

# Inflammatory Bowel Disease Population Analyzer Tool for Health systems (IBD PATH): A Case Study Risk Stratifying IBD Patients for Clinical Outcomes

Poster B0393

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## Background

- Inflammatory bowel disease (IBD) is associated with substantial economic burden and its increasing prevalence will only exacerbate the costs.<sup>1,2</sup>
- Population health management (PHM) strategies like risk stratification are needed to increase quality of care and improve health outcomes while reducing costs.<sup>3</sup>
- Risk stratification is also integral for IBD patient management according to care pathways/guidelines.<sup>4-8</sup>
- Previous research suggests risk stratification using American Gastroenterological Association (AGA) care pathways was infrequently documented.
- IBD PATH was developed to identify patient risk and potential gaps in care using electronic medical record (EMR) data.
- We used IBD PATH to conduct a real-world case study to identify data standardization gaps and facilitate PHM efforts within Ochsner Health (Ochsner).

## Materials and Methods

- Ochsner data included patients with IBD visits between Jan. 2020 and Dec. 2021 and data variables; medication name and ordered date, visit dates and associated diagnosis and procedure codes.
- Using a standardized template included in IBD PATH, a subset of patients had additional unstructured clinical data from EMR converted into structured data.
- These variables are based on AGA care pathway risk factors for Crohn's disease (CD) and ulcerative colitis (UC) complications.<sup>4,5</sup>
- The EMR dataset, formatted per the tool specifications, was uploaded into the tool.
- Descriptive analyses were performed through IBD PATH.

## Results

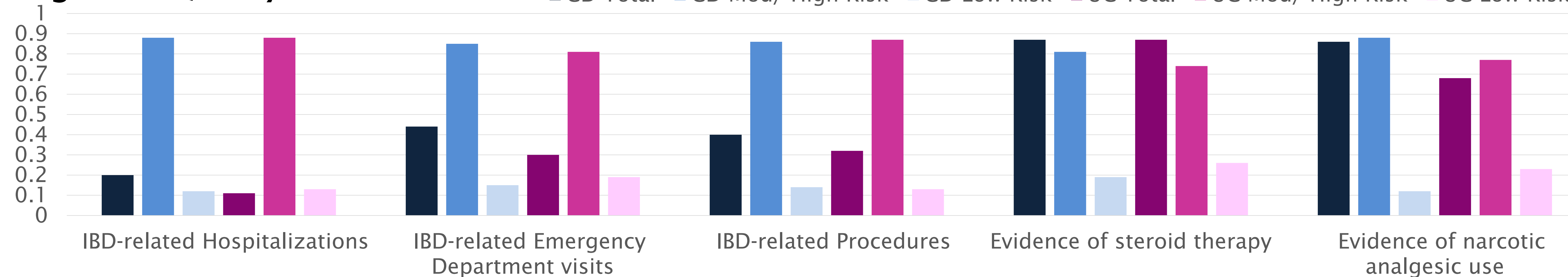
- AGA risk was not documented in the EMR. Unstructured risk factors were collected for a total of 164 patients (124 CD, 71 UC), Table 1.
- Majority of cases (82% CD, 77% UC) were classified as mod/high risk and the primary risk factors perianal disease for CD and previous steroid-requiring disease for UC.

**Table 1: Respondent Demographics**

	Crohn's Disease			Ulcerative Colitis		
	Total, N=124	Mod/High Risk, N=102	Low Risk, N=22	Total, N=71	Mod/High Risk, N=55	Low Risk, N=16
<b>AGA Risk Level Characteristics, n(%)</b>						
<b>Crohn's Disease Risk Factors</b>						
Age <30 years at diagnosis	22 (18)	22 (22)	---			
Extensive anatomic involvement	7 (6)	7 (7)	---			
Perianal disease	83 (67)	83 (81)	---			
Severe rectal disease	32 (26)	32 (31)	---			
Deep ulcers	9 (7)	9 (9)	---			
Previous surgical resection	0 (0)	0 (0)	---			
Stricturing behavior	17 (14)	17 (17)	---			
Penetrating behavior	24 (19)	24 (24)	---			
<b>Ulcerative Colitis Disease Risk Factors</b>						
Age <40 years				16 (23)	16 (29)	---
Extensive colitis				33 (46)	33 (60)	---
Steroid-requiring disease				43 (61)	43 (78)	---
Deep ulcers				2 (3)	2 (4)	---
History of hospitalization				4 (6)	4 (7)	---
High CRP and ESR				0 (0)	0 (0)	---
Clostridium difficile infection				4 (6)	4 (7)	---
Cytomegalovirus infection				1 (1)	1 (2)	---
<b>Medication Utilization, n(%)</b>						
<b>Biologics</b>	38 (31)	35 (92)	3 (8)	16 (23)	16 (100)	7 (13)
Adalimumab	12 (32)	10 (83)	2 (17)	5 (31)	5 (100)	0 (0)
Certolizumab pegol	0 (0)	0 (0)	0 (0)	1 (6)	1 (100)	0 (0)
Golimumab	---	---	---	1 (6)	1 (100)	0 (0)
Infliximab	14 (56)	14 (100)	0 (0)	2 (13)	2 (100)	0 (0)
Vedolizumab	10 (26)	9 (90)	1 (10)	5 (31)	5 (100)	0 (0)
Ustekinumab	3 (8)	3 (100)	0 (0)	3 (19)	3 (100)	0 (0)
<b>Immunomodulators</b>	5 (4)	3 (60)	2 (40)	4 (6)	3 (75)	1 (25)
Azathioprine	5 (100)	3 (60)	2 (40)	4 (100)	3 (75)	1 (25)
<b>5-Aminosalicylic acids</b>				12 (17)	9 (75)	3 (25)
Mesalamine	---	---	---	10 (83)	7 (70)	3 (30)
Sulfasalazine	---	---	---	2 (17)	2 (100)	0 (0)

Note: The medication utilization percentages for the mod/high and low risk columns are based on total number of patients in the row not total number of mod/high or low risk patients

**Figure 1: Quality Indicators**



Note: The quality indicators percentages for the mod/high and low risk columns are based on total number of patients in the row not total number of mod/high or low risk patients  
 Abbreviations: Mod, moderate; AGA, American Gastroenterological Association; CRP, c-reactive protein; ESR, erythrocyte sedimentation rate

- While 30% of mod/high risk patients had a biologic medication record, nearly 50% did not have an IBD treatment record.
- Mod/high risk patients were also more likely to have had IBD-related hospitalizations, emergency department visits, and procedures in the follow-up period.
- Steroid use was low overall; however, majority of those that had evidence of steroid use were mod/high risk. Additionally, narcotic analgesic use was high in those with mod/high risk.

**Figure 1: Patient-Level Report**

Patient	Provider	IBD Type	Risk Level	User Defined 1	User Defined 2	User Defined 3	Aminosalicylates	Biologics	JAK inhibitor	Immunomodulators	Steroids
291	1234	CD	Mod/High				No	No	No	No	No
296	1234	UC	Low				No	No	No	No	No
32	1234	UC	Mod/High				No	No	No	No	No
332	1234	Both	Mod/High				No	No	No	Azathioprine	No
339	1234	Both	Mod/High				No	Adalimumab	No	No	No
347	1234	UC	Mod/High				No	No	No	No	Prednisone
352	1234	Both	Mod/High				No	Adalimumab	No	No	No
361	1234	Both	Mod/High				No	Infliximab	No	No	No
367	1234	CD	Mod/High				No	No	No	No	No
378	1234	UC	Low				No	No	No	No	No
413	1234	Both	Mod/High				No	Infliximab	No	No	No
414	1234	CD	Mod/High				No	Infliximab	No	No	No
420	1234	CD	Mod/High				No	No	No	No	No
423	1234	Both	Mod/High				Mesalamine	No	No	Azathioprine	No
425	1234	UC	Low				No	No	No	No	No
440	1234	UC	Mod/High				No	No	No	No	No
475	1234	CD	Mod/High				No	Infliximab	No	No	No
486	1234	CD	Mod/High				No	No	No	No	No
509	1234	UC	Mod/High				No	Ustekinumab	No	No	No
514	1234	Both	Mod/High				No	No	No	No	Prednisone
529	1234	Both	Mod/High				No	No	No	No	No
540	1234	UC	Mod/High				No	No	No	No	No

Note: The data entry information must be completed by the user in order to populate and stratify the patients into moderate/high and low risk categories  
 Medication utilization represents all medication records in the follow-up period, not just current medications. Therefore, medication utilization may be overestimated, especially combination therapies and steroid use.  
 Abbreviations: CD = Crohn's Disease; UC = Ulcerative Colitis; Mod/High = Moderate to High; JAK = Janus Kinase.

## Discussion and Conclusions

- Risk stratification of patients with IBD is not explicitly documented in the EMR.
- Nearly 80% of cases were mod/high risk and 67% of CD cases had perianal disease.
- Ochsner population is nearly 36% Black, whom have been found to have more perianal disease.<sup>9</sup>
- Tools such as IBD PATH can inform PHM of patients diagnosed with IBD, facilitating the identification of potential population level gaps in care for further assessment.
- Results are dependent on the completeness of data uploaded. Incomplete data may result in the underreporting of medications and quality indicators.

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