

Use of Standardized Inflammatory Bowel Disease Endoscopy Scores in Clinical Practice

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Background: Inflammatory bowel disease (IBD) treatment targets include mucosal healing based on standardized endoscopic scoring systems. The rates and ease of use of these scoring systems in practice have not been well described. We aimed to assess the rates and factors associated with the use of IBD endoscopic scoring systems in practice from IBD LIVE attendees.

Methods: IBD Live is an international case-based conference focusing on the management of patients with IBD. We created a web-based survey consisting of 38 questions on the frequency and ease of use of various IBD endoscopic scores. This survey was emailed to the IBD Live listserv in March 2022 with a second email sent 14 days later. We included only respondents who are currently performing endoscopy. Continuous variables were analyzed using an unpaired student's *t*-test. Categorical variables were analyzed using Pearson's chi-square test.

Results: There were 65 responses out of 170 (38.2% response rate) regular attendees. Eleven responses were excluded (4 with no response on the use of endoscopy scores, and 7 were not performing endoscopy). Of the respondents, 72.2% are from the United States, 70.4% are adult gastroenterologists, 53.9% in academic practice, and 40.7% in practice for ≥ 15 years. Of the endoscopy scores used $\geq 50\%$ of the time, 74.1% were using the Mayo Endoscopic Subscore (MES), 72.3% using the Rutgeerts Score, 61.2% using the Simple Endoscopic Score for Crohn's Disease, and 28.6% using the Pouchitis Disease Activity Index. Attending IBD LIVE \geq monthly ($P = .028$), attending an IBD conference at least every 2 years ($P = .020$), and having the scoring system incorporated into the endoscopy documentation software ($P = .002$) were associated with more consistent use of the MES. Attending IBD Live at least monthly ($P = .026$), having an IBD volume of $\geq 50\%$ ($P = .011$), and attending an IBD conference at least every 2 years ($P = .004$) was associated with more frequent use of the Rutgeerts score. There were no factors that increased the use of other endoscopic scores.

Conclusions: The MES and the Rutgeerts score are more commonly used with much lower rates of use of endoscopic scores for Crohn's disease and pouchitis. The use of these endoscopy scores is more common among those who regularly attend IBD conferences, have higher volume IBD practices, and have these scoring systems incorporated into endoscopy software. Further evaluation of barriers to use and ways to improve utilization of endoscopic scoring for Crohn's disease and pouchitis is needed.

Lay Summary

In a study of inflammatory bowel disease (IBD) Live participants, low utilization rates of IBD endoscopy scoring systems were found. Greater utilization of certain IBD endoscopy scoring systems was found in those regularly attending IBD conferences and incorporating scoring systems into endoscopy software.

Key Words: inflammatory bowel disease, endoscopy scores, Crohn's disease, ulcerative colitis

Background

Inflammatory bowel diseases (IBDs), including ulcerative colitis (UC) and Crohn's disease (CD), are chronic inflammatory conditions of the gastrointestinal tract. UC typically involves only the colon while CD can involve any location in the gastrointestinal tract from the mouth to the anus. Complications from persistent intestinal inflammation in untreated IBD include intestinal stenosis or stricture, obstruction, intra-abdominal abscesses, fistula tracts, dysplasia, or malignancy. The management of IBD is focused on long-term steroid-free treatments that result in clinical remission and endoscopic healing to improve symptoms, prevent complications, and improve quality of life. Because of the variability between

endoscopists on what is considered severe versus moderate inflammation on endoscopy, several endoscopy scoring systems have been developed to standardize endoscopic severity scoring.¹ These scoring systems include the modified Mayo Endoscopic Subscore (MES) and the UC Endoscopic Index of Severity (UCEIS) for UC, the Crohn's Disease Endoscopic Index of Severity (CDEIS) and Simple Endoscopic Score for Crohn's Disease (SES-CD), and the Rutgeerts Postoperative Endoscopic Index for postoperative Crohn's disease.

The European Crohn's and Colitis Organization guidelines recommend using IBD endoscopic scores for the diagnosis of UC, CD, and pouchitis.² Our current treatment guidelines for the management of IBD recommend selecting medications

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based on disease severity using endoscopic scores.³⁻⁶ Further, the goals of IBD treatment include endoscopic healing based on endoscopic scores as an attainable target. According to the STRIDE 2 consensus statements, endoscopic healing in CD is defined as an SES-CD score of <3 points or an absence of ulcerations (ie, all SES-CD ulceration subscores = 0).² Endoscopic healing in UC is defined as a MES = 0–1 point, or UCEIS ≤ 1 point.^{2,3} Despite the recommendation for the use of endoscopic scoring systems to determine disease severity and/or endoscopic healing, it is unclear which endoscopic scoring systems are being used and how often these systems are utilized in real-world clinical practice.

IBD Live is a weekly international virtual conference consisting of case presentations of difficult clinical cases involving the evaluation and treatment of patients with IBD or with suspected IBD.⁷ Cases are presented by trainees, gastroenterologists, or surgeons for discussion and treatment recommendations among a core set of faculty from various academic institutions. During the case presentations, most presenters will include a description of endoscopic findings, occasionally with images; however, the use of endoscopic scoring systems is much less often used. The primary aim of this study is to assess the consistent use of IBD endoscopic scoring systems in clinical practice among participants of the IBD Live conference. A secondary aim is to assess for any change in the use of these scoring systems after attending IBD Live.

Methods

We created a web-based survey on the frequency and ease of use of several different IBD endoscopic scores. We sent an email in March 2022 with an explanation of the study and an embedded link to the survey to all IBD Live participants on the participant email list. A second email was sent 14 days later to those who had not yet responded. We only included responses from participants who are currently performing endoscopy and those who completed questions on at least 1 endoscopic scoring system. The survey included provider information such as practice type, years in practice, percentage of practice dedicated to IBD patients, type of endoscopy documentation software used, and the frequency of use of a standardized IBD endoscopy scoring system. Consistent use of an endoscopic scoring system was defined as use in at least 50% of the colonoscopies performed on patients with IBD. We compared the cohorts who consistently use standardized IBD endoscopy scoring systems with the cohort who use these scoring systems less than 50% of the time to assess for significant differences between the groups, such as age, years in practice, frequency of attendance to IBD Live, and the particular endoscopy documentation software that is used. Continuous variables were analyzed using an unpaired student's *t*-test. Categorical variables were analyzed using Pearson's chi-square test. A *P*-value of <.05 was considered statistically significant. This study was deemed to be exempt by the Yale Institutional Review Board.

Results

Out of 170 regular IBD Live attendees, we received 65 responses (38.2% response rate). Of these, 11 responses were excluded (4 had no responses on the use of any of the endoscopy scores and 7 were not currently performing endoscopy). Of the respondents, 100% had completed fellowship

training, 72.2% are from the United States, 70.4% are adult gastroenterologists, 53.9% in academic practice, and 40.7% have been in practice for ≥15 years (Table 1).

Use of IBD Endoscopy Scores

Of the endoscopy scores used ≥50% of the time, 74.1% were using the MES, 72.3% using the Rutgeerts Score, 61.2% using the SES-CD, and 28.6% using the Pouchitis Disease Activity Index (Figure 1). Of the remaining respondents, 24.5% reported using the CDEIS and 23% (12/52) reported using the UCEIS ≥50% of the time. The endoscopy documentation software used by most respondents is Provation in 47.9% (23/48), Endoworks in 14.6% (7/48), Endosoft in 4.2% (2/48), while 33.3% (16/48) reported "Other" including Gmed, E-merge, G-Gastro, Viewpoint, Lumens, Unisoft, and Endopro.

Factors Associated With More Consistent Endoscopy Score Use

More consistent use of the MES was associated with attending the IBD Live conference at least monthly (*P* = .028), attending an IBD conference at least every 2 years (*P* = .020), and having the scoring system incorporated into the endoscopy documentation software (*P* = 0.002). More consistent use of the Rutgeerts score was associated with attending the IBD Live conference at least monthly (*P* = .026), having an IBD volume

Table 1. Respondent demographics.

Variable	<i>n</i> (%)
Practice location	
United States	39 (72.2)
Asia	7 (12.9)
Europe	4 (7.4)
Other	4 (7.5)
Specialty	
Adult gastroenterology	38 (70.4)
Surgery	10 (18.5)
Pediatric gastroenterology	5 (9.3)
Other	1 (1.9)
Type of practice	
Academic	32 (59.3)
Private practice	13 (24.1)
Other	9 (16.6)
Years in practice	
Less than 5 years	15 (27.8)
5 years to less than 10 years	8 (14.8)
10 years to less than 15 years	9 (16.7)
15 years or more	22 (40.7)
Percent of practice focused on IBD	
Up to 50%	28 (51.9)
50% or more	26 (48.1)
Attends an IBD conference ≥2 years	
Yes	50 (92.6)
No	4 (7.4)
IBD Live attendance	
At least monthly	36 (66.6)
Less than monthly	18 (33.3)

Abbreviation: IBD, inflammatory bowel disease.

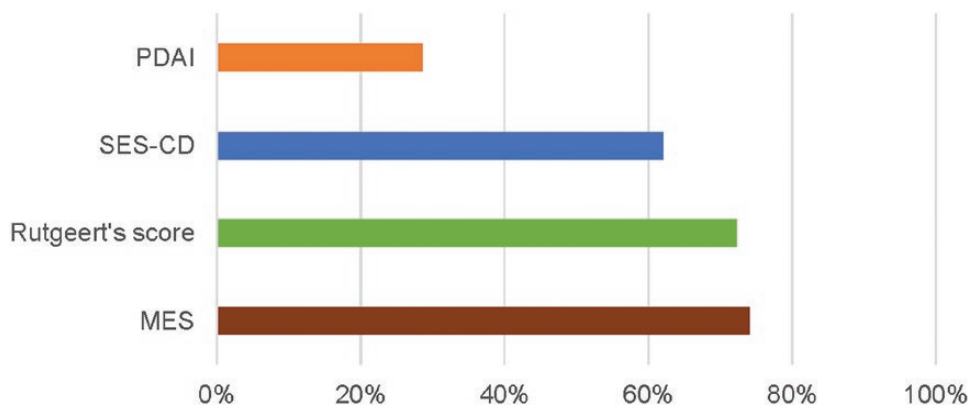


Figure 1. Frequency of utilizing inflammatory bowel disease endoscopic scores $\geq 50\%$ of the time. MES, Mayo Endoscopic Subscore; PDAI, Pouchitis Disease Activity Index; SES-CD, Simple Endoscopic Score for Crohn's disease.

of $\geq 50\%$ of all patients ($P = .011$), and attending an IBD conference at least every 2 years ($P = .004$). There were no factors that increased the use of other endoscopic scores (Table 2).

Discussion

In our study of IBD Live participants, we found that the MES and the Rutgeerts score are currently in use by approximately three-quarters of IBD doctors with much lower rates of use of standardized endoscopic scores for CD and pouchitis. More consistent use of the MES was associated with ongoing IBD education and having the endoscopic scoring system incorporated into the endoscopy documentation software while more consistent use of the Rutgeerts score was associated with ongoing IBD education and having a higher volume of IBD patients. The use of other IBD endoscopic scoring systems was much lower in clinical practice.

At the time of submission, this appears to be the first study to assess to use of IBD endoscopic scoring systems in clinical practice. We hypothesize that the more consistent use of the MES and Rutgeerts scores are due to the ease of use as both scoring systems assess disease severity based on the endoscopic appearance of the most severe area of inflammation or at the surgical anastomosis. The other scoring systems require the addition of scores for several intestinal locations to calculate a score (such as with the SES-CD) or require the addition of several variables to calculate a severity score (such as with the UCEIS). The SES-CD is incorporated into some endoscopy documentation software; however, that did not lead to an increase in use.

This study has several strengths including the targeted cohort of IBD practitioners which we hypothesized may lead to an overestimation of the use of IBD endoscopy scores. Our study also had an adequate response rate of 38%; however, the ideal response rate is closer to 60%.⁸ Our respondents were predominantly adult gastroenterologists, which is the group most frequently performing endoscopy in IBD patients, with an almost even division among the years of practice. The limitations of our study include the survey study design, which can lead to response bias. However, we would anticipate that response bias would lead to a higher rate of endoscopy scoring use. The study was also limited by the small sample size. Recall bias may present a limitation as it may be difficult to accurately estimate the percentage of IBD patients in each respondent's clinical practice and percentage of use of endoscopy scoring

systems; however, we tried to provide responses with wide ranges to minimize this potential bias. Another possible limitation is that the study population may not be representative of most gastroenterologists in practice due to the IBD focus of the group. However, we found that even in an IBD-focused cohort, the use of IBD endoscopic scoring systems is quite low suggesting the use in non-IBD-focused practices, which are more prevalent, may be even lower.

Our study focused on the IBD Live attendees which is a select group of practitioners who are interested in the care of patients with IBD. Despite using this focused cohort and the goals of IBD treatment based on achieving specific endoscopic scores, we found that IBD endoscopic scoring systems are more commonly used for patients with UC and postoperative CD with few using standardized endoscopic scoring systems for CD. We also noted that very few incorporate pouchitis scoring into their clinical practice. Endoscopic scoring systems standardize the criteria used to determine disease severity and response to treatment. They should be routinely used in clinical practice to decrease the variability of the determination of disease severity between colonoscopies and between endoscopists. If endoscopic scoring systems are not used in practice, there is a risk for variability in the determination of disease severity, resulting in patients who are overtreated, potentially leading to adverse therapy side effects, or undertreated for their IBD, potentially leading to prolonged disease activity and more complications. Given the low rate of use, interventions to raise awareness regarding the importance of consistent use of endoscopic scoring systems in clinical practice are needed as well as programs to provide additional training, possibly through national gastroenterology and IBD societies. Review articles are available which provide an overview of these endoscopic scoring systems and address the need to incorporate IBD endoscopic scoring as part of a treat to target approach to IBD care^{9,10}; however, further evaluation to identify specific barriers to use and ways to further improve the utilization of IBD endoscopic scoring is needed.

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Table 2. Comparison between high utilizers ($\geq 50\%$) and low utilizers ($< 50\%$) of different IBD endoscopy scores

Use of Mayo UC Endoscopic Subscore	$\geq 50\%$ of the time ($n = 40$), n (%)	$< 50\%$ of the time ($n = 14$), n (%)	<i>P</i> -value
Endoscopic score built into software	27 (67.5)	3 (21.4)	0.002
Attend IBD conference at least every 2 years	39 (97.5)	11 (78.6)	0.020
Attend IBD Live			0.028
At least monthly	30 (75)	6 (42.9)	
Less than monthly	10 (25)	8 (57.1)	
Number of years in GI practice			0.55
< 10 years	18 (45)	5 (35.7)	
≥ 10 years	22 (55)	9 (64.3)	
Specialty			0.012
Adult GI	32 (84.2)	6 (15.8)	
Pediatric GI	4 (80)	1 (20)	
Colorectal surgery	4 (40)	6 (60)	
Other	0	1 (100)	
Use of the Rutgeerts Score	$\geq 50\%$ of the time ($n = 34$), n (%)	$< 50\%$ of the time ($n = 13$), n (%)	<i>P</i> -value
Endoscopic score built into software	17 (50)	3 (23.1)	0.45
Attend IBD conference at least every 2 years	34 (100)	10 (76.9)	0.004
IBD patient volume $\geq 50\%$	22 (64.7)	3 (23.1)	0.011
Attend IBD Live			0.026
At least monthly	27 (79.4)	6 (46.2)	
Less than monthly	7 (20.6)	7 (53.9)	
Number of years in GI practice			0.51
< 10 years	14 (41.2)	4 (30.8)	
≥ 10 years	20 (58.8)	9 (69.2)	
Specialty			0.19
Adult GI	27 (79.4)	7 (53.9)	
Pediatric GI	3 (8.8)	2 (15.4)	
Colorectal surgery	4 (11.8)	4 (30.8)	
Use of the Simple Endoscopic Score for Crohn's Disease	$\geq 50\%$ of the time ($n = 30$), n (%)	$< 50\%$ of the time ($n = 19$), n (%)	<i>P</i> -value
Endoscopic score built into software	18 (60)	6 (31.6)	0.09
Attend IBD conference at least every 2 years	29 (96.7)	16 (84.2)	0.12
IBD patient volume $\geq 50\%$	17 (56.7)	8 (42.1)	0.32
Attend IBD Live			0.16
At least monthly	23 (76.7)	11 (57.9)	
Less than monthly	7 (23.3)	8 (42.1)	
Number of years in GI practice			0.10
< 10 years	15 (50)	5 (26.3)	
≥ 10 years	15 (50)	14 (73.7)	
Specialty			0.25
Adult GI	24 (68.6)	11 (31.4)	
Pediatric GI	2 (40)	3 (60)	
Colorectal surgery	4 (44.4)	5 (55.6)	

Abbreviations: IBD, inflammatory bowel disease; GI, gastrointestinal; UC, ulcerative colitis. The bold numbers are the statistically significant results.

Author Contributions

J.K.J.G.: Conception, study design, survey questions, data collection, manuscript draft, manuscript revisions, and final approval. B.A.B.: Study design, survey questions, statistical analysis, manuscript draft, manuscript revisions, and approval. F.A.F.: Survey questions, manuscript revisions, and

approval. M.R.: Survey questions, manuscript revisions, and approval

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Conflicts of Interest

J.K.J.G.: AbbVie Speaker Bureau; Advisory Board: Pfizer. B.A.B.: Speaker honoraria: AbbVie, Takeda. Advisory board: Bristol Meyers Squibb. F.A.F.: Advisory Boards: AbbVie, BMS, Braintree Labs, IBD Educational Group, Iterative Scopes, Janssen, Pfizer, Sebel. Data Safety Monitoring Boards: Adiso Therapeutics, Lilly. M.R.: Advisory Boards and Consultant (both) for Abbvie, Janssen, UCB, Takeda, Pfizer, BMS, Organon, Amgen, Genentech, Gilead, Salix, Prometheus, Lilly, Celgene, TARGET Pharma Solutions, Trellis. J.K.J.G. holds the position of Associate Editor for *Crohn's & Colitis 360* and has been recused from reviewing or making decisions for the manuscript. M.R. holds the position of Editor-in-Chief for *Crohn's & Colitis 360* and has been recused from reviewing or making decisions for the manuscript.

Data Availability

Data not publicly available.

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