



international bowel
ULTRASOUND GROUP

What's new in IUS in UC

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IBUS Advanced Ultrasound Workshop – Module 3

DDW, San Diego, US, May 5th, 2025

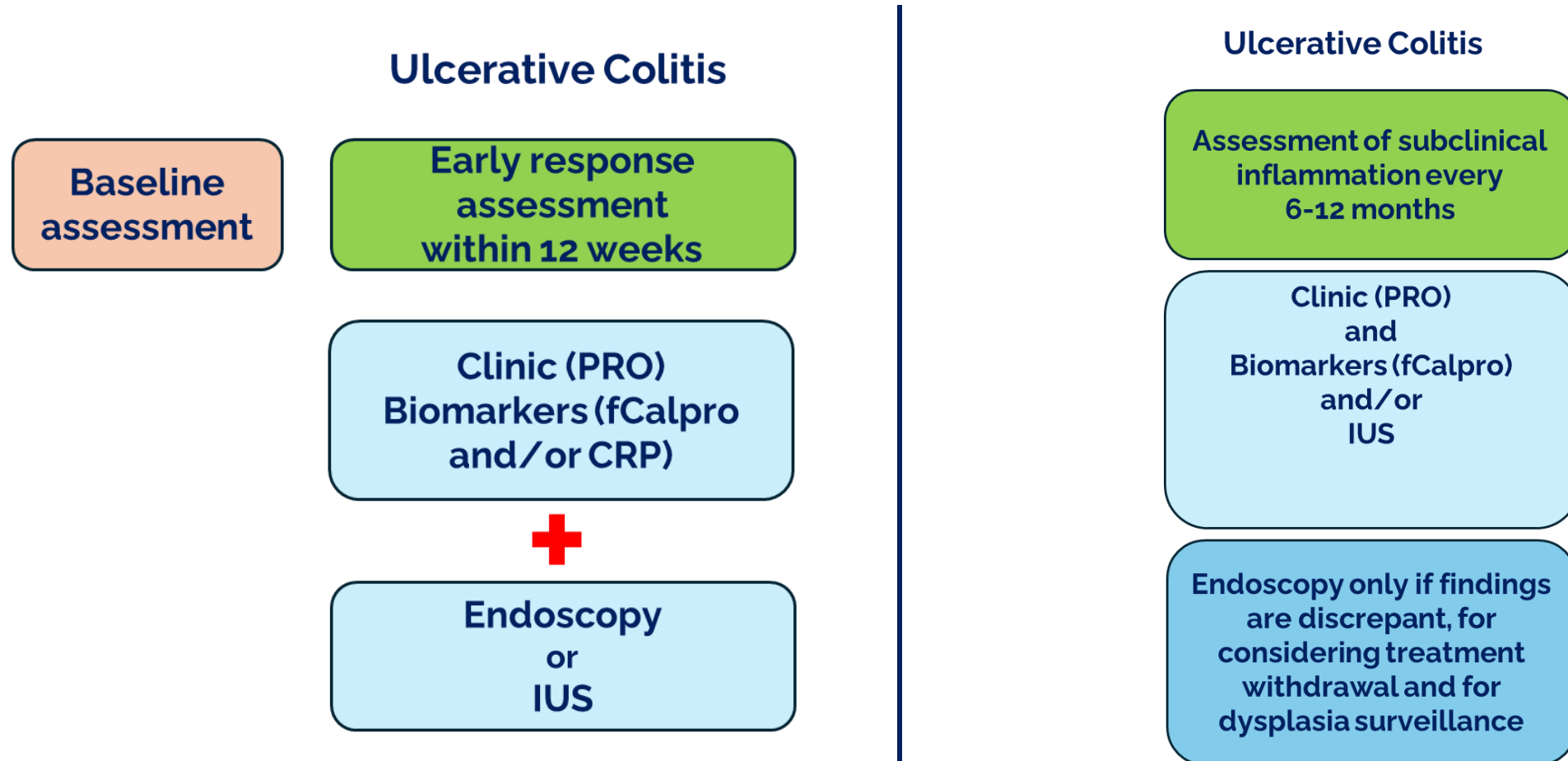


Disclosures

- financial support for research from AbbVie, Biora Therapeutics, Celltrion, Landos, Pfizer, Sanofi, Sosei Heptares/Nxera and Takeda.
- speaker's fees from Abbvie, Agomab, Alfasigma, Biogen, Bristol Myers Squibb, Celltrion, Chiesi, Eli Lilly, Falk, Ferring, Galapagos, Johnson and Johnson, MSD, Pfizer, R-Biopharm, Takeda, Tillots Pharma, Truvion and Viatrix.
- consultancy fees from Abbvie, Alfasigma, Alimentiv, Anyptys Bio, Applied Strategic, AstraZeneca, Atheneum, BenevolentAI, Biora Therapeutics, Bristol Myers Squibb, Domain Therapeutics, Eli Lilly, Galapagos, Guidepoint, Landos, Merck, Mirador Therapeutics, Mylan, Inotrem, Ipsos, Johnson and Johnson, Pfizer, Progenity, Sandoz, Santa Ana Bio, Sosei Heptares, Takeda, Tillots Pharma and Viatrix.
- stock options Vagustim and Thetis Pharma.



The emerging role of IUS in UC disease monitoring

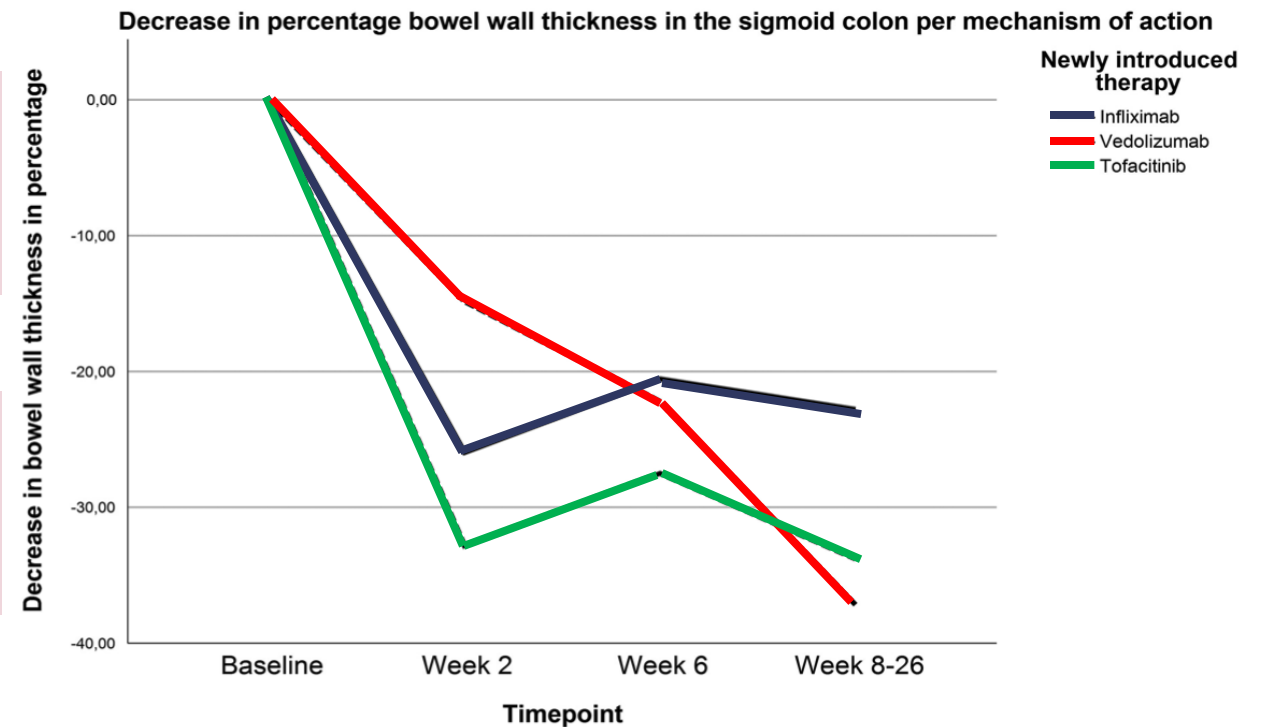




Change in BWT indicative for future endoscopic outcome

BWT was lower from **Week 6 onward** for patients achieving **endoscopic improvement**

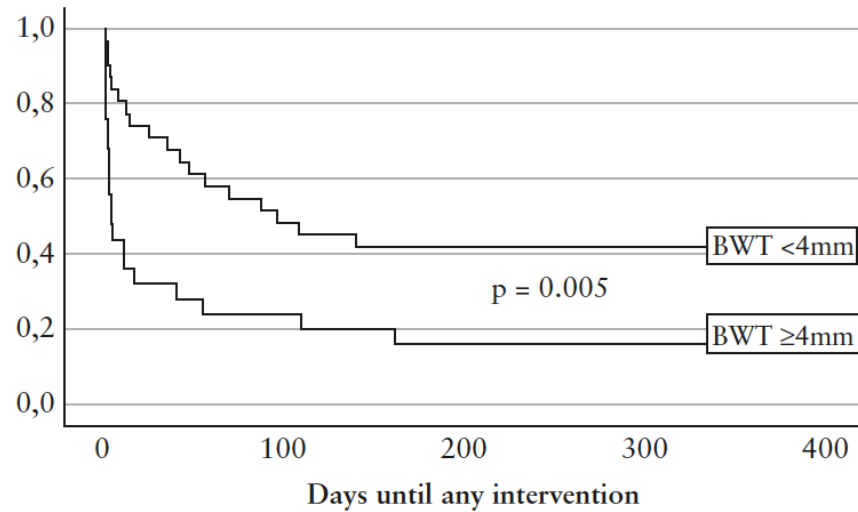
Submucosal layer thickness predicted **endoscopic remission** ($p=0.018$) and endoscopic improvement at Week 6 ($p=0.02$)





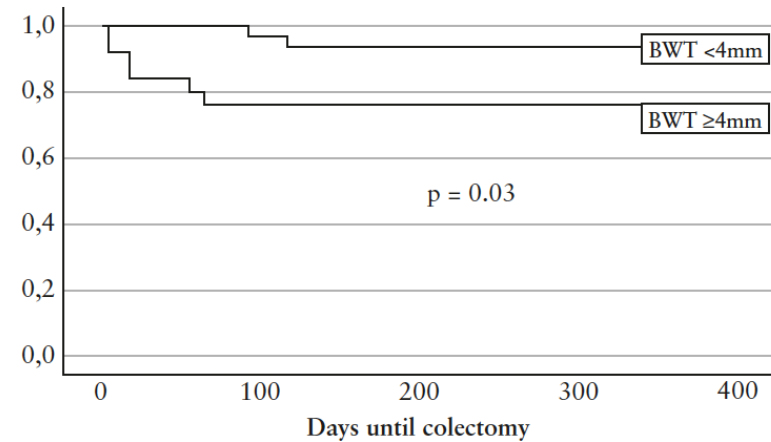
Change in BWT indicative also in the acute setting

Bowel wall thickness at 48 hours <4mm



	Total (n)	Any intervention (n)	Mean (days)	95%CI	Median (days)	95%CI	p
BWT ≥4mm	25	21	75	24 - 127	4	1 - 7	0.005
BWT <4mm	31	18	176	119 - 233	96	4 - 188	

Bowel wall thickness at 48 hours <4mm



	Total (n)	Colectomy (n)	Mean (days)	95%CI	Median (days)	95%CI	p
BWT ≥4mm	25	7	-	-	-	-	0.03
BWT <4mm	31	2	-	-	-	-	



BWT indicative already at diagnosis

Threshold variables	Univariable analyses			Multivariable analyses with stepwise reduction		
	OR	95% CI	P-value	OR	95% CI	P-value
IBUS-SAS >45 ^a	16	3299	<.01			
Mayo Endoscopic Subscore = 3 ^a	20	5135	<.001			
CRP >100 ^b	29	6155	<.0001	9.3	1.179	.042
Albumin ≤25 ^b	18	476	<.001			
SCCAI ≥10 ^a	26	6177	<.001	11	1.678	.014
BWT >6 mm ^a	38	9270	<.0001	11	1.872	.01
Extensive loss of stratification ^a	5.8	1.323	.01			
Maximum color Doppler score ^a	11	378	<.01			
Presence of inflammatory fat ^a	6.0	1.625	<.01			

Independent predictor of colectomy within 3 months



BWT in children, similar to adults?

Do children with IBD in sustained deep remission have the same bowel wall thickness as adults?

Background

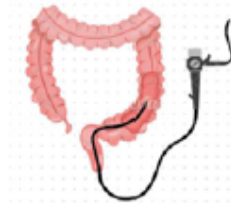
- Remission values for bowel wall thickness (BWT) on intestinal ultrasound (IUS) for children with IBD are extrapolated from adults
- We evaluated BWT on IUS in children with IBD in sustained deep remission



Cohort and Design

- Cross-sectional study of children with IBD

Clinical Remission =
Normal



Or



Outcome of Interest



- Segmental BWT
- Effect of patient and disease characteristics

Results

- Normal BWT in children with IBD in deep remission is less than adults
- BWT is unaffected by age, sex, and bowel segment



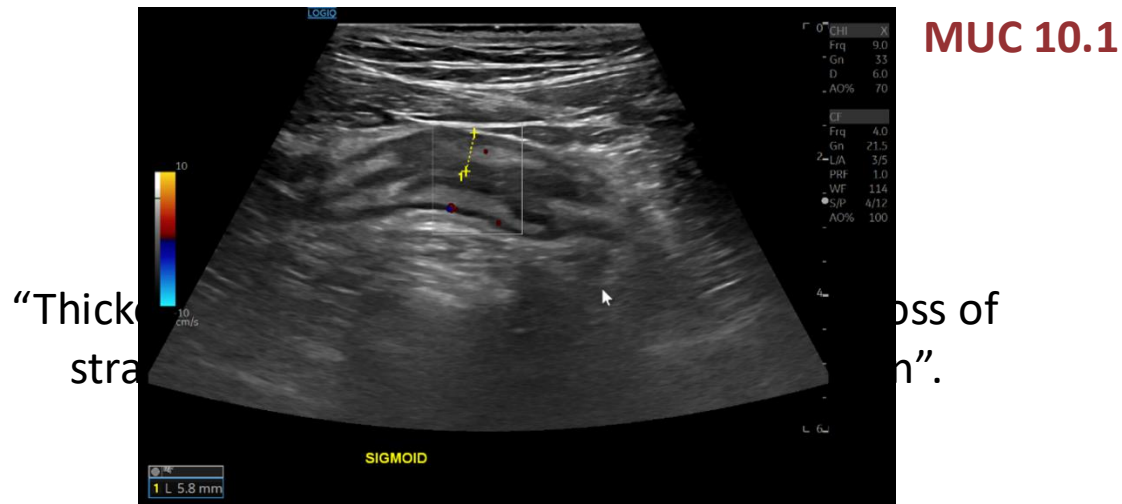


IUS as monitoring strategy in UC... but what about proctitis?

	Specificity	PPV
Mucosal healing Mayo 0		
BWT <3	75	60
BWT <3 and CDS 0	78	61
BWT <3, CDS 0, FC <150	96	89
Mucosal healing Mayo 0 or 1		
BWT <3	77	75
BWT <3 and CDS 0	77	72
BWT <3, CDS 0, FC <150	94	89



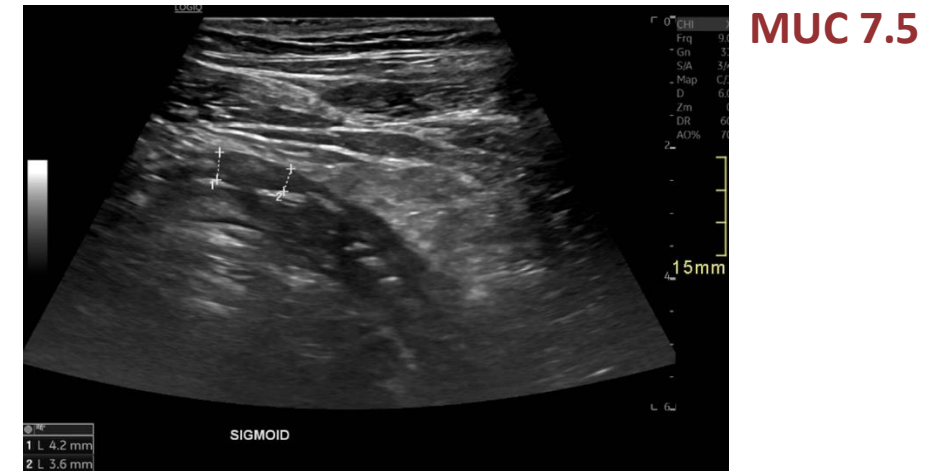
The need for standardisation



March 10th 2025

Baseline - 3rd line therapy

**Photodocumentation
Standardised reporting**

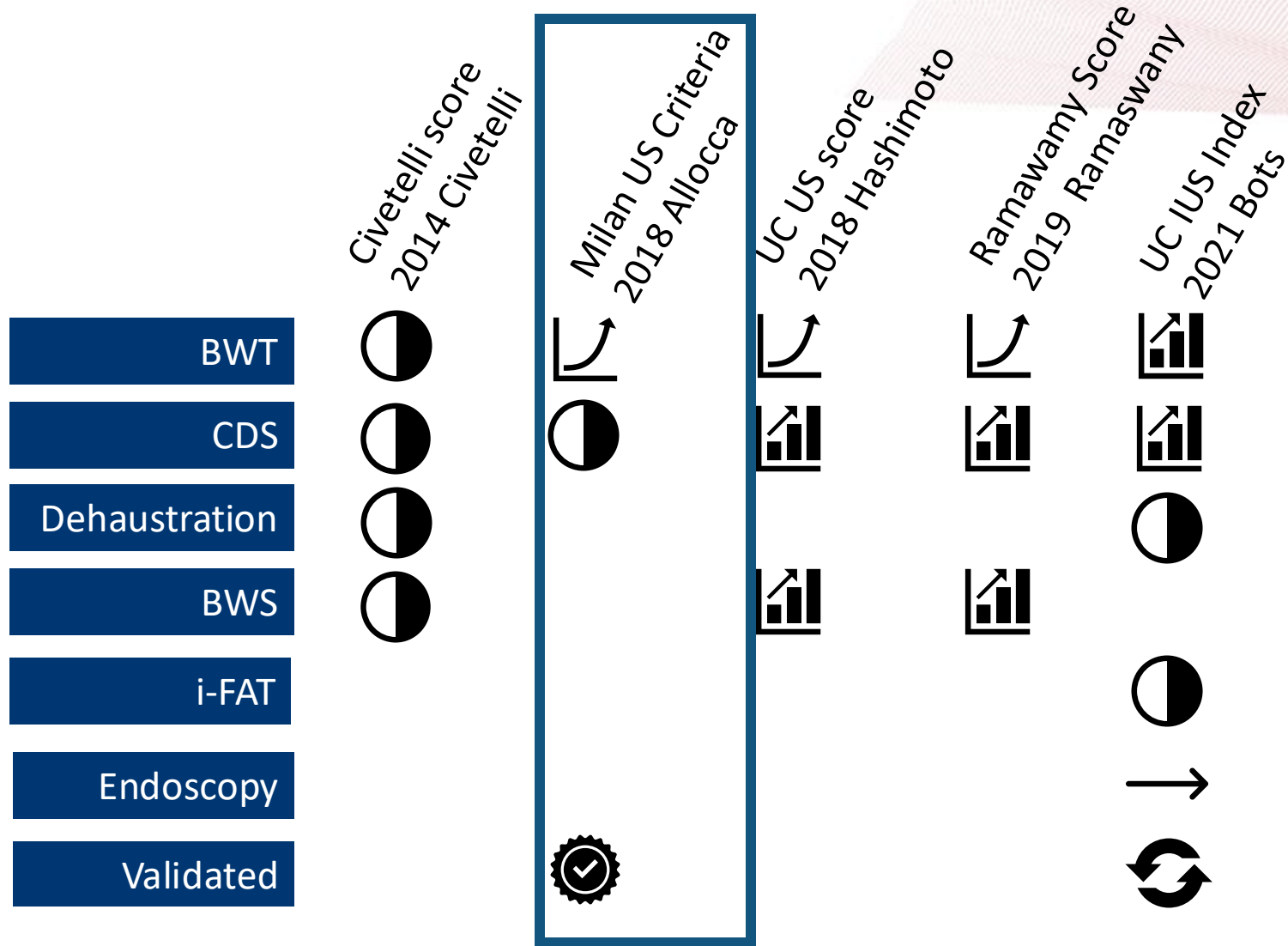


May 5th 2025

Week 8 - 3rd line therapy
Clinical improvement,
residual symptoms



The need for validated scores

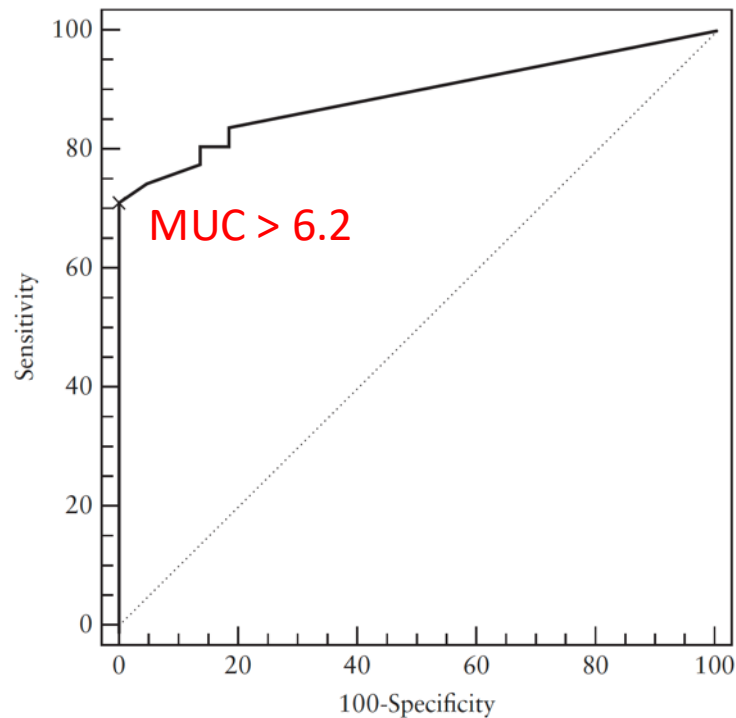




Milan Ultrasound Criteria

Humanitas Ultrasound criteria = Milan Ultrasound Criteria =
$$\text{BWT (mm)} \times 1.4 + \text{CDS} \times 2$$

CDS = 1 if present; CDS = 0 if absent



MUC ^a range	Observed risk of endoscopic activity ^a
<6.2	4/19 (21%)
6.3-8.1	1/2 (50%)
8.2-10.6	11/11 (100%)
>10.6	11/11 (100%)

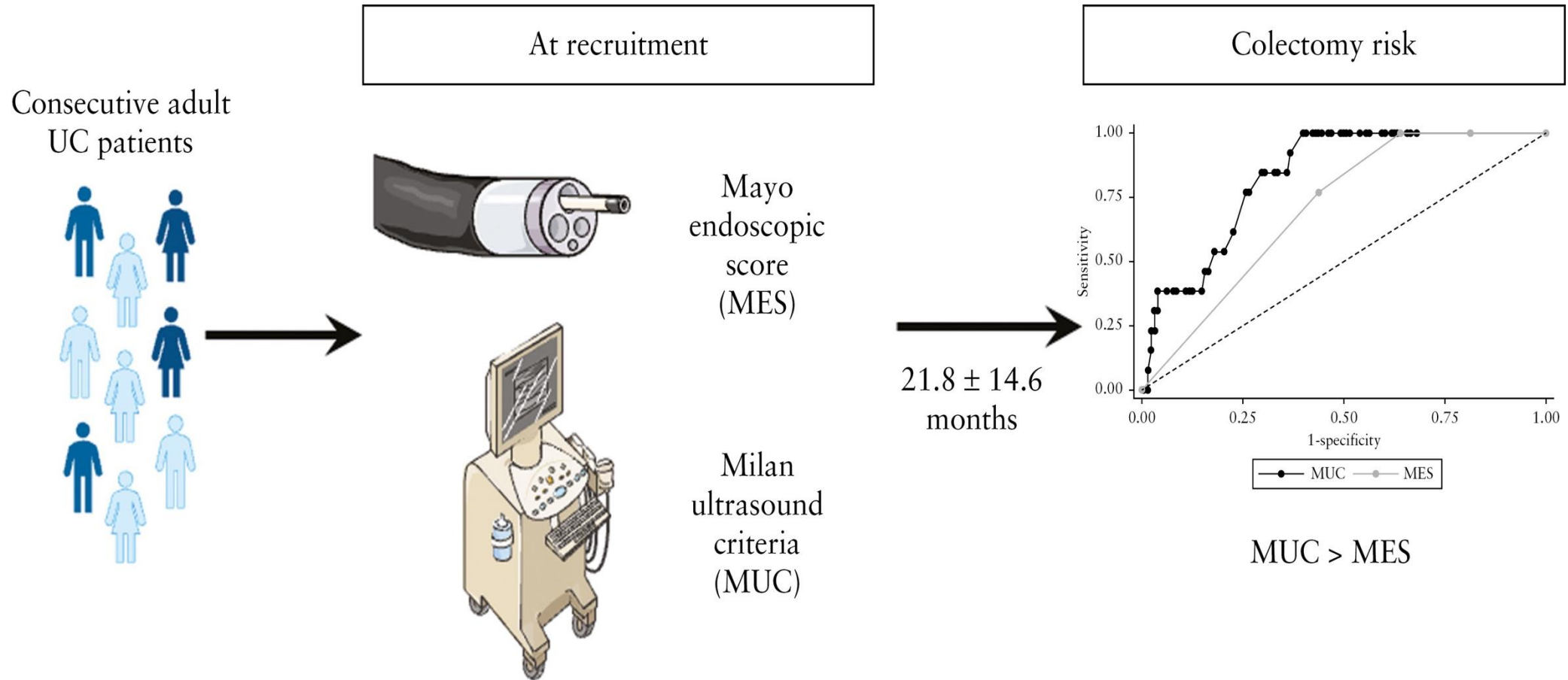
TABLE 3 Diagnostic accuracy of Milan Ultrasound Criteria (MUC) in derivation and validation study

	Cut-off	MUC in derivation study			MUC in validation study		
		ROC	Sens	Spec	ROC	Sens	Spec
Active disease (Mayo endoscopic sub-score >2)	>6.2	0.891	0.71	1.00	0.902	0.85	0.94

Abbreviations: ROC, receiver operating characteristic; Sens, sensitivity; Spec, specificity.

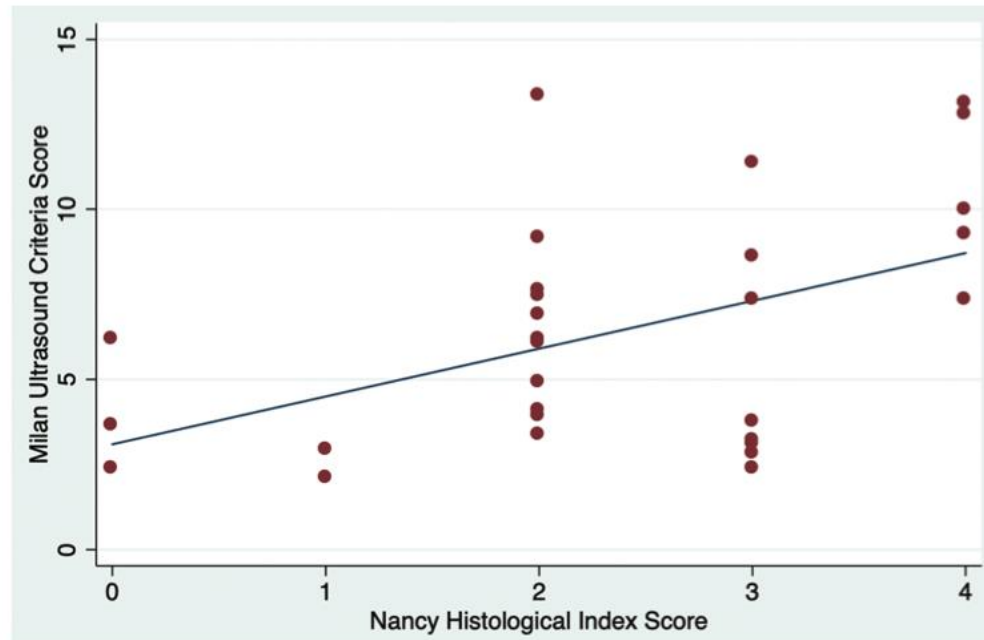


MUC has a prognostic value





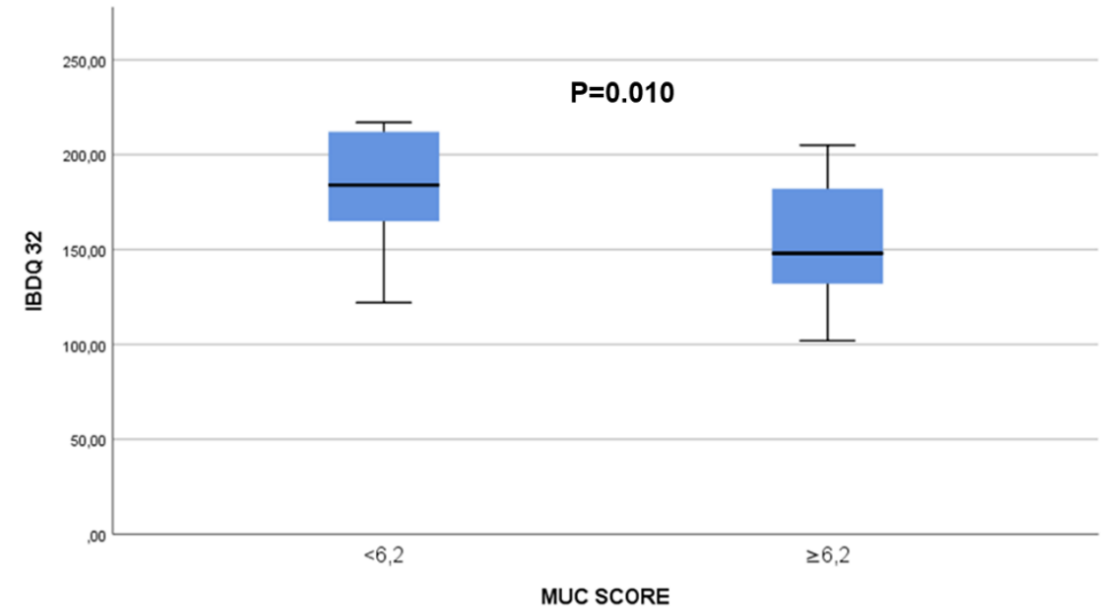
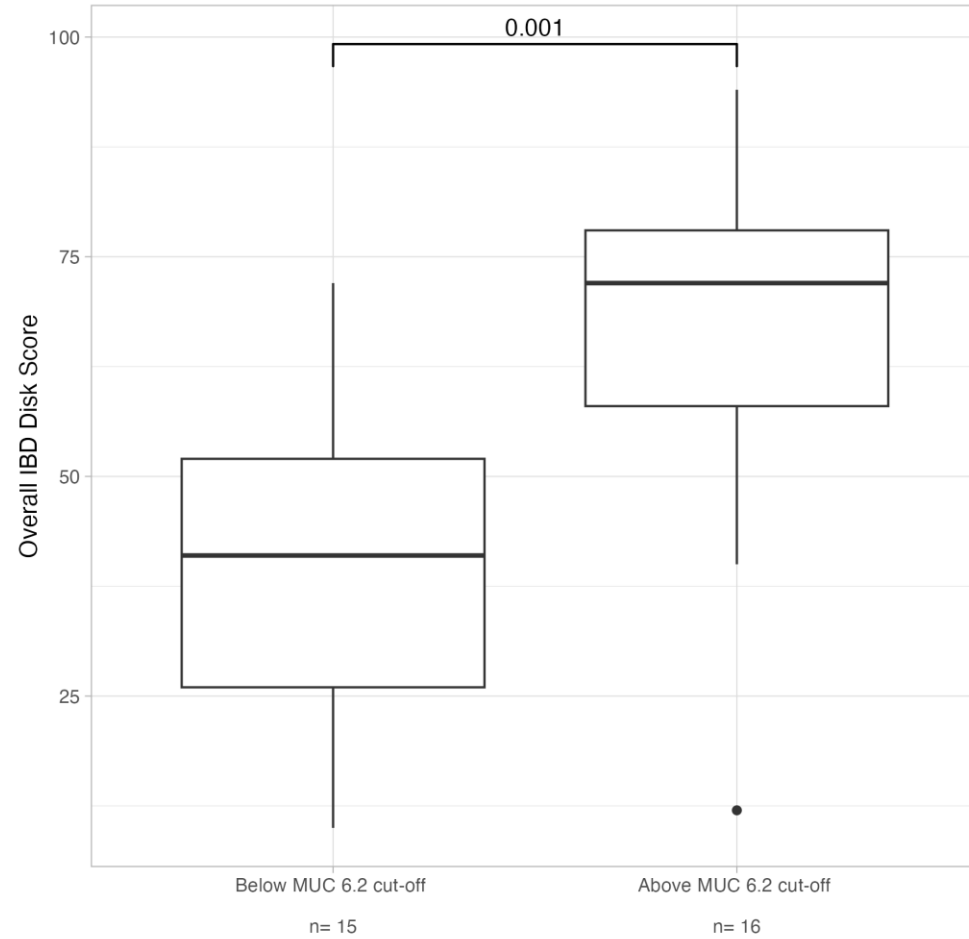
MUC is correlated to histologic activity



Comparison	<i>P</i>	Sensitivity (%)	Specificity (%)	Positive Predictive Value (%)	Negative Predictive Value (%)
MUC >6.3	.048	55	100	100	31
Calprotectin >50 ug/g	.127	92	40	88	50
Calprotectin >100 ug/g	.022	79	80	95	44
Composite of MUC and calprotectin ^a	.007	88	80	95	57



MUC is associated with quality of life



Eggermont et al. ECCO 2025. P0453.

Parra Izquierdo et al. ECCO 2025. P0353.



Moving beyond MUC, is there a place for the IBUS-SAS?

IBUS SAS
2021 Novak K

BWT



CDS



i-fat



BWS



VAS

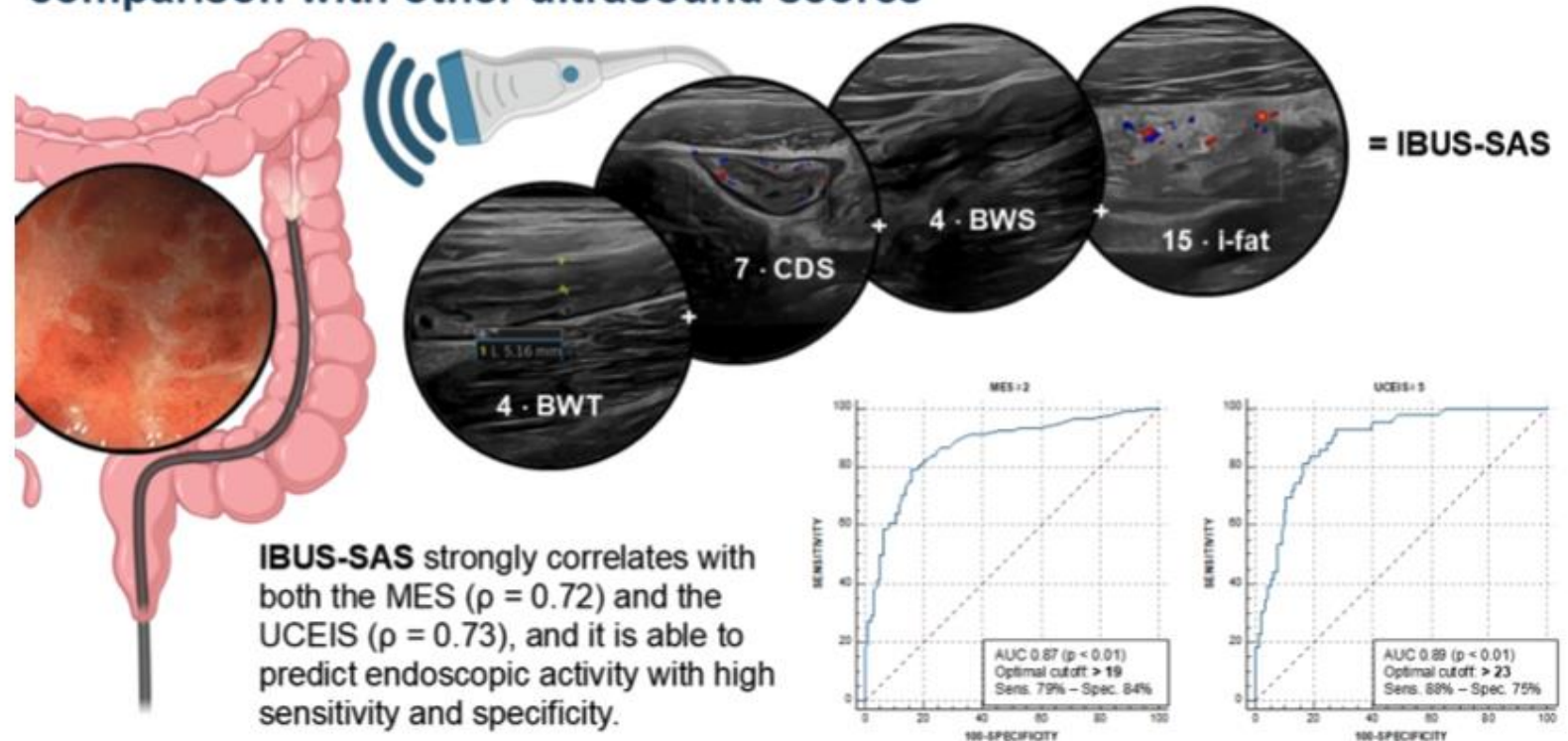


Endoscopy

Validated
(CD)



The use of International Bowel Ultrasound Segmental Activity Score (IBUS-SAS) in patients with ulcerative colitis: applicability and comparison with other ultrasound scores

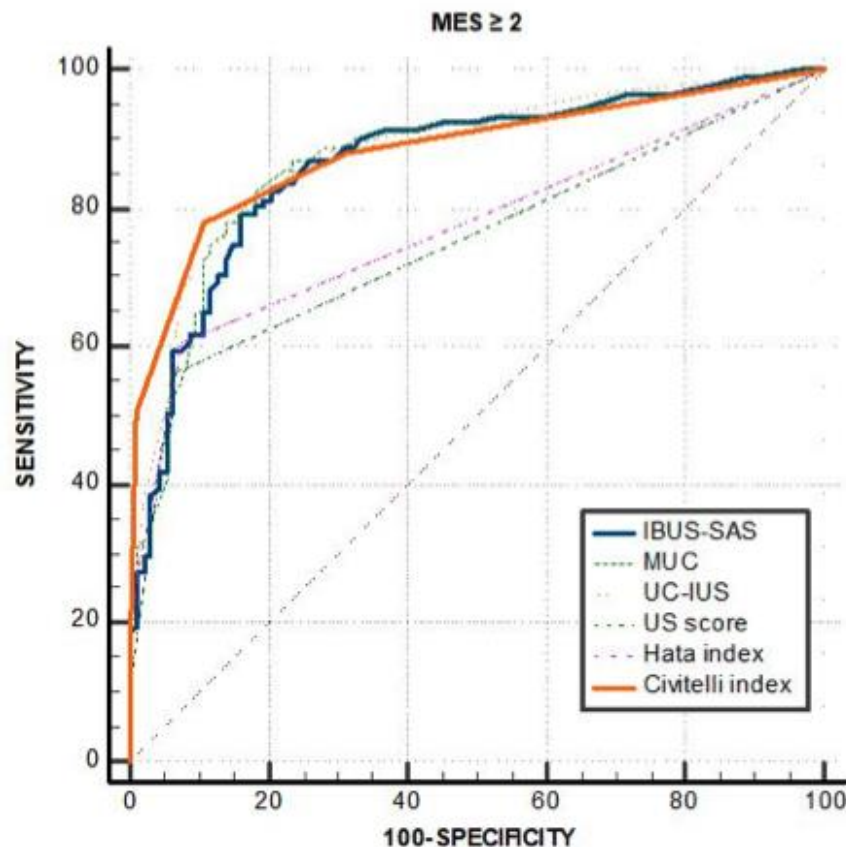




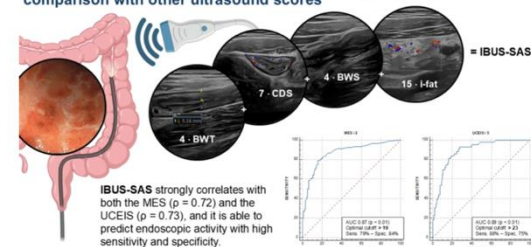
Moving beyond MUC, is there a place for the IBUS-SAS?

IBUS SAS
2021 Novak K

Score	AUC	95%CI	p-value	Optimal cut-off	Sensitivity	Specificity
IBUS-SAS	0.87	0.81-0.91	< 0.01	> 19	79%	84%
MUC	0.87	0.82-0.90	< 0.01	> 6.2	73%	88%



The use of International Bowel Ultrasound Segmental Activity Score (IBUS-SAS) in patients with ulcerative colitis: applicability and comparison with other ultrasound scores



BWT

CDS

i-fat

BWS

VAS

Endoscopy

Validated
(CD)



Conclusion

- **Intestinal ultrasound** has a **central role** in the **monitoring** of patients with ulcerative colitis.
- The combination of **intestinal ultrasound** and **faecal calprotectin** significantly increases the specificity, especially in patients with proctitis.
- **Bowel wall thickness** and **color Doppler signal** are **key parameters** that respond early to treatment and correlate well with endoscopic outcomes in **UC**.
- **Early (changes)** in BWT are **predictive** for **long-term outcomes**.
- **Milan Ultrasound Criteria (MUC)** provides a **validated scoring** system with prognostic value, including correlation with histological disease activity and quality of life.