A0347: Factors Associated With Fecal Calprotectin Sample Collection Compliance: An IBD Center Quality Improvement Project

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BACKGROUND

- Inflammation monitoring for patients with IBD is important for therapeutic regimens and prevention of disease flare-ups.[1]
- While colonoscopy remains the gold standard, one non-invasive, inexpensive method of monitoring is measuring fecal calprotectin (Fcal) in patient stool samples. However, patient compliance with this test is variable and incompletely described.[2]
- We assessed compliance rates with Fcal tests and identified factors associated with non-compliance.

METHODS

- A retrospective chart review was completed for all patients who were ordered a fecal calprotectin test and visited the IBD Center from August –December 2021.
- For patients with incomplete Fcal tests, a secondary survey was administered to better understand patient difficulties and perspectives.
- Simple statistical analysis, multivariable regression modeling, Bayesian factor analysis (BFA), and a thematic analysis were all performed.

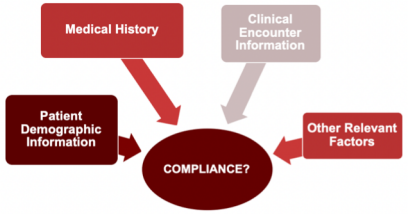


Figure 1: Variables assessed in our IBD Center retrospective chart review

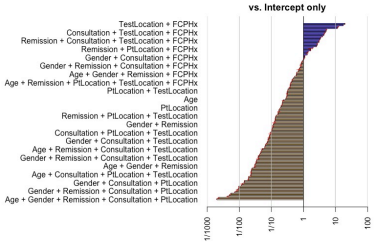
Table 1: Patient demographic and clinical information

	Complete Fcal N = 110	Incomplete Fcal N = 55	P-Value
Age (years)	43.50 (26)	35 (24)	0.067
Gender (female) %	59 (53.6%)	27 (49.1%)	0.582
Median Income ($1000)	98.7 ± 3.40	94.4 ± 2.76	0.418
Race %			
Non-Hispanic Black	4 (3.6%)	1 (1.8%)	
Non-Hispanic White	87 (79.1%)	46 (83.6%)	
Hispanic/ Latino	1 (0.9%)	1 (1.8%)	
Non-Hispanic Asian	3 (2.7%)	3 (5.5%)	0.705
American Indian/ Alaskan Native	2 (1.8%)	---	
Native Hawaiian	2 (1.8%)	---	
Unlisted/Patient Declined	11 (10%)	4 (7)(3%)	
Insurance Type (%)			
Medicare	16 (14.5%)	5 (9.1%)	
Medicaid	3 (2.7%)	---	0.362
Private/Employment-based	87 (79.1%)	49 (89.1%)	
None	4 (3.6%)	1 (<1%)	
Ulcerative Colitis (%)	57 (51.8%)	28 (49.1%)	1.00
E1 - Ulcerative Proctitis	4 (8.3%)	2 (7.4%)	
E2 - Left-sided Colitis	11 (22.9%)	9 (33.3%)	0.619
E3 - Extensive Colitis	33 (69.8%)	16 (59.3%)	
Crohn's Disease (%)	58 (52.7%)	31 (56.4%)	
L1 – Ileal	11 (23.4%)	6 (27.3%)	0.741
L2 – Colonic	14 (29.8%)	6 (27.3%)	
L3 - Ileocolonic	22 (46.8%)	10 (45.5%)	
IBD Remission (%)	41 (83.7%)	59 (67.8%)	0.033
	N = 49	N = 87	
History of GI-related Surgeries (%)	47 (42.7%)	17 (30.9%)	0.176
History of GI-related Hospitalizations (%)	38 (34.5%)	16 (29.1%)	0.598
History of GI-related Diseases (%)	29 (26.4%)	12 (21.8%)	0.571
History of Other Comorbidities (%)			
Hypertension	19 (17.3%)	7 (12.3%)	0.505
Diabetes Mellitus	5 (5.5%)	4 (7.3%)	0.733
Hyperlipidemia	8 (7.3%)	1 (1.8%)	0.274
Arthritis/DJD	8 (7.3%)	5 (9.1%)	0.762
General Anxiety Disorder	10 (9.1%)	6 (10.9%)	0.782
Depression	6 (5.5%)	3 (5.5%)	1.000
Usage of IBD-related Medications (%)			
None	20 (18.3%)	6 (11.1%)	
1 Advanced Therapy	66 (60.6%)	39 (72.2%)	0.315
2 or More Advanced Therapies	23 (21.1%)	9 (16.7%)	
Location of Fcal Order (%)			
River East	56 (50.9%)	26 (47.3%)	
Hyde Park	46 (41.8%)	28 (50.9%)	0.250
Hinsdale	8 (7.3%)	1 (1.8%)	
Clinic Visit type (%)			
In-person	70 (63.6%)	28 (50.9%)	0.132
Virtual	40 (36.4%)	27 (49.1%)	
History of Fcal Orders (%)	74 (67.3%)	38 (69.1%)	0.861
History of Fulfilled Fcal Orders (%)	69 (93.2%)	26 (68.4%)	0.001
	N = 74	N = 38	
Days between completed Fcal	1.00 (12)	---	---
Patient Location			
In City	27 (24.5%)	13 (23.6%)	
In State	65 (59.1%)	29 (52.7%)	0.082
In Neighboring State	14 (12.7%)	5 (9.1%)	
In Distant State	4 (3.6%)	8 (14.5%)	
Fcal Testing Order (%)			
University of Chicago Med	41 (37.3%)	8 (14.5%)	0.004
Third-party Lab	69 (62.7%)	47 (85.5%)	

Table 2: Multivariable regression for Fcal test completion and test delays

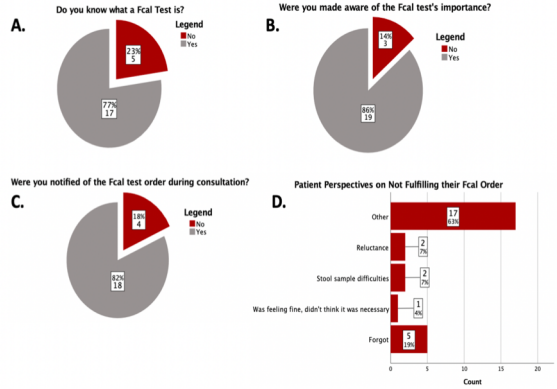
	Logistic Regression for Test Completion				Regression for Delayed Testing Completion			
Factor	**Estimate Effect Size (B)**	**Std. Error**	**P-Value**	**95% Confidence Interval**	**Estimate Effect Size (B)**	**Std. Error**	**P-Value**	**95% Confidence Interval**
Age (years)	0.017	0.015	0.248	0.988 – 1.048	0.148	0.104	0.163	-31.309-7.575
Gender (female)	-0.441	0.543	0.417	0.222 – 1.866	0.877	3.635	0.810	0.062 – 0.357
IBD Remission	-0.949	0.624	0.128	0.114 – 1.316	-0.331	3.895	0.933	-6.421 – 8.176
Clinic Visit Type	-0.523	0.528	0.322	0.210 – 1.570	0.102	3.992	0.980	-8.151 – 7.490
History of Fecal Calprotectin Completion	2.116	0.741	**0.004**	1.942 – 35.493	6.628	2.625	0.357	-7.699 – 20.956
Fecal Calprotectin Testing Location	-1.304	0.668	**0.050**	0.073 – 1.005	12.875	3.843	**0.002**	5.160 – 20.591

Figure 2: Cumulative variable effects on patient compliance



RESULTS

Figure 3: Secondary survey results from patients with incomplete Fcal tests



Themes from "Other" in Figure 3D included: Pandemic-related effects, third-party testing issues, and lack of imported results

CONCLUSION

- We found that patient non-compliance with Fcal tests was associated with third-party testing center usage, a lack of prior testing, and pandemic-related effects.
- The future availability of home Fcal tests may improve adherence.
- We are now testing an EHR intervention (video and FAQs) to improve adherence.

REFERENCES

1. Bouguen G, et. al. Clin Gastroenterol and Hepatol J. 2015;13(6):1042-1050
2. Maréchal C, et al. United Eur Gastroenterol J. 2017;5(5):702-707

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