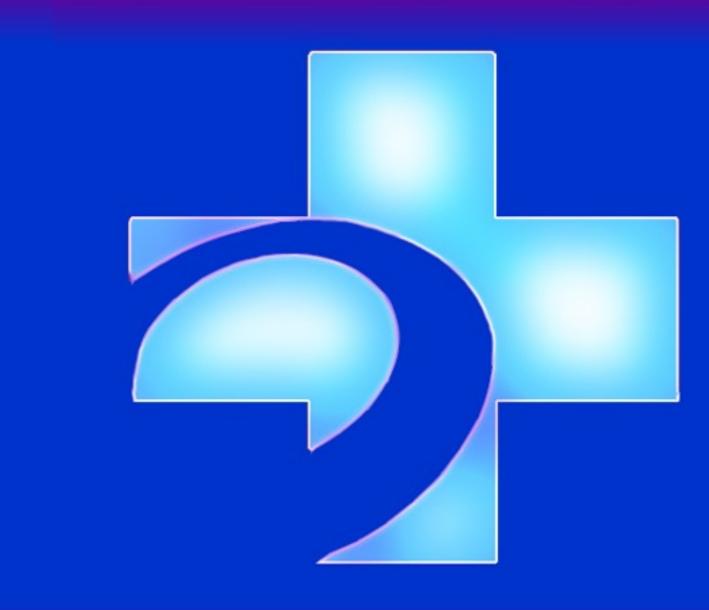# OUTCOMES OF ANTIBIOTIC USE IN ISCHEMIC COLITIS
A Retrospective Cohort Study

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INTRODUCTION

- Ischemic colitis (IC) is caused by inadequate blood flow to the colon.
- Most cases resolve with conservative management. Antibiotics are recommended in moderate and severe disease.
- Severe IC can be life-threatening and require surgery: risk factors include isolated right-sided colitis, peritonitis, shock, and vascular risk.
- **OBJECTIVE:** this study aims to evaluate whether there is any benefit to using antibiotics in mild and moderate IC.

METHODS

STUDY DESIGN

- Study type: single-center retrospective cohort —chart review
- Population: adult inpatients with IC admitted between 2015-2018
- Data source: charts containing International Classification of Disease code K55 (vascular disorder of the intestine), key terms "ischemia" and "colitis" in discharge summaries and radiology reports

INCLUSION CRITERIA	EXCLUSION CRITERIA
- Age > 18	- Antibiotics for any other indication
- Admitted to hospital	- Prior inflammatory bowel disease, colon cancer, or colon resection
- Proven IC diagnosis (endoscopy, diagnostic imaging, operative findings, or histology)	- Endocarditis, Clostridium difficile infection, cardiogenic shock

⟹ Patients assigned to mild-moderate or severe groups as defined by the 2014 American College of Gastroenterology Guidelines

- **PRIMARY OUTCOMES:** Hospital length of stay || Any adverse outcome
- **SECONDARY OUTCOMES:** all-cause mortality at 3 months and 6 months, need for surgical intervention, IC relapse within 1 year, bacteremia

RESULTS — STUDY POPULATION

DATA ANALYSIS

837 charts reviewed
⟹ 191 included

Continuous variables:
Mann-Whitney U test
or Student's t-test
as appropriate

Categorical variables:
Fischer's exact test

Baseline Characteristics					
	Mild-Moderate (N=130)		Severe (N=61)		P
Demographic					
Age (years ±SD)	71.1	±11.6	69.4	±14.3	0.8
Sex = M (%)	33	25.4%	24	39.3%	0.06
Comorbidities					
CAD	20	15.4%	24	39.3%	<0.01
CHF	7	5.4%	5	8.2%	0.53
PVD	10	7.7%	17	27.9%	<0.01
CVD	15	11.5%	5	8.2%	0.62
Dementia	6	4.6%	8	13.1%	0.07
COPD	18	13.8%	9	14.8%	0.83
CTD	4	3.1%	0	0.0%	0.31
PUD	2	1.5%	3	4.9%	0.38
Cirhosis					
Mild-Mod	1	0.8%	0	0.0%	1
Severe	1	0.8%	1	1.6%	0.52
T2DM					
Uncomplicated	18	13.8%	7	11.5%	0.82
Complicated	12	9.2%	18	29.5%	<0.01
Hemiplegia	0	0.0%	0	0.0%	1
CKD	9	6.9%	12	19.7%	**0.03**
Admission Vitals					
BP <90	6	4.6%	12	19.7%	
HR >100	13	10.0%	18	29.5%	
BUN >8	34	26.2%	34	55.7%	
HG <120	25	19.2%	32	52.5%	
N <136	16	12.3%	22	36.1%	
WBC > 15	38	29.2%	25	41.0%	0.1

RESULTS — OUTCOMES

Clinical Outcomes Associated with Antibiotic Use							
	Mild-Moderate IC (N = 130)				Severe IC (N = 61)		
	No Antibiotics		Antibiotics		p	No Antibiotics	Antibiotics	p
	N = 37		N = 93			N = 12	N = 49	
Primary Outcomes								
Length of Stay, days (±SD)	3.14	±2.07	5.22	±6.08	<0.01	17.54 ±21.56	13.66 15.14	0.88
Any Adverse Event	3	8.1%	18	19.3%	0.19	6 50.0%	21 42.9%	0.75
Secondary Outcomes								
Mortality								
3 month	0	0.0%	1	1.1%	NS	2 16.7%	0 0.0%	<0.05
6month	0	0.0%	3	3.2%	0.56	3 25.0%	2 4.1%	<0.05
Surgery	0	0.0%	2	2.2%	NS	3 25.0%	11 22.4%	NS
Relapse 1yr	3	8.1%	11	11.8%	0.76	1 8.3%	6 12.2%	NS
Bacteremia	0	0.0%	1	1.1%	NS	0 0.0%	2 4.1%	NS

DISCUSSION

- Antibiotic use was not associated with adverse events in mild-moderate IC, suggesting that antibiotics do not improve outcomes in this group.
- In patients with mild and moderate IC, antibiotic use was associated with increased length of hospital admission.
- In severe IC antibiotic use did not impact length of stay or total adverse events. Secondary outcome analysis shows increased mortality in this group at 3 and 6 months in patients who did not receive antibiotics.
- **CONCLUSION:** these results suggest that conservative management without the use of antibiotics is sufficient in mild and moderate IC.

⟹ Additional research will be required to establish clear guidelines for antibiotic indications, agent selection, and optimal treatment duration

ABSTRACT

BACKGROUND

Ischemic colitis (IC) is caused by inadequate blood flow to the colon. Most cases resolve with conservative management. Isolated right-sided colitis, peritonitis, shock, and vascular risk factors are predictors of severe disease which can be life-threatening and require surgery. Current guidelines recommend antibiotics for moderate/severe disease. This is based on results from animal models and concern for gut translocation of bacteria; there have been no comparative studies in humans. This study aims to evaluate whether there is benefit to antibiotic use in non-severe IC.

METHODS

This is a single-center retrospective cohort study of adult patients hospitalized with IC from 2015-2018. Inclusion in the study required endoscopic, radiologic, operative, or histologic evidence of ischemic colitis. Patients were divided into mild/moderate and severe IC cohorts as per 2014 American College of Gastroenterology Guidelines. Primary outcomes were length of stay and any adverse event, which is defined as a composite measure of pre-specified secondary outcomes including mortality, need for surgery, 1-year relapse, and bacteremia.

RESULTS

Of 191 patients enrolled in the study, 130 had mild/moderate IC and 61 had severe IC. In mild/moderate IC groups there was no significant difference in total adverse events, although use of antibiotics was associated with a significant increase in LOS (Table 1). In the severe IC groups there was no significant difference in any primary outcomes, but mortality was lower at 3 and 6 months among patients who received antibiotics.

CONCLUSION

Antibiotics did not improve outcomes in mild/moderate IC, suggesting that conservative management may be sufficient in this group. Antibiotic use was associated with increased LOS in mild/moderate IC and with decreased mortality in severe IC; it is not clear whether these associations are true antibiotic-mediated effects or whether they simply reflect a tendency to use antibiotics more frequently in patients who are more unstable. Future prospective research is needed to establish clear guidelines for antibiotic indications, agent selection, and optimal treatment duration.