

Risk Factors for Non-Adherence to Biologic Therapy in Adult Patients With Inflammatory Bowel Disease (IBD): A Retrospective Analysis

Sara Horst, MD MPH

Associate Professor

Inflammatory Bowel Disease Center

Vanderbilt University Medical Center

Background

- In moderate to severe IBD, **non-adherence** to biologic therapy is associated with:
 - Increased risk of disease flare
 - Increased healthcare costs
 - Anti-drug antibody formation for anti-TNF α agents
- Assessment of medication adherence:
 - **Medication possession ratio (MPR)** - Calculated as: (Number of days supply of medication obtained during observation period)/(Total number of days in observation period)

Background

- **Optimal** MPR value?
 - National insurance claims database study:
 - **MPR < 0.86 (adalimumab) and MPR < 0.87 (certolizumab)** associated with **increased risk of flare**
- **Risk factors** for biologic non-adherence (prior studies):
 - Smoking
 - Psychiatric comorbidity
 - Narcotic use
 - Prior biologic use

Govani S, Noureldin M, Higgins P, et al. Am J Gastroenterol. 2018;113:276
Severs M, Mangen MJ, Fidler H, et al. Inflammatory Bowel Disease 2017;23:1568
Lopez A, Billioud V, Peyrin-Biroulet C, et al. Inflamm Bowel Dis 2013;19:1528
Govani S, Noureldin M, Higgins P, et al. Am J Gastroenterol. 2018;113:276

Study Objectives

- Assess **medication non-adherence for injectable biologic medication** using MPR at a tertiary care IBD center
 - Medication non-adherence: defined as $MPR < 0.86$
 - Calculated using prescription claims data
- Identify **clinically relevant** and **identifiable** risk factors for non-adherence

Methods

- Retrospective chart review
- **Inclusion criteria:**
 - Patients diagnosed with moderate to severe IBD
 - Prescribed self-injectable biologic medication
 - Adalimumab, Certolizumab, Golimumab, Ustekinumab
 - Utilized integrated specialty pharmacy
 - Had at least 3 subsequent pharmacy claims

Results: Demographics

n = 460 patients with a median follow-up of **921 days** (range 232, 1414 d)

	Crohn's disease (n=393)	Ulcerative colitis (n=67)
Age (<i>median, range</i>)	37 (29,47)	40 (33,56)
Sex (<i>female</i>)	62%	57%
Race (<i>Caucasian</i>)	91%	96%
Insurance status		
<i>Commercial</i>	73%	81%
<i>Medicare</i>	22%	16%
<i>Medicaid</i>	5%	1%
Psychiatric history	51%	43%
<i>Depressive disorder</i>	46%	36%
<i>Anxiety disorder</i>	37%	34%
<i>Other</i>	20%	10%
Narcotic use	25%	9%
Prior biologic use	59%	58%

Crohn's disease (n=393)	% of patients
Surgical history	55%
Smoker	19%
Perianal disease	38%
Fistulizing disease	54%

Results: Medication Adherence

	n	Mean MPR (+/- SD)
Total	460	0.89 (+/-0.13)
Certolizumab	85	0.84 (+/- 0.16)
Adalimumab	338	0.90 (+/- 0.13)
Golimumab	20	0.91 (+/- 0.15)
Ustekinumab	17	0.89 (+/- 0.12)

- **High overall medication adherence** at an integrated tertiary care IBD center

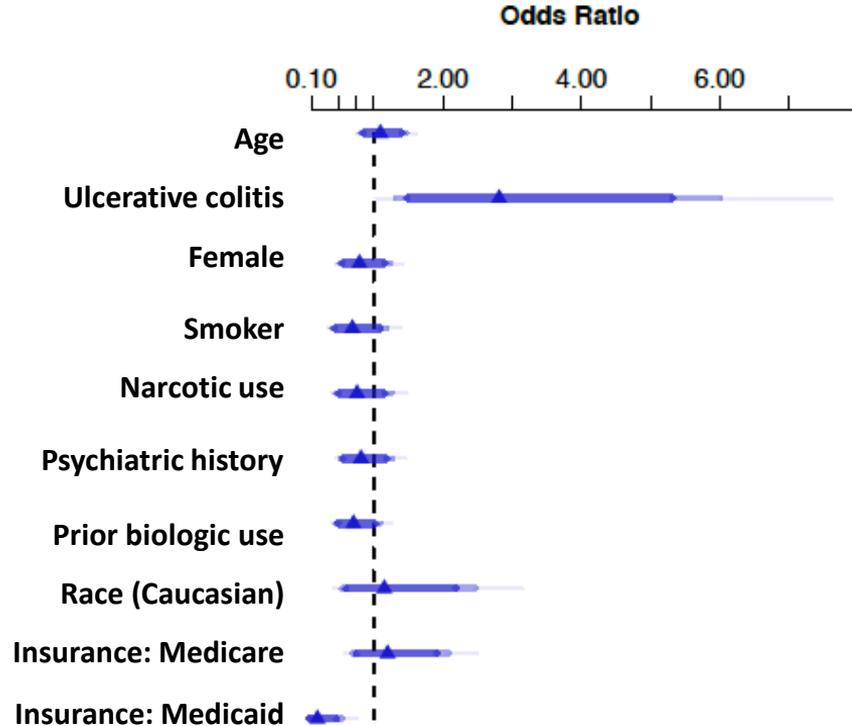
	n	Adherent (MPR \geq 0.86)
Total	460	69%
Crohn's disease	393	71%
Ulcerative colitis	67	87%

Results: Univariate Analysis

	Non-Adherent MPR < 0.86 (n=144)	Adherent MPR ≥ 0.86 (n=316)	p-value
Ulcerative colitis	6%	18%	<0.05
Sex (female)	67%	59%	NS
Race (Caucasian)	92%	92%	NS
Insurance status			<0.05
<i>Commercial</i>	70%	76%	
<i>Medicare</i>	20%	22%	
<i>Medicaid</i>	10%	2%	
Psychiatric history	57%	47%	<0.05
Narcotic use	29%	20%	<0.05
Prior biologic use	67%	55%	<0.05
Crohn's disease only (n=393)			
<i>Smoker</i>	23%	14%	<0.05
<i>Surgical history</i>	56%	44%	NS
<i>Perianal disease</i>	41%	37%	NS
<i>Fistulizing disease</i>	59%	51%	NS

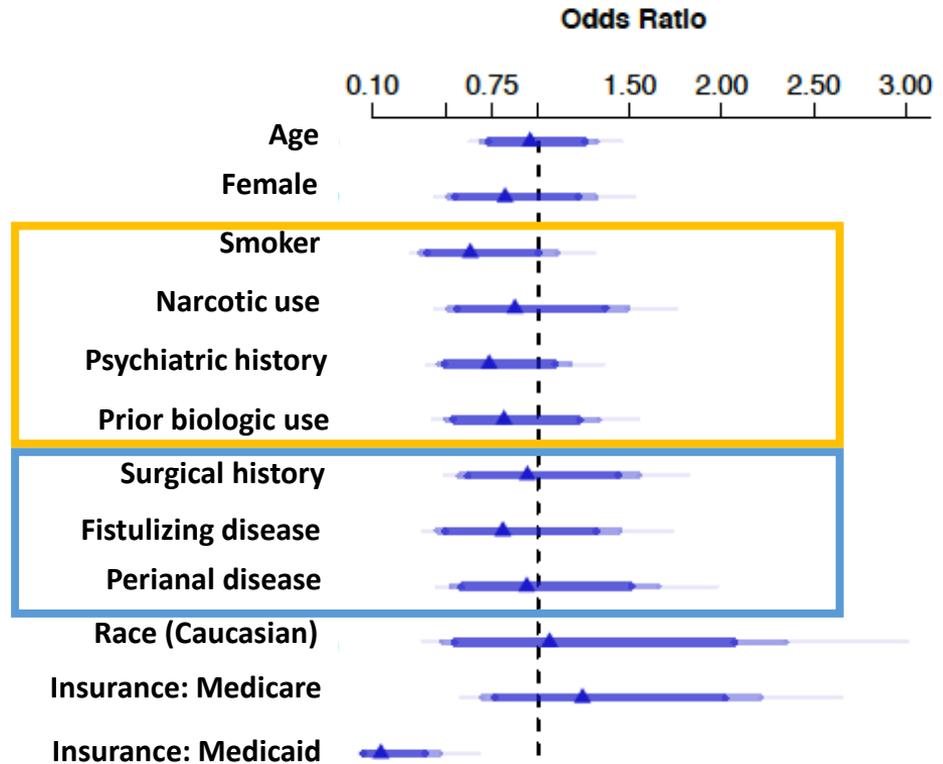
Results: Multivariate Analysis for All Patients

- Pts with ulcerative colitis were **more likely** to be adherent to biologic therapy (n=67).
- Insurance status: Pts with Medicaid were **less likely** to be adherent to biologic therapy (n=20).



Results: Multivariate Analysis: Crohn's disease

- Disease severity **did not** have an impact on medication adherence.
- Risk factors from univariate analysis:
 - Trend toward significance

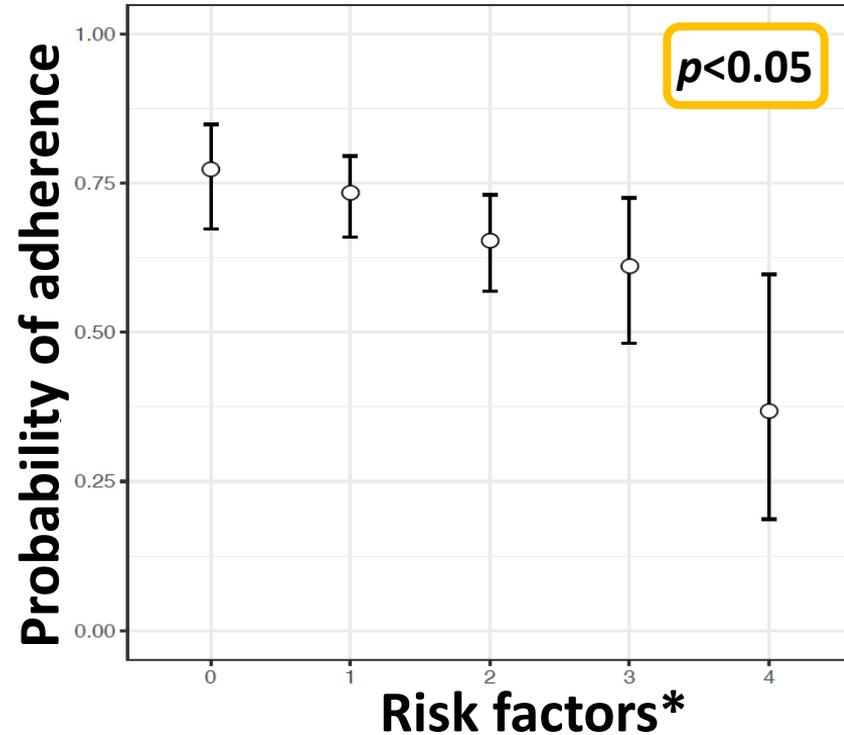


Risk factors for Non-Adherence in Crohn's disease: Cumulative Effect

Number of Risk Factors*	n	Adherent (MPR \geq 0.86)
0	53/72	74%
1	95/133	71%
2	68/111	61%
3	34/56	61%
4	7/19	37%

*Risk factors for non-adherence:

Narcotic use, psychiatric history, prior biologic use, smoking



Cumulative Effect: Risk factors for Non-Adherence in Crohn's disease

	% of patients with 2-4 risk factors*	<i>p</i> -value
Insurance Type		
Medicaid	75%	<0.05
Commercial	38%	
Disease Type		
Crohn's disease	48%	<0.05
Ulcerative colitis	34%	

- **Cumulative effect** of risk factors for non-adherence seen in multivariate analysis

***Risk factors for non-adherence:**

Narcotic use, psychiatric history, prior biologic use, smoking

Summary and Clinical Relevance:

- **High overall MPR** for injectable biologics at tertiary care center
 - Multidisciplinary care team: psychologist, social worker, dietician
 - Integrated specialty pharmacy
- Multivariate analysis in all patients for risk of non-adherence
 - **Insurance type (Medicaid), Crohn's disease**
- Several clinically accessible risk factors identified **in Crohn's disease**
 - **Cumulative:** the probability of non-adherence increases as the number of risk factors present increases
- Resources focused on **patients at highest risk**
 - Consider at several levels: payer, specialty pharmacy, clinics

Acknowledgements

- **Vanderbilt University Specialty Pharmacy Research** team
- Special Thanks to the **McClain Family** for their generous contribution to support this research