

## Background

- Inflammatory bowel disease (IBD), is a chronic relapsing inflammatory disorder that requires a meticulous multidisciplinary management approach.
- This may prove difficult in safety net hospitals, and it is unclear if a hospital's safety net burden (SNB) is associated with outcomes.
- The aim of this study was to investigate the effect of hospital SNB on in-hospital mortality, length of stay, and hospitalization cost in patients with IBD.

## Methods

- We used the National Inpatient Sample (NIS) to identify all adult hospitalizations with IBD from 2016 to 2018.
- SNB was calculated as the percentage of hospitalizations with Medicaid or uninsured payer status for each hospital in the 2016-2018 database.
- Multivariable models were used to compare outcomes of admissions to hospitals with low SNB (lowest tertile, <18.1%) hospitals with high SNB (highest tertile, >31.1%).

	Low SNB N=45,144	High SNB N=61,459	
<b>Patient Characteristics</b>			
Age, mean (SD), y	55.9 (19.1)	51.2 (18.9)	<.0001
Sex, n (%)			0.0263
Female	25,098 (55.6)	34,591 (56.3)	
Male	20,028 (44.4)	26,848 (43.7)	
Race			<.0001
White	35,576 (82.9)	42,577 (70.6)	
African American	3,451 (8.0)	9,433 (15.6)	
Hispanic	1,990 (4.6)	5,613 (9.3)	
Other	1,892 (4.4)	2,659 (4.5)	
Type of IBD			
Ulcerative Colitis	18,387 (40.7)	22,634 (36.8)	<.0001
Crohn's	27,046 (59.9)	39,150 (63.7)	<.0001
<b>Medical comorbidities, n (%)</b>			
Smoking	395 (0.9)	831 (1.4)	<.0001
Alcohol	1,084 (2.4)	2,157 (3.5)	<.0001
Clostridioides difficile	2,105 (4.7)	2,981 (4.9)	0.1558
Bowel perforation	379 (0.8)	508 (0.8)	0.8178
Severe sepsis with shock	1,805 (4.0)	2,681 (4.4)	0.0035
Blood transfusion	2,758 (6.1)	3,678 (6.0)	0.3977
Primary payer, n (%)			<.0001
Medicare	20,030 (44.5)	23,608 (38.5)	
Medicaid	3,713 (8.2)	13,328 (21.7)	
Private	19,675 (43.7)	18,745 (30.5)	
Self-pay, no charge, other	1,638 (3.6)	5,705 (9.3)	
Hospital location			<.0001
Urban	42,706 (94.6)	56,353 (91.7)	
Rural	2,438 (5.4)	5,106 (8.3)	

Table 1. Demographic, clinical, and hospital characteristics of admissions with inflammatory bowel disease (n=106,603) stratified by safety net burden (SNB), National Inpatient Sample database, 2016-2018.

	Low SNB	High SNB	Unadjusted model	P	Adjusted model	P
In-hospital mortality, n (%)	642 (1.4)	953 (1.6)	Crude OR (95% CI): 1.09 (0.99-1.21)	0.087	Adjusted OR (95% CI) <sup>1</sup> : 1.15 (1.03-1.29)	0.016
Length of stay in days, mean (SD)	5.1 (6.1)	5.6 (7.5)	Mean difference (95% CI): 0.43 (0.34-0.51)	<0.0001	Adjusted mean difference (95% CI) <sup>2</sup> : 0.38 (0.29-0.46)	< 0.0001
Total hospital costs, mean/median	\$15968/ \$9952	\$15670/ \$9449	Mean difference (95% CI): \$-223 (-\$523 to \$78)	0.1461	Adjusted mean difference (95% CI) <sup>3</sup> : \$-402 (-\$700 to -\$103)	0.0083

Table 2: Primary outcomes of SNB with mortality, length of stay, and hospital costs.

<sup>1</sup> Results from multivariable logistic regression model adjusting for age, sex, race, All Patient-Refined Diagnosis Related Group (APR-DRG) risk of mortality, and hospital region. Hospital location was not a significant predictor of mortality (p>0.05) and was removed from the model. <sup>2</sup> Results from multivariable logistic regression model adjusting for age, sex, All Patient-Refined Diagnosis Related Group (APR-DRG) illness severity, hospital location status, and hospital region. <sup>3</sup> Results from multivariable linear regression model adjusting for age, sex, APR-DRG illness severity, hospital location, and hospital region.

## Results

- The demographic and clinical characteristics for the 106,603 patients hospitalized with IBD are shown in Table 1.
- Of all patients, 42.3% were admitted to low SNB hospitals and 57.7% were admitted to high SNB hospitals.
- The main study outcomes (in-hospital mortality, length of stay, and cost) are shown in Table 2.
- In-hospital mortality was 1.4% in low SNB hospitals and 1.6% in high SNB hospitals (adjusted OR=1.15, 95% CI 1.03-1.29, p=0.016).
- Mean length of stay was longer in high SNB hospitals compared to low SNB hospitals (5.6 vs 5.1 days, adjusted mean difference 0.38 days, p<0.0001).
- Low SNB hospitals had higher hospitalization costs compared to high SNB hospitals (\$15,968 vs \$15,670, adjusted mean difference \$402, p=0.01).

## Conclusion

- In this large population of inpatients with IBD, patients admitted to high SNB hospitals had overall worse hospital mortality and longer length of stay. Patients admitted to low SNB hospitals had higher hospital costs.
- Further research is needed to clarify the cause of these discrepant outcomes in IBD hospitalizations, and specific interventions are needed to improve the delivery of care to IBD patients in high SNB hospitals.