

The Impact of an IBD Patient-Centered Medical Home on Surgical Resource Utilization

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INTRODUCTION

Inflammatory bowel diseases (IBD) are common chronic inflammatory conditions of the gastrointestinal tract and ranks among the top five most costly gastrointestinal conditions in the US, contributing an annual estimated burden of 30 billion dollars in direct and indirect costs to the US healthcare system. Direct costs of IBD include diagnostic procedures, medications, adverse events, hospitalizations, surgeries, and specialist consultations. Indirect costs include those within the medical sector including nonrelated care obtained within years saved as well as nonmedical factors such as a loss of productivity at work or intangible costs like pain and emotional distress. Prior studies have demonstrated that a relatively small group of super-utilizers contribute the most to the total cost of disease.

Creating patient-centered medical homes (PCMH), has shown promise in managing complex chronic diseases, including IBD. Early studies on PCMHs and specialty medical homes have demonstrated reductions in emergency department visits, hospitalizations, and disease activity, alongside improvements in QOL and patient satisfaction observed as early as one year after implementation. Despite encouraging data on healthcare utilization and patient-reported outcomes, the impact of IBD-PCMHs on surgical outcomes remains unclear. As surgical management remains a cornerstone of IBD management, the impact of PCMHs on surgical outcomes represents a critical gap in the current literature.

METHODS

- ❖ We identified adult patients undergoing abdominal surgery for IBD at a tertiary care center from 9/2018 to 3/2024. Data were abstracted through a statewide surgical quality collaborative.
- ❖ Primary exposure was longitudinal care within the center’s IBD PCMH.
- ❖ Primary outcome was resource utilization measured by highest quartile length of stay (LOS75+).
- ❖ LOS75+ was compared between groups (PCMH vs. non-PCMH).
- ❖ Both bivariate and multivariate analyses were conducted.

RESULTS

229 cases were analyzed; 140 (61.1%) PCMH. Bivariate analysis showed no significant differences between PCMH versus non-PCMH patients in regard to Black race (19.3% vs. 18.0%), commercial insurance (59.3% vs. 49.4%), underweight (33.6% vs. 24.7%) or MIS approach (69.3% vs. 70.8%). PCMH patients received less urgent/emergent surgery (15.0% vs. 27.0%, p=0.03). Patients with LOS75+ were compared to those that had shorter LOS (Table 1).

	All n=229	LOS75+ n=68	Non- LOS75+ n=161	p-value
Age	44 (17)	44.3 (17.1)	43.2 (16.8)	0.6486
Sex-Male	107 (46.7%)	39 (57.4%)	68 (42.2%)	0.0362
Race-Black	43 (18.8%)	21 (30.9%)	22 (13.7%)	0.0023
Insurance-Commercial	127 (55.5%)	36 (52.9%)	91 (56.5%)	0.6184
Admission Source-Home	187 (81.7%)	38 (55.9%)	149 (92.5%)	<.0001
Body Mass index	26.6 (7.1)	27 (7)	25.8 (7.3)	0.2914
Underweight status	69 (30.1%)	22 (32.4%)	47 (29.2%)	0.6339
Preoperative albumin	3.4 (0.8)	3.6 (0.7)	3 (1)	<.0001
Current smoker	24 (10.5%)	8 (11.8%)	16 (9.9%)	0.6801
Congestive heart Failure	5 (2.2%)	1 (1.5%)	4 (2.5%)	0.6314
COPD	6 (2.6%)	1 (1.5%)	5 (3.1%)	0.4791
CAD	6 (2.6%)	3 (4.4%)	3 (1.9%)	0.2700
Diabetes	22 (9.6%)	3 (4.4%)	19 (11.8%)	0.0830
Hypertension	58 (25.3%)	20 (29.4%)	38 (23.6%)	0.3557
Peripheral vascular disease	7 (3.1%)	1 (1.5%)	6 (3.7%)	0.3648
Ascites	1 (0.4%)	0 (0%)	1 (0.6%)	0.5148
Arrhythmias	17 (7.4%)	9 (13.2%)	8 (5%)	0.0292
DVT	22 (9.6%)	11 (16.2%)	11 (6.8%)	0.0283
Pre-op Opioid use	50 (21.8%)	15 (22.1%)	35 (21.7%)	0.9573
Pre-op Transfusion	9 (3.9%)	6 (8.8%)	3 (1.9%)	0.0133
ASA Class 3	123 (53.7%)	45 (66.2%)	78 (48.4%)	0.0140
MIS surgical approach	160 (69.9%)	42 (61.8%)	118 (73.3%)	0.0824
Urgent/Emergent surgery	45 (19.7%)	30 (44.1%)	15 (9.3%)	<.0001
Postoperative opioids	196 (85.6%)	57 (83.8%)	139 (86.3%)	0.6209
LOS	6.8 (6)	13.7 (6.8)	3.8 (1.7)	

Table 1. Demographic variables as stratified by LOS.

On multivariable regression, Black race (OR 3.54, 95% CI 1.63-7.69) and urgent/emergent surgery (OR 10.70, 95% CI 4.60-24.86) were independently associated with LOS75+ while PCMH had lower odds of LOS 75+ (OR 0.44, 95% CI 0.22-0.85).

	All n=229	PCMH n=140	Non-PCMH n=89	p-value
Minimally-invasive approach	160 (69.9%)	97 (69.3%)	63 (70.8%)	0.8093
Urgent/Emergent operation	45 (19.7%)	21 (15%)	24 (27%)	0.0263
Operation Duration	4.1 (2.1)	3.9 (2)	4.3 (2.2)	0.2815
Complication Postoperatively	83 (36.2%)	50 (35.7%)	33 (37.1%)	0.8342
Requiring the ICU After Surgery	9 (3.9%)	3 (2.1%)	6 (6.7%)	0.0809
Discharge Destination	131 (57.2%)	84 (60%)	47 (52.8%)	0.2837
Death	2 (0.9%)	1 (0.7%)	1 (1.1%)	0.7513
Presented to ED w/in 30 days	22 (10%)	11 (8%)	11 (13.3%)	0.2041
Readmission w/in 30 days	41 (18.5%)	25 (18.1%)	16 (19%)	0.8623
Reoperation w/in 30 days	14 (6.3%)	8 (5.8%)	6 (7.2%)	0.6722

Table 2. Evaluation of intraoperative and postoperative outcomes as stratified by PCMH status.

DISCUSSION

To date, the literature describing the application of PCMHs in the setting of IBD has been limited to evaluating healthcare utilization metrics, as measured by readmissions and ED visits, and patient-centered outcomes such as QOL. While prior research has demonstrated improvements in patient satisfaction and healthcare utilization with IBD-specific PCMHs, surgical outcomes have not been evaluated as primary endpoints. Our study addresses this gap by demonstrating that IBD-specific PCMHs can directly influence surgical outcomes, namely the need for urgent or emergent surgery, and the risk of prolonged hospitalization.

In our study, patient enrollment in a PCMH was associated with a significantly lower rate of urgent or emergent surgery when compared to patients receiving standard care outside of the PCMH (15.0% vs. 27.0%, p = 0.03). This data suggests that coordinated care may and proactive interventions in patients with IBD may reduce surgical acuity. In evaluating the impact of PCMH enrollment on inpatient resource utilization, patients receiving care through a PCMH had significantly lower odds of experiencing a length of stay in the highest quartile (OR 0.44, 95% CI 0.22-0.85).

CONCLUSION

Patients enrolled in an IBD-PCMH had decreased resource utilization for their surgical encounters compared to their non-PCMH counterparts. These data suggest a benefit to surgical patients undergoing care through an IBD PCMH.

FUTURE WORK

- ❖ Evaluate long-term outcomes of IBD-PCMH on patient outcomes
- ❖ Expand evaluation of patients to other IBD-PCMH across multiple institution
- ❖ Evaluate the impact of PCMH on long-term disease severity control, quality of life, and cost-effectiveness of utilizing a PCMH

REFERENCES

1. Click B, Regueiro M. The Inflammatory Bowel Disease Medical Home: From Patients to Populations. *Inflamm Bowel Dis*. 2019;25(12):1881-1885. doi:10.1093/ibd/izz062
2. Petryszyn PW, Witezak I. Costs in inflammatory bowel diseases. *Przegląd Gastroenterol*. 2016;11(1):6-13. doi:10.5114/pg.2016.57883
3. Dan A, Boutros M, Nedjar H, et al. Cost of Ulcerative Colitis in Quebec, Canada: A Retrospective Cohort Study. *Inflamm Bowel Dis*. 2017;23(8):1262-1271. doi:10.1097/MIB.0000000000001147
4. Veet CA, Radomski TR, D’Avella C, et al. Impact of Healthcare Delivery System Type on Clinical, Utilization, and Cost Outcomes of Patient-Centered Medical Homes: a Systematic Review. *J Gen Intern Med*. 2020;35(4):1276-1284. doi:10.1007/s11606-019-05594-3
5. Hong SJ, Jang J, Berg D, et al. Implementation of an Inpatient IBD Service Is Associated with Improvement in Quality of Care and Long-Term Outcomes. *Dig Dis Sci*. 2021;66(11):3753-3759. doi:10.1007/s10620-020-06749-7

