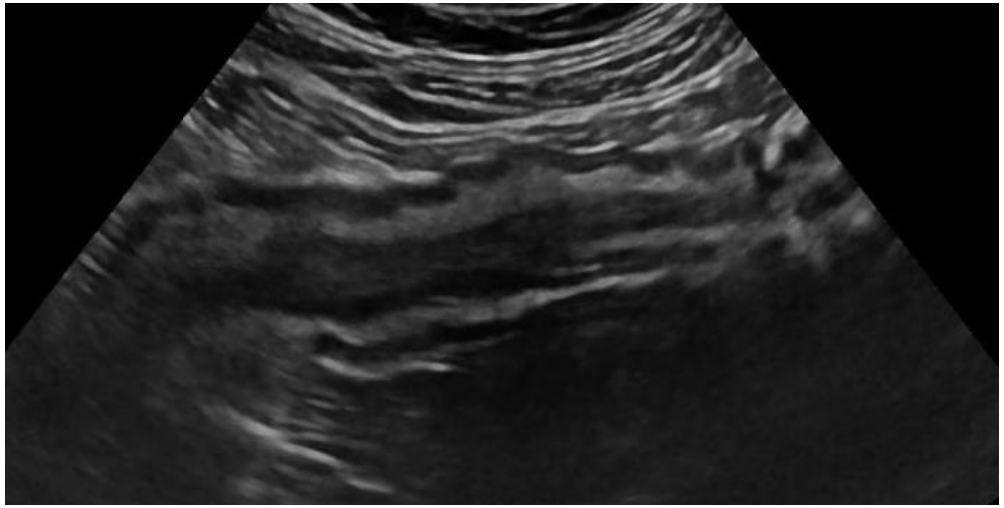
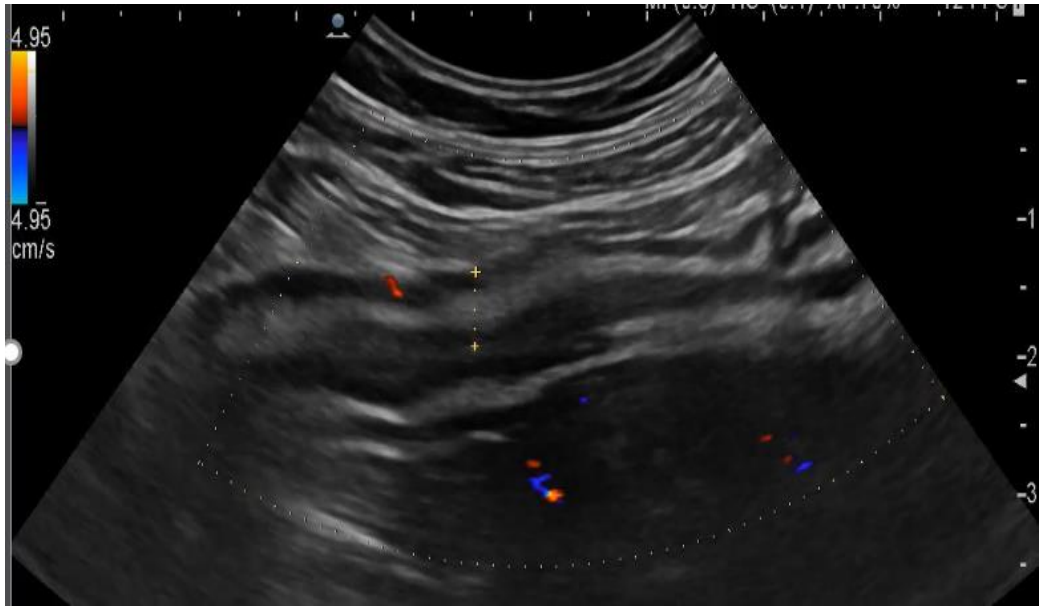
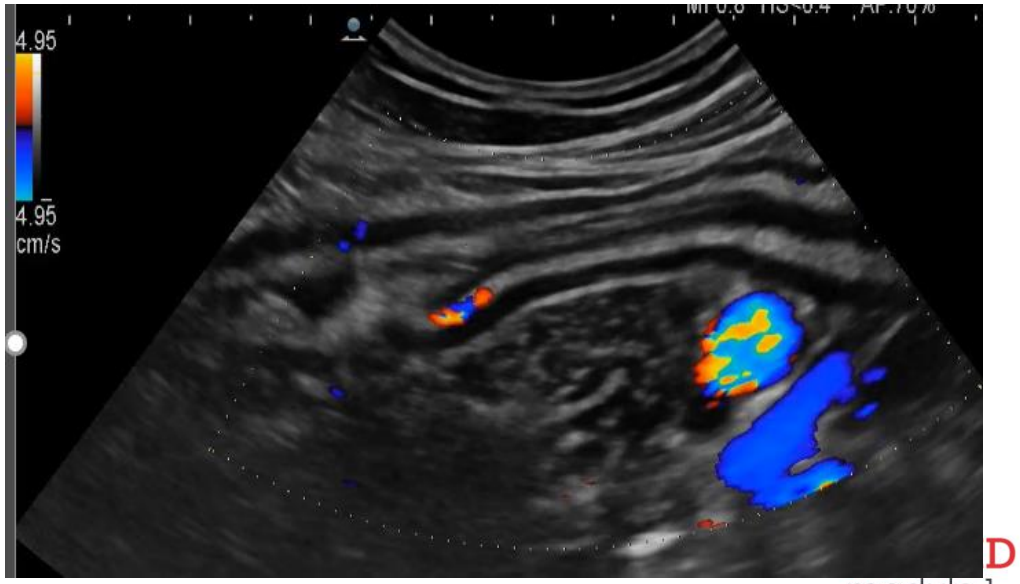



4.95
4.95
cm/s


4.95
4.95
cm/s

Strong Inter-Observer Agreement of an Expert Panel for Intestinal Ultrasound in Ulcerative Colitis

Table 1. Overview of IUS parameters, techniques and cut-off values

IUS parameter	Technique/categories	Pathologic
BWT	[2 × longitudinal plane + 2 × cross-sectional plane]/4	BWT > 3.0 mm
CDS	0: absent; 1: small spots [single vessels] within the wall; 2: long stretches within the wall; 3: long stretches extending into the mesentery	Grade 2 or 3
BWS	0: preserved; 1: uncertain [in doubt of disturbance of wall layers]; 2: focal loss [< 3 cm in length within the SC]; 3: extensive loss [≥ 3 cm in length within the SC]	Grade 2 or 3
Loss of haustration	0: preserved; 1: uncertain [in doubt of complete loss of haustrations]; 2: loss	Grade 2
i-fat	0: absent; 1: uncertain [in doubt of hyperechogenicity around the segment]; 2: present	Grade 2
Lymph nodes	0: absent; 1: present and < 5 mm in shortest axis; 2: present and 5–9.9 mm in shortest axis; 3: present and ≥ 10 mm in the shortest axis	Undetermined

- **Inter-observer agreement was almost perfect for BWT** [ICC: 0.96) and substantial for CDS [κ = 0.63]
- Agreement was moderate for presence of lymphnodes [κ = 0.41] and fair for presence of i-fat [κ = 0.36], BWS [κ = 0.24] and loss of haustrations [κ = 0.26]
- **Substantial agreement for presence of disease activity on IUS** [κ = 0.77] and **almost perfect agreement for disease severity** [ICC: 0.93]

RELIABLE

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The predictive role of IUS in assessing treatment response in UC

49 UC patients starting biologics

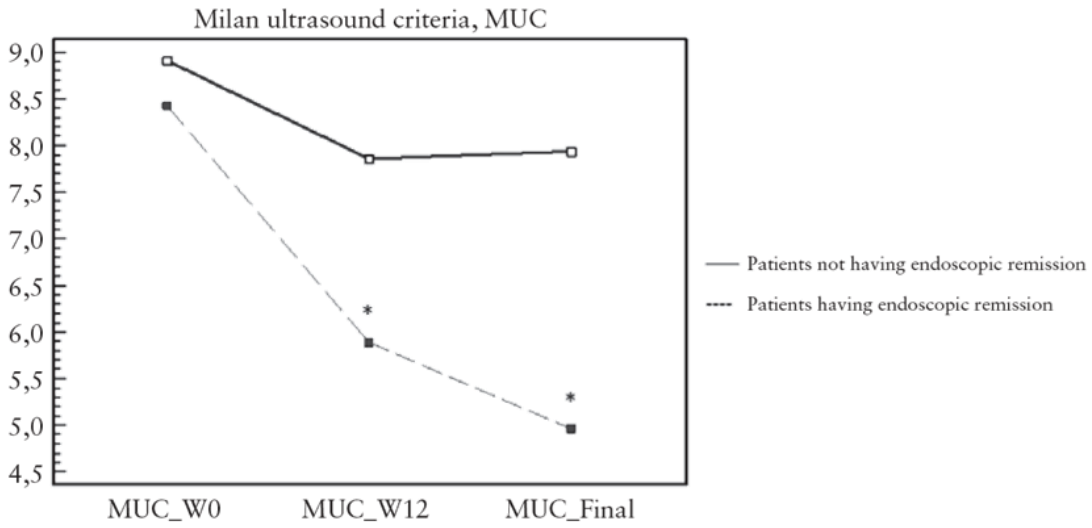

Table 3. Influence of non-invasive tools at week 12 on the risk of endoscopic improvement [MES ≤ 1] at reassessment

Parameter	Univariable analysis		Multivariable analysis	
	OR [95% CI]	*p*	OR [95% CI]	*p*
MUC ≤ 6.2	7.0 [1.84–26.61]	***0.0043***	5.80 [1.49–22.47]	***0.010***
FC, µg/g	6.0 [1.52–23.67]	***0.010***	—	—
<50	0.44 [0.07–2.51]	0.35		
50–250	0.30 [0.08–1.12]	0.074		
>250				
CRP < 5 mg/L	2.03 [0.51–8.00]	0.31	—	—
PMS ≤ 2	3.54 [0.97–12.90]	0.054	—	—

Abbreviations: MES, Mayo endoscopic score; MUC, Milan ultrasound criteria; FC, faecal calprotectin; CRP, C-reactive protein; PMS, partial Mayo score. Significant *p*-values are highlighted in bold and italics.

IUS at 3 months (MUC < 6.2) predicts endoscopic response at 1 year.

Allocca, et al JCC 2023

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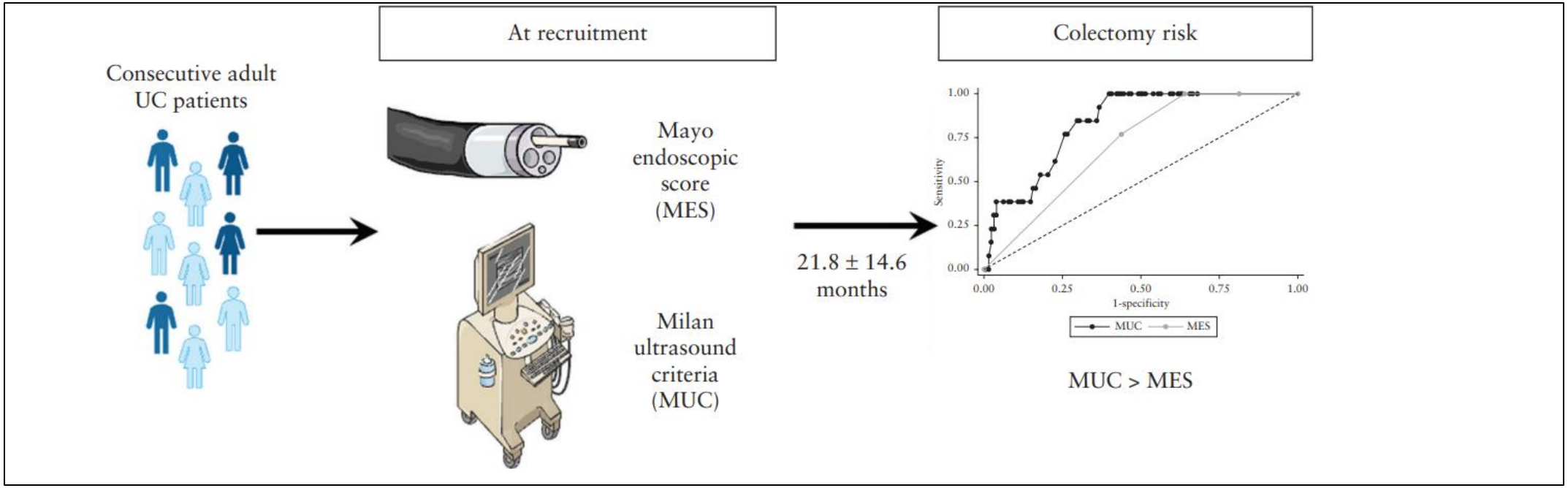
Superior predictive value of transmural over endoscopic severity for colectomy risk in ulcerative colitis

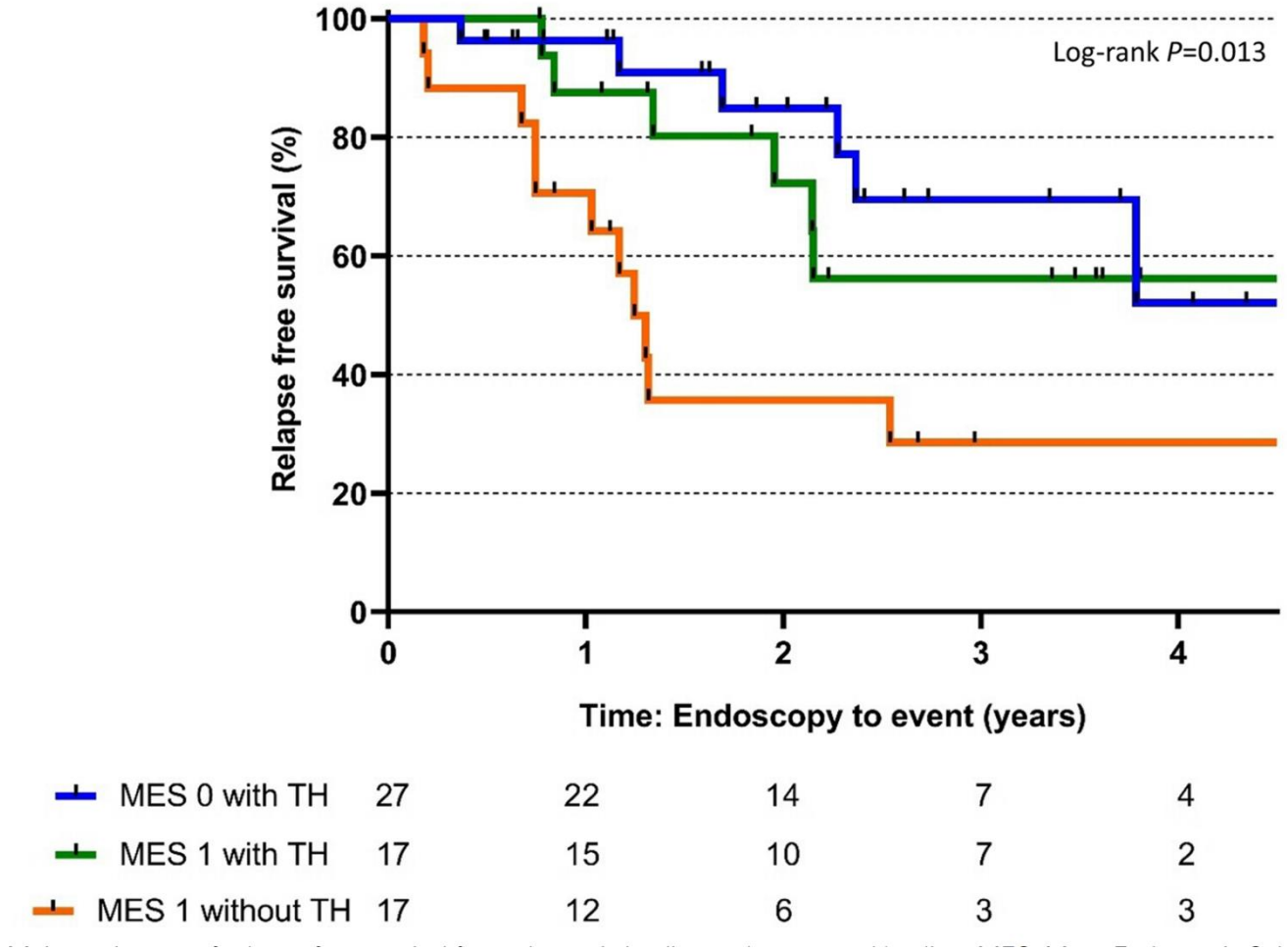


- ***The MUC score predicted the need for colectomy***

- ***MUC demonstrated higher accuracy than MES*** *(area under ROC curve [AUROC] 0.83, 95% CI: 0.75–0.92 vs 0.71, 95% CI: 0.62–0.80)* ***and better performance for predicting colectomy*** *[p = 0.02].*

The optimal MUC cut-off value for predicting colectomy was 7.7

Transmural healing outperforms endoscopic healing in UC



Transmural healing (BWT<3 mm) by IUS is a **strong, noninvasive marker** of durable remission, outperforming **Endoscopic healing** for long-term risk stratification.

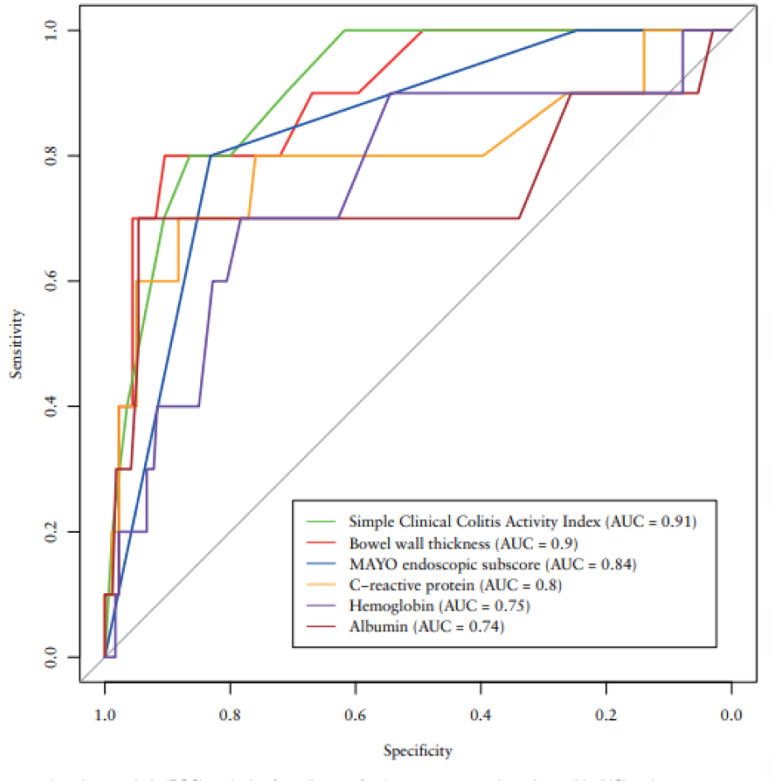
Retrospective study: UC on stable maintenance therapy with EH (MES≤1)

Lim CT et al.. J Crohns Colitis. 2025

Predictive Value of IUS in Early UC

Prospective population-based cohort of newly diagnosed E2/E3 UC patients:

193 patients were followed up with symptoms, biochemical parameters, IUS (baseline, 3M and 12M) and endoscopy.



IUS was a predictor of colectomy within the first 3M with **BWT >6 mm** as the optimal cut-off (OR 38, 95% CI 8-270, P < .0001)

At **3M, 59% of patients achieved TMR:**
TMR was associated with:

- higher rates of steroid-free clinical remission in all subsequent follow-ups
- reduced need for steroids during follow-up (6% vs. 19%, P=0.036).

Madsen GR *et al. J Crohn Colitis 2025*

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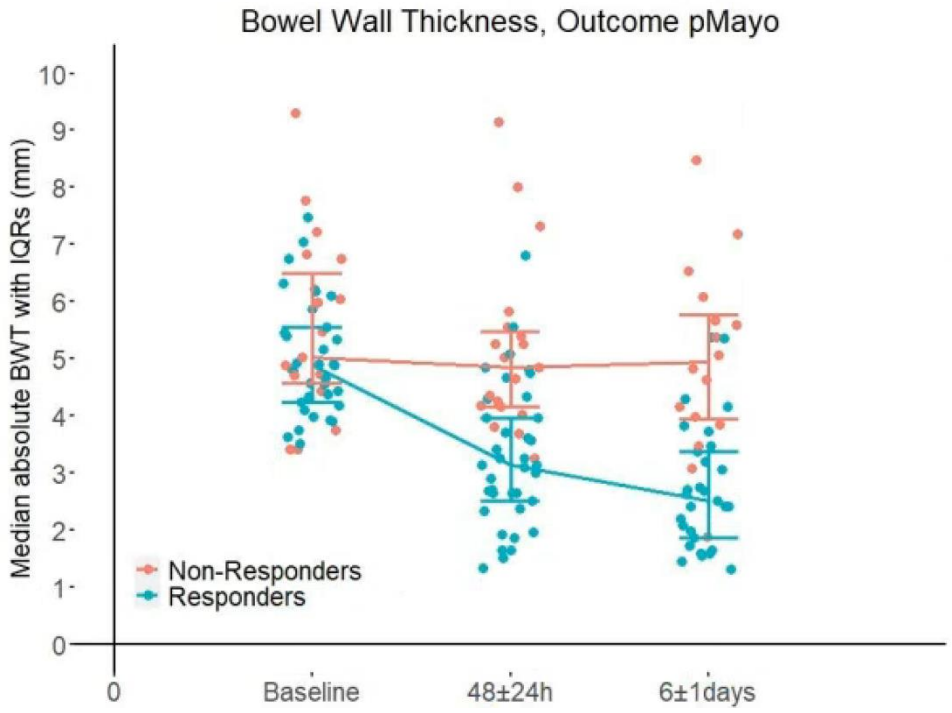
Early IUS Predicts Steroid Response in ASUC

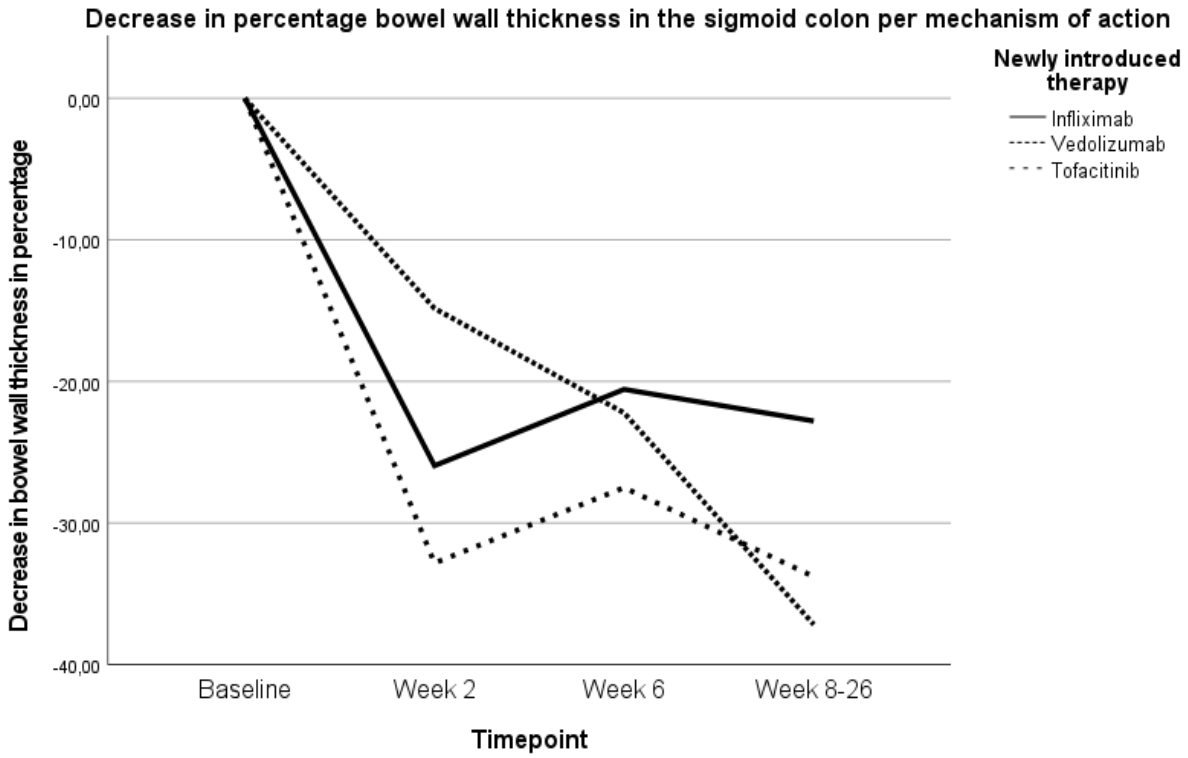
Prospective cohort of 56 ASUC patients starting on ic CS, IUS at baseline, 48h (+/-24h) and 6 days



- **Significant difference between responders and non-responders at day 2 (**median BWT 3.1 mm vs 4.9mm; p<0.0001)
- **≤20% reduction** had a sensitivity of 84.2% (95%CI 60.4, 96.6%) and a specificity of 78.4% (61.8, 90.2%) *for determining non-response (*AUC 0.85)

Ilvemark F *et al. J Crohn Colitis 2022*

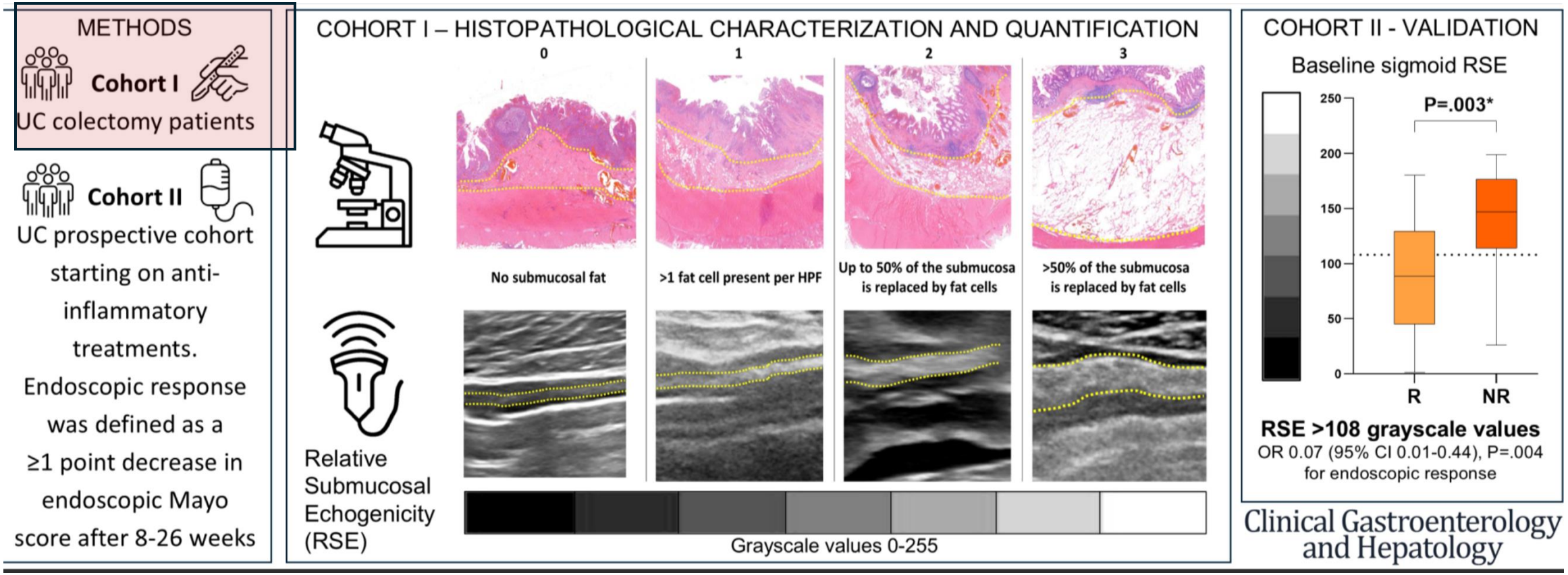
Early Prediction of Endoscopic Response: DIRECT-UC study



- At W6, **BWT≤3.0 mm** predicted endoscopic remission
- **Submucosal thickness** at W6 predicted endoscopic remission (OR: 0.09, 95%CI: 0.01-0.65, p=0.018) and improvement (OR: 0.14, 95%CI: 0.03-0.75, p=0.02) and was most sensitive to change
- IUS response was drug specific

De Voogd F *et al. Inflamm Bowel Dis 2023*

Submucosal Echogenicity is a Predictor of Non-response in UC



Pruijt *et al. J Crohns Colitis 2025*

Submucosal Echogenicity is a Predictor of Non-response in UC

METHODS

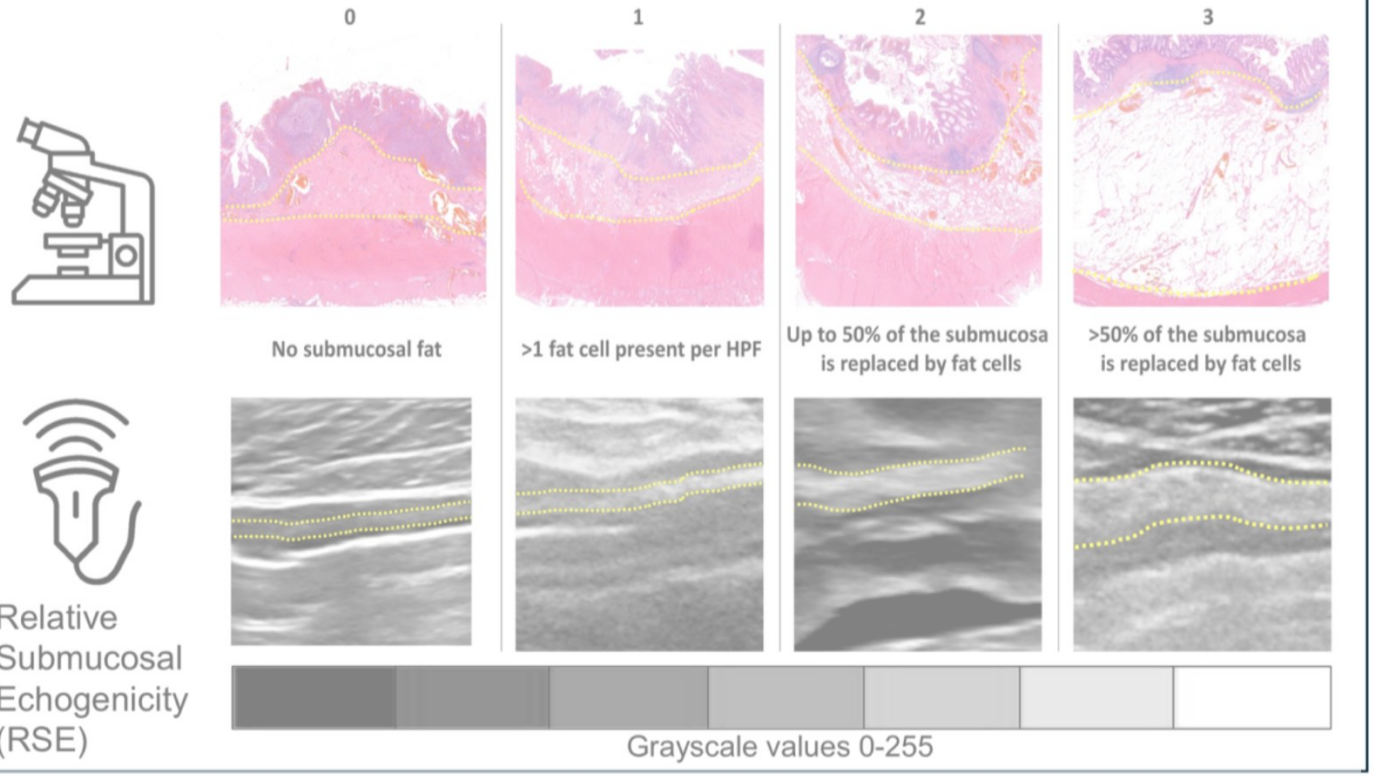
Cohort I

UC colectomy patients

Cohort II

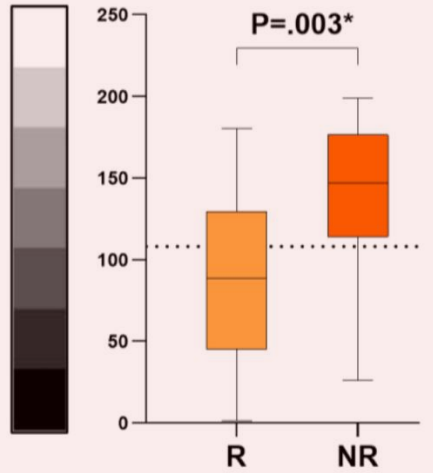
UC prospective cohort starting on anti-inflammatory treatments. Endoscopic response was defined as a ≥1 point decrease in endoscopic Mayo score after 8-26 weeks

COHORT I – HISTOPATHOLOGICAL CHARACTERIZATION AND QUANTIFICATION



COHORT II - VALIDATION

Baseline sigmoid RSE



RSE >108 grayscale values

OR 0.07 (95% CI 0.01-0.44), P=.004 for endoscopic response

Clinical Gastroenterology and Hepatology

Pruijt *et al. J Crohns Colitis 2025*

PREDICTIVE

IUS scores proposed for the assement of IUS disease activity

	BWT	IBUS-SAS	MUC	UC-IUS	US Score	Hata index	Civitelli index
MES	0.67	0.72	0.73	0.76	0.63	0.67	0.77
UCEIS	0.62	0.73	0.74	0.77	0.67	0.70	0.79
PMS	0.66	0.71	0.72	0.75	0.71	0.70	0.75
CRP	0.37	0.38	0.36	0.40	0.32	0.31	0.34
FC	0.49	0.51	0.55	0.55	0.48	0.55	0.57

good agreement with endoscopic disease activity

QUANTIFIABLE

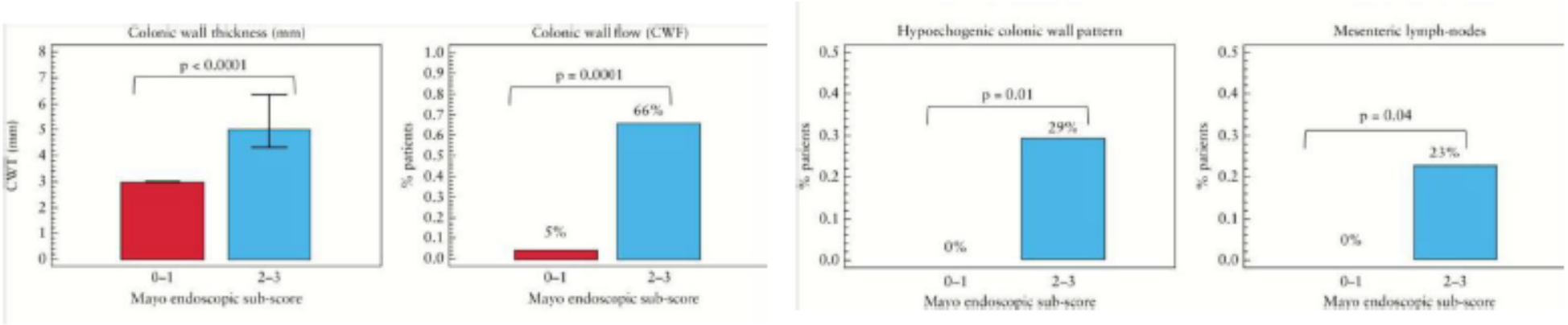
Adapted from Innocenti T et al. J Crohns Colitis. 2025 PMID: 40127042.

Milan Ultrasoud criteria (MUC score)

In a prospective cohort 53 patients with UC going through endoscopy and IUS were assessed by two independent readers; BWT and CDS were independent predictors of endoscopic activity (eMayo 0-1 vs 2-3).

- **MUC > 6.2** identifies EMS > 1
- **MUC ≤ 4.3** identifies EMS =0

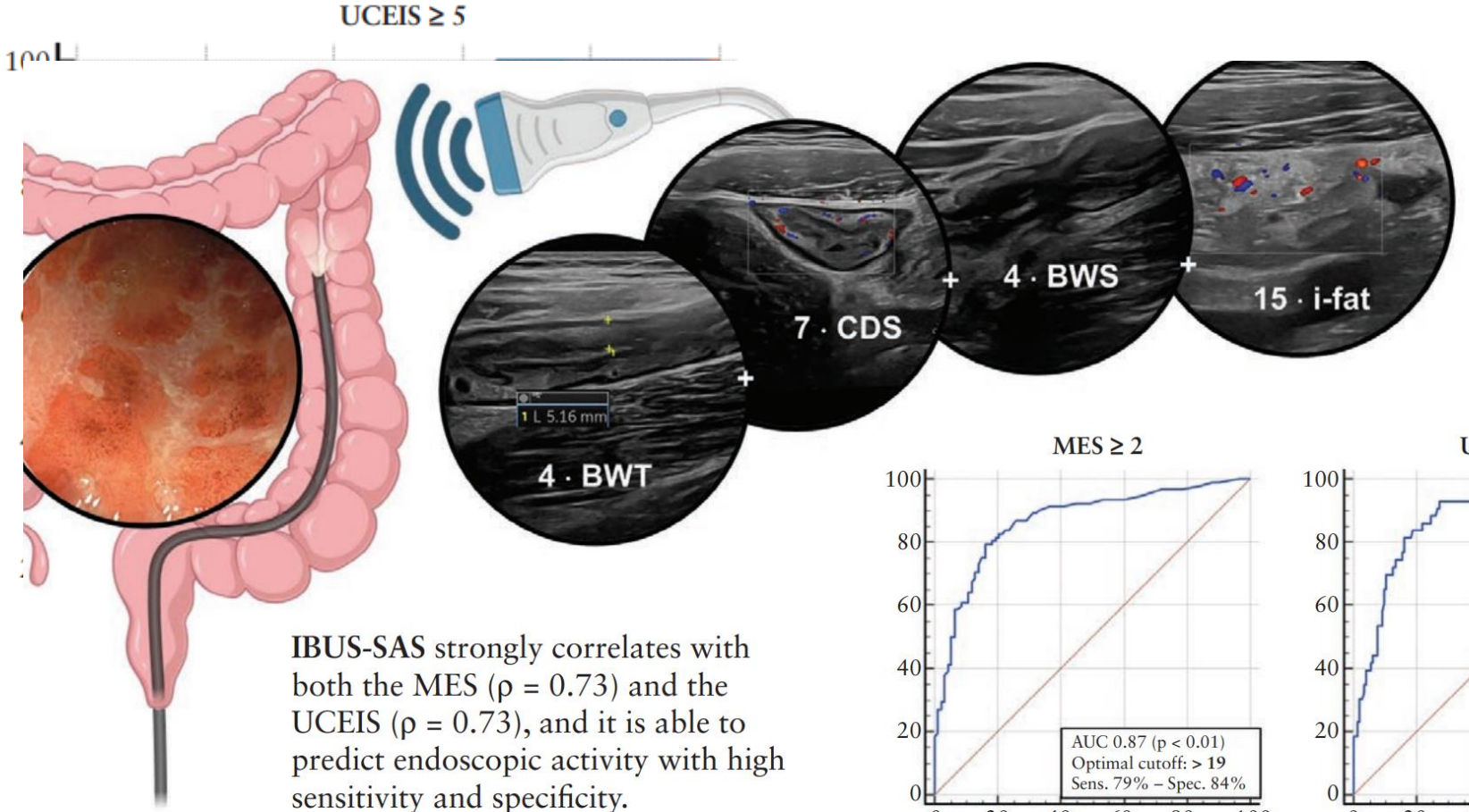
MUC: 1.4 x CWT [mm] + 2 × CWF



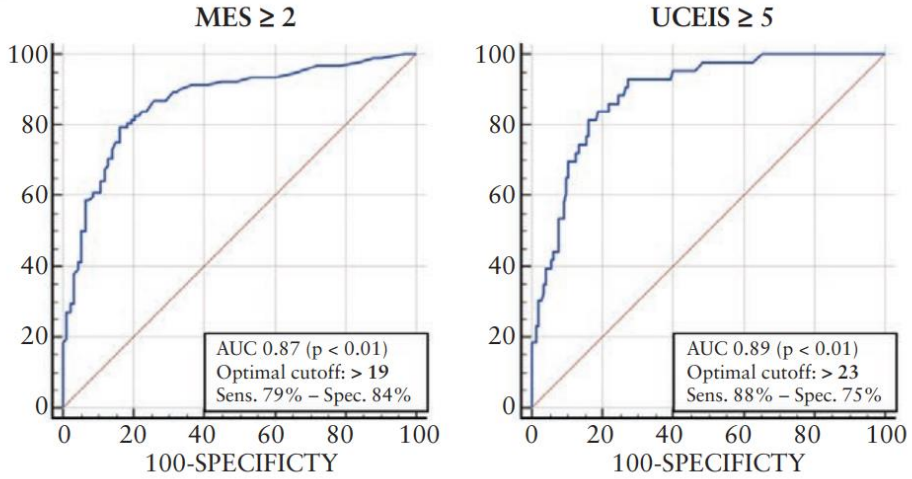
Allocca M et al. J Crohns Colitis 2018; Allocca M *et al. UEG Journal* 2021; Allocca M *et al. J Crohns Colitis* 2023

IBUS-SAS in UC: comparison with other IUS scores

QUANTIFIABLE



IBUS-SAS strongly correlates with both the MES (ρ = 0.73) and the UCEIS (ρ = 0.73), and it is able to predict endoscopic activity with high sensitivity and specificity.



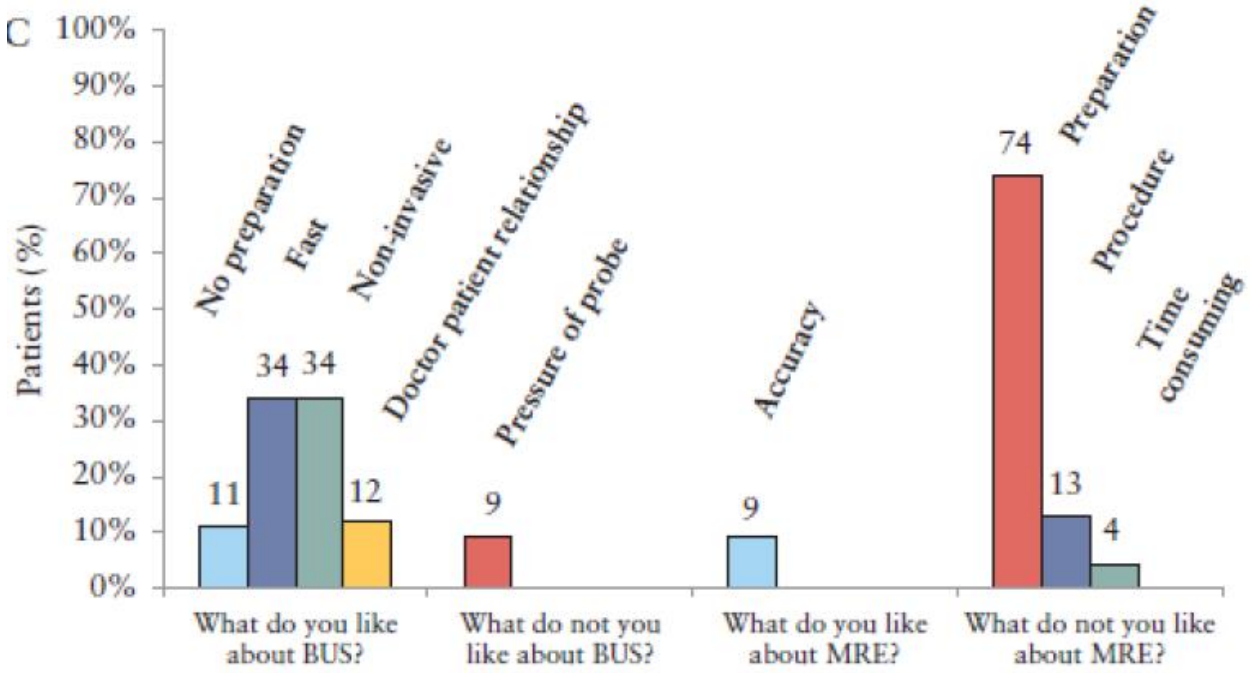
%CI
3–0.93
5–0.94
6–0.94
7–0.88
0–0.90
6–0.95

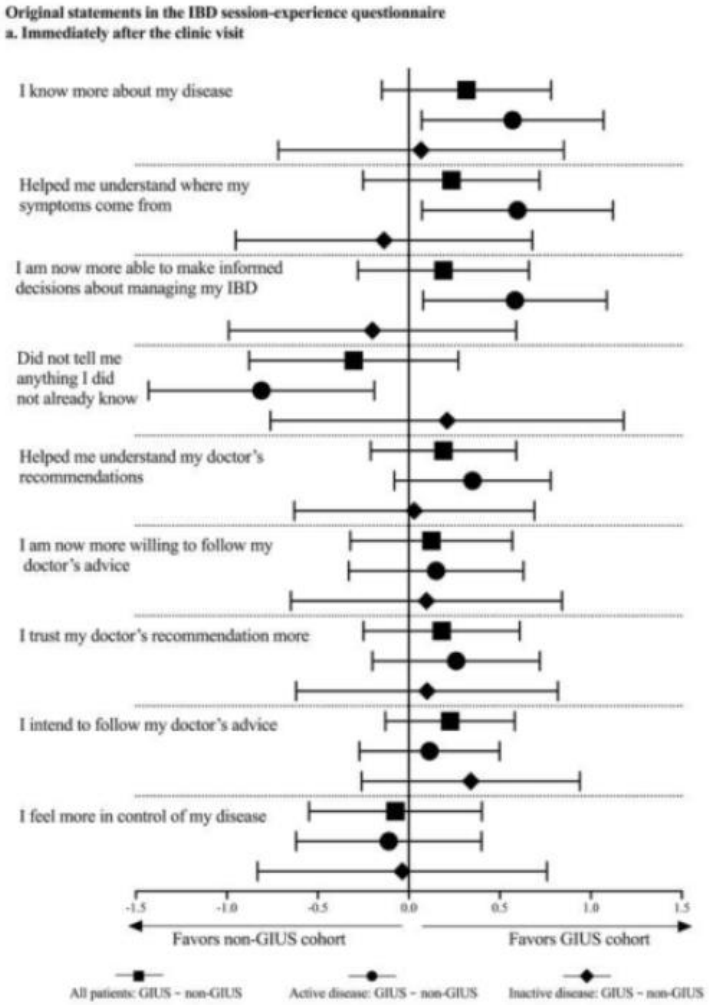
all scores performed similarly in assessing endoscopic activity

Innocenti T et al. J Crohns Colitis. 2025 PMID: 40127042.

Patients prefer Intestinal ultrasound

ACCEPTED





Several studies have shown that it is the technique preferred by patients..

Take home messages

Intestinal ultrasound in UC is..

An Accurate, quantifiable, predictive and accepted technique..

Take home messages

Intestinal ultrasound in UC is..

An Accurate, quantifiable, predictive and accepted technique..

Useful for diagnostic suspicion or confirmation

Useful for monitoring treatment response

Allows dynamic assessment of disease activity

In selected cases, it can replace colonoscopy

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Thank you