

# Impact of Persistence With Infliximab on Hospitalizations in Ulcerative Colitis

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Ulcerative colitis (UC) is a chronic inflammatory disorder of unknown etiology that affects the colonic mucosa, resulting in continuous inflammation.<sup>1</sup> Common symptoms associated with UC are loose stools, which often include visible blood, cramping and abdominal pain, tenesmus, fever, fatigue, and weight loss. Moreover, colorectal cancer risk increases with duration of illness after 8 years.<sup>1</sup> In North America, the reported incidence rates for UC range from 2.2 to 14.3 cases per 100,000 patient-years, while prevalence rates range from 37 to 246 cases per 100,000 patients.<sup>2</sup> Ulcerative colitis-related costs have recently been estimated at \$2.7 billion per year, with hospitalizations contributing to 37.6% of this figure.<sup>3</sup> For these and other reasons, the World Gastroenterology Organization and the American College of Gastroenterology specify treatment goals that include preventing complications, hospitalization, and surgery.<sup>1,4</sup>

The anti-tumor necrosis factor therapy infliximab has been shown to effectively induce response and remission in patients with moderately to severely active UC, as demonstrated in the Active Ulcerative Colitis Trials (ACT 1 and ACT 2).<sup>5</sup> Infliximab was also shown to reduce hospitalizations and surgeries in the ACT studies, and there was a significant overall risk reduction of 7% for colectomy.<sup>6</sup> Infliximab was initially approved by the US Food and Drug Administration (FDA) in September 2005 for reduction of signs and symptoms in UC, achievement of clinical remission and mucosal healing in UC, and corticosteroid elimination in patients with moderately to severely active UC who have had an inadequate response to conventional therapy.<sup>7</sup> A subsequent expanded indication for infliximab was announced in October 2006 for the maintenance of clinical remission and mucosal healing in UC.<sup>7</sup> The FDA dosing guidelines for infliximab in adults with moderately to severely active UC is 5 mg/kg given as an intravenous induction regimen at 0, 2, and 6 weeks, followed by a maintenance regimen of 5 mg/kg every 8 weeks thereafter.<sup>7</sup>

Unfortunately, few data studying the dosing patterns of infliximab and the effects of maintenance dosing on hospitalizations, surgeries, and other negative outcomes in UC exist outside clinical trials. In this study, we sought (1) to describe the induction and maintenance dosing patterns

of infliximab in the treatment of UC and (2) to assess the impact of complete induction and persistence with maintenance therapy on hospitalization for UC.

**Objectives:** To assess infliximab infusion patterns in ulcerative colitis (UC) and assess the impact of persistence with infliximab maintenance therapy on UC-related hospitalizations, lengths of stay, and inpatient costs.

**Study Design:** Retrospective analysis of medical claims for UC patients newly initiating infliximab treatment.

**Methods:** Patients were aged  $\geq 18$  years and had 2 UC diagnosis codes, an infliximab index date between September 1, 2005, and January 31, 2008, and continuous enrollment for  $\geq 12$  months before and  $\geq 14$  months after the index date. Infliximab induction (first 56 days postindex) and maintenance ( $>56$  days and  $<12$  months postinduction) patterns were evaluated. Of patients with maintenance treatment, persistence was defined as a medication possession ratio (MPR) of  $\geq 80\%$ , and this group was compared with those without persistence ( $<80\%$  MPR).

**Results:** Overall, 420 patients were included in the analysis; 84.3% ( $n = 354$ ) continued to maintenance therapy. Maintenance infusion patterns were consistent with recommended prescribing information. A smaller proportion of patients with maintenance therapy persistence required hospitalization compared with patients without persistence (3.0% vs 20.4%;  $P < .001$ ). Hospitalized patients with maintenance therapy persistence had significantly lower mean inpatient costs (\$14,243 vs \$32,745;  $P = .046$ ), with a trend toward shorter mean lengths of stay (6.67 vs 9.71 days;  $P = .147$ ) than patients without persistence.

**Conclusions:** Infliximab maintenance therapy persistence in UC was associated with significantly fewer hospitalizations. Once hospitalized, patients with therapeutic persistence had significantly decreased inpatient costs.

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### Take-Away Points

The findings of this observational study support approved labeling for infliximab and clinical trial data showing that induction and subsequent maintenance infliximab therapy may reduce negative outcomes in ulcerative colitis (UC).

- Infliximab induction and maintenance infusion patterns during the first year of therapy were consistent with prescribing recommendations.
- Therapeutic persistence with maintenance therapy was associated with fewer hospitalizations and significantly decreased inpatient costs.
- These data might suggest that UC patients who respond to infliximab should be monitored to ensure that appropriate infliximab maintenance regimens are followed.

days postindex and less than 12 months postinduction. Patients with no infusions after 56 days postindex were considered to have no maintenance therapy. Patients with at least 1 infusion after 56 days postindex were considered to have maintenance therapy. Results for those patients receiving maintenance therapy were stratified by the number of induction doses received (ie, 1, 2, or 3) dur-

ing the 56-day postindex period. The number of infusions and time (days) between infusions were reported for patients receiving maintenance therapy.

**Treatment Persistence.** Treatment persistence was calculated for the maintenance period as a medication possession ratio (MPR), where the total days of supply of infliximab administered during the maintenance period was divided by 360. Patients were required to have at least 1 infliximab infusion claim after day 56, thus indicating maintenance treatment, for the MPR to be calculated. The MPR was calculated through the 14-month postindex period (ie, 12 months of maintenance therapy postinduction). Results for patients with therapeutic persistence ( $\geq 80\%$  MPR) were compared with results for patients without therapeutic persistence ( $< 80\%$  MPR) during maintenance therapy. Prior adherence research has recognized an MPR threshold of 80% as an accepted and standard definition of adherence in UC.<sup>8</sup>

**Ulcerative Colitis–Related Hospitalizations, Lengths of Stay, and Inpatient Costs.** The number of UC-related hospitalizations (ie, inpatient discharge claims with a UC diagnosis in any position on the claim), lengths of UC-related hospitalizations (days), and the associated UC-related inpatient costs were evaluated for the total population for the 14 months after the index infliximab infusion and for the 12 months postinduction for those patients with maintenance therapy. Payments and admissions were evaluated with health plan–paid claims. Ulcerative colitis–related hospitalizations and costs were compared for patients with and without infliximab maintenance therapy. For those patients receiving maintenance therapy, UC-related hospitalizations and costs were compared for patients with and without therapeutic persistence.

### Statistical Analysis

Univariate statistics were generated for the preindex and postindex infliximab periods. Categorical variables were summarized with frequency counts and percentages, with statistical differences assessed via  $\chi^2$  tests. Continuous variables were represented by means, medians, and standard deviations, with statistical differences assessed via nonparametric Wilcoxon

## METHODS

### Study Design and Sample Selection

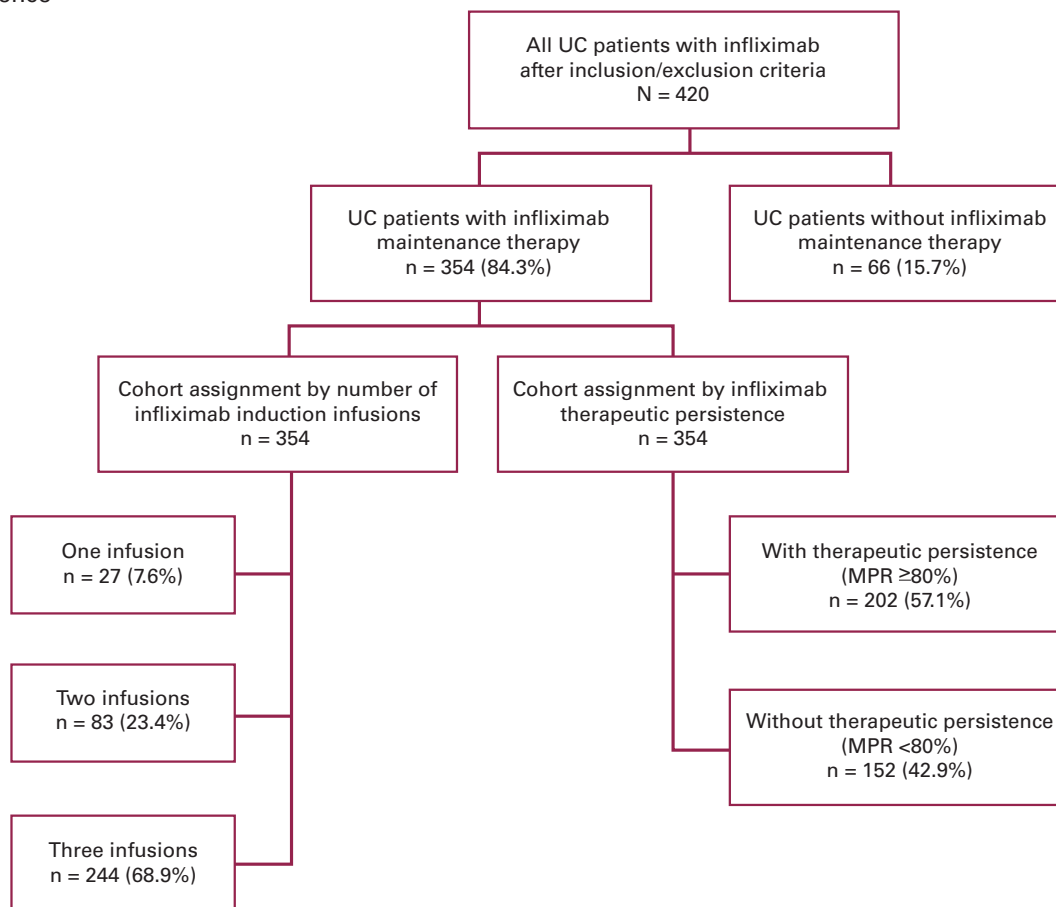
We conducted a retrospective analysis using medical and pharmacy claims from the IMS LifeLink Health Plan Claims (US) Database received between September 1, 2004, and March 31, 2009. Infliximab claims were identified using the Healthcare Common Procedure Coding System code J1745; for each patient, the date of the first infliximab infusion claim between September 1, 2005, and January 31, 2008, was deemed the index date. Patients were included if they were aged  $\geq 18$  years, had newly initiated treatment with infliximab (as identified by a 6-month absence of claims for infliximab prior to the index date), and had at least 2 medical claims with an *International Classification of Disease, 9th Revision (ICD-9)* diagnostic code for UC (ICD-9 code 556.x) prior to the index date. Continuous enrollment for 12 months before (preindex) and 14 months after (postindex) the first infliximab infusion claim was required. Patients were excluded if they had more than 3 infliximab claims during the first 56 days postindex; 2 claims with a diagnosis of Crohn's disease (ICD-9 code 555.x) during the preindex period; or 1 claim with a diagnosis of psoriatic arthritis (ICD-9 code 696.0), psoriasis (ICD-9 code 696.1), rheumatoid arthritis (ICD-9 codes 714.x), or ankylosing spondylitis (ICD-9 code 720) during the preindex period. To be consistent with the ACT study exclusion criteria, patients with evidence of either a partial or complete colectomy within the first 12 weeks postindex were also excluded from the analysis. Partial colectomies were identified by the following Current Procedural Terminology (CPT) codes: 44139-44141, 44143-44147, 44204-44208, 44213, and 45123. Complete colectomies were identified by CPT codes 44150, 44151, 44155-44158, 44160, 44210-44212, 45121, 44152, and 44153.

### Measures and Analyses

**Infliximab Induction and Maintenance Doses.** Infliximab induction doses were defined as infusion claims received during the first 56 days postindex. Infliximab maintenance doses were defined as any infusion claims received after 56

## Persistence With Infliximab

■ **Figure 1.** UC Patient Cohort Assignment by Number of Infliximab Induction Infusions and Therapeutic Persistence



MPR indicates medication possession ratio; UC, ulcerative colitis.

tests. Statistical significance was defined at a 2-sided level of .05 or less. All statistical analyses were performed using SAS release 8.2 (SAS Institute Inc, Cary, North Carolina). Multivariate models were used to assess the relationship between continuing to maintenance or having therapeutic persistence with infliximab and UC-related hospitalizations and inpatient costs. Logistic regression was used for the risk of hospitalization, and generalized linear models with log-link function and gamma distribution were used for the inpatient costs. The multivariate models controlled for baseline demographic and utilization characteristics, including sex, age, geographic location, baseline UC-related hospitalizations, and baseline UC-related outpatient costs.

## RESULTS

### Patient Demographics and Cohort Assignments

A total of 420 UC patients receiving infliximab (maintenance, n = 354; no maintenance, n = 66; therapeutic persis-

tence, n = 202; no therapeutic persistence, n = 152) met the selection criteria and were included in the analyses (Figure 1). Overall, the mean (SD) age was 43.9 (14.1) years, and 47.9% were female. The majority of patients had health plan coverage with a commercial payer (97.6%). Most (72.8%) received their index infliximab infusion in an outpatient setting (ie, physician office or outpatient hospital). Demographic characteristics were reported for the overall UC group and by cohort (ie, maintenance with 1, 2, or 3 induction doses; no maintenance; therapeutic persistence; and no therapeutic persistence). No statistically significant differences in demographic characteristics were observed (Tables 1A and 1B).

### Infliximab Induction and Maintenance Doses

Overall, patients received a mean (SD) of 6.08 (2.49) infliximab infusions during the 12 months postindex. The median number of infliximab infusions postindex was 7. Patients receiving infliximab maintenance therapy had a mean (SD) of 6.83 (1.91) cumulative infusions during the 12-month

■ **Table 1A.** Demographic Characteristics of All Patients (N = 420)<sup>a</sup>

Characteristic	All UC Patients	Patients With Maintenance	Patients Without Maintenance	P
<b>No. (%)</b>	420 (100)	354 (84.3)	66 (15.7)	
<b>Age, y, mean (SD)</b>	43.9 (14.1)	44.0 (14.2)	43.4 (13.8)	.797
<b>Female</b>	201 (47.9)	171 (48.3)	30 (45.5)	.670
<b>Payer type</b>				
Commercial	410 (97.6)	344 (97.2)	66 (100)	
Medicaid	1 (0.2)	1 (0.3)	0 (0)	
Medicare risk	4 (1.0)	4 (1.1)	0 (0)	
Self-insured	5 (1.2)	5 (1.4)	0 (0)	
<b>Plan type</b>				
Consumer-directed healthcare	1 (0.2)	1 (0.3)	0 (0)	
HMO	83 (19.8)	73 (20.6)	10 (15.2)	
Indemnity plan	25 (6.0)	21 (5.9)	4 (6.1)	
POS	57 (13.6)	50 (14.1)	7 (10.6)	
PPO	250 (59.5)	205 (57.9)	45 (68.2)	
Unknown	4 (1.0)	4 (1.1)	0 (0)	
<b>Region</b>				.180
Northeast	72 (17.1)	61 (17.2)	11 (16.7)	
Midwest	143 (34.0)	123 (34.7)	20 (30.3)	
South	119 (28.3)	104 (29.4)	15 (22.7)	
West	86 (20.5)	66 (18.6)	20 (30.3)	
<b>Place of service for index infliximab infusion</b>				
Pharmacy	9 (2.1)	6 (1.7)	3 (4.5)	
Outpatient office	242 (57.6)	201 (56.8)	41 (62.1)	
Outpatient hospital	64 (15.2)	52 (14.7)	12 (18.2)	
Inpatient hospital	65 (15.5)	58 (16.4)	7 (10.6)	
All other places of service	16 (3.8)	16 (4.5)	0 (0)	
Unknown	24 (5.7)	21 (5.9)	3 (4.5)	

HMO indicates health maintenance organization; POS, point of service; PPO, preferred provider organization; UC, ulcerative colitis.  
<sup>a</sup>Values are number (percentage) unless otherwise indicated.

postindex period, whereas those with only induction infusions had a mean (SD) of 2.05 (0.83) infusions. Of those continuing to maintenance therapy, a mean (SD) of 5.87 (1.93) infusions were administered during the maintenance phase (ie, 12 months postinduction). In addition, patients with therapeutic persistence during maintenance therapy had a higher mean (SD) cumulative number of infusions (7.22 [0.85]) compared with patients without therapeutic persistence (4.08 [1.44]) (Figure 2).

Of the 354 patients with UC receiving maintenance therapy, the majority (68.9%) had 3 infliximab infusions during the induction period, while 23.4% had 2 induction infusions and 7.6% had only 1 induction infusion. The overall mean (SD) number of days during the induction period was 35 (14), and

days during the induction period increased with the number of induction doses received (1 induction dose = 1 day [0]; 2 induction doses = 24.9 days [12.9]; 3 induction doses = 42.4 days [4.5]). The median time between infusions during the first year postinduction was 56 days. Table 2 reports the times between infusions for the overall group and by number of induction doses received.

### Ulcerative Colitis–Related Hospitalizations, Lengths of Stay, and Inpatient Costs

Ulcerative colitis–related hospitalizations and their associated costs for all patients are reported in Table 3. Among all patients, those continuing to maintenance therapy incurred fewer mean hospitalizations (0.12 vs 0.32) and lower mean

## Persistence With Infliximab

**Table 1B.** Demographic Characteristics of Patients Continuing to Maintenance Treatment by Therapeutic Persistence (N = 354)<sup>a</sup>

Characteristic	Therapeutic Persistence (MPR ≥80%)	No Therapeutic Persistence (MPR <80%)	P
<b>No. (%)</b>	202 (57.1)	152 (42.9)	
<b>Age, y, mean (SD)</b>	43.7 (13.5)	44.4 (15.1)	.649
<b>Female</b>	101 (50)	70 (46.1)	.462
<b>Payer type</b>			
Commercial	197 (97.5)	147 (96.7)	
Medicaid	0 (0)	1 (0.7)	
Medicare risk	2 (1.0)	2 (1.3)	
Self-insured	3 (1.5)	2 (1.3)	
<b>Plan type</b>			
Consumer-directed healthcare	0 (0)	1 (0.7)	
HMO	48 (23.8)	25 (16.4)	
Indemnity plan	8 (4.0)	13 (8.6)	
POS	27 (13.4)	23 (15.1)	
PPO	116 (57.4)	89 (58.6)	
Unknown	3 (1.5)	1 (0.7)	
<b>Region</b>			.216
Northeast	29 (14.4)	32 (21.1)	
Midwest	78 (38.6)	45 (29.6)	
South	59 (29.2)	45 (29.6)	
West	36 (17.8)	30 (19.7)	
<b>Place of service for index infliximab infusion</b>			
Pharmacy	2 (1.0)	4 (2.6)	
Outpatient office	128 (63.4)	73 (48.0)	
Outpatient hospital	25 (12.4)	27 (17.8)	
Inpatient hospital	26 (12.9)	32 (21.1)	
All other places of service	10 (5.0)	6 (3.9)	
Unknown	11 (5.4)	10 (6.6)	

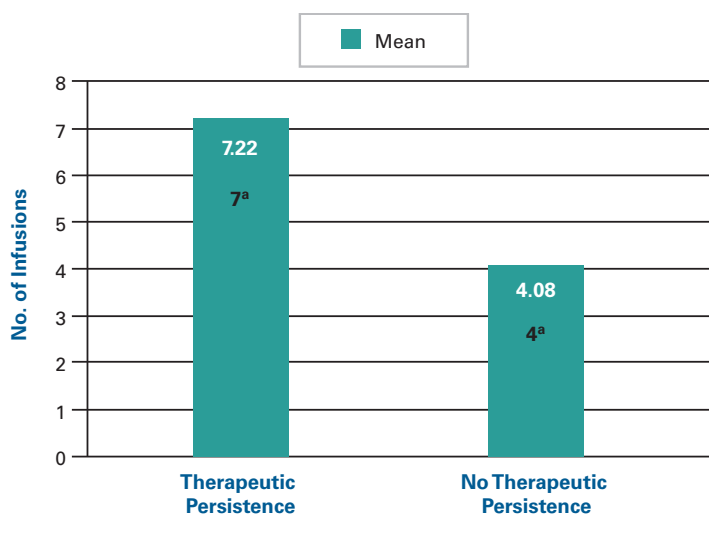
HMO indicates health maintenance organization; MPR, medication possession ratio; POS, point of service; PPO, preferred provider organization.  
<sup>a</sup>Values are number (percentage) unless otherwise indicated.

inpatient costs (\$3118 vs \$8610) than those patients with induction infusions only. Furthermore, those patients with maintenance therapy and therapeutic persistence had fewer mean hospitalizations (0.03 vs 0.22) and lower mean inpatient costs (\$423 vs \$6678) than those without therapeutic persistence.

Ulcerative colitis–related hospitalizations, their associated costs, and the lengths of stay for patients with UC who had at least 1 hospitalization are reported in **Table 4**. The percentage of patients requiring hospitalization was lower for those receiving maintenance therapy than for those who received only induction therapy (11.0% vs 25.8%;  $P = .001$ ) and lower for those who were persistent with maintenance therapy than for those who were not persistent (3.0% vs 20.4%;  $P < .001$ ). After adjustment for baseline characteristics in multivariate

analyses, the risk of hospitalization remained statistically significantly higher for patients not continuing to maintenance (odds ratio 2.94; 95% confidence interval [CI] 1.51, 5.73;  $P = .0015$ ) and for patients without therapeutic persistence (odds ratio 8.50; 95% CI 3.39, 21.30;  $P < .0001$ ). Among the subset of patients with at least 1 hospitalization, those continuing to maintenance therapy incurred slightly fewer mean UC-related hospitalizations (1.10 vs 1.24;  $P = .201$ ), had slightly lower inpatient mean costs (\$28,302 vs \$33,429;  $P = .487$ ), and had a trend toward shorter mean lengths of stay (8.90 vs 11.65 days;  $P = .260$ ) than induction-only patients, although none of these differences were statistically significant. However, among those patients who continued to maintenance therapy and were hospitalized, there was no significant difference in

■ **Figure 2.** Cumulative Number of Infusions During Maintenance Therapy by Persistency Cohort Assignment



<sup>a</sup>Median.  
P < .001.

mean number of UC-related hospitalizations between those with therapeutic persistence and those without therapeutic persistence (1.17 vs 1.10; NS [nonsignificant]) although the mean inpatient costs for those with therapeutic persistence was significantly lower (\$14,243 vs \$32,745; P = .046). The mean length of stay also trended lower for patients with therapeutic persistence (6.67 vs 9.71 days), but was not statistically different. Multivariate analysis demonstrated that the UC-related inpatient costs for patients with at least 1 hospitalization remained statistically significantly higher for patients without therapeutic persistence (P = .0220).

## DISCUSSION

Findings from this study revealed that induction and maintenance infusion patterns were generally consistent with

prescribing recommendations for infliximab. The majority of patients treated with infliximab for UC received 3 induction doses, and more than 80% of patients continued to receive maintenance therapy. During maintenance therapy, the majority of patients were persistent with therapy (57.1%), as measured using an MPR of ≥80%. Patients with therapeutic persistence during maintenance therapy received a cumulative mean of 7.22 infusions, which is consistent with the infliximab prescribing information. The median time between infusions during the maintenance period was 56 days, which aligns with the labeled dosing of maintenance infusions every 8 weeks.

Among all patients in the study, those who progressed to infliximab maintenance therapy and those who were persistent had a trend toward fewer inpatient hospitalizations and associated costs. Patients who did not progress to infliximab maintenance therapy had a nearly 3-fold greater risk of hospitalization. Additionally, patients who did not have therapeutic persistence had more than an 8-fold greater risk of hospitalization. This finding supports previous findings from the ACT clinical trials, which demonstrated that reductions in hospitalizations were associated with infliximab therapy.<sup>6</sup>

When looking just at patients with an inpatient hospitalization, there was a trend toward reduced inpatient utilization among patients who continued to maintenance treatment compared with those who had only induction infusions. For patients who did continue to maintenance therapy, therapeutic persistence with infliximab was not associated with a significant difference in the mean number of hospitalizations compared with no therapeutic persistence. However, patients with therapeutic persistence had significantly lower costs and their lengths of stay trended toward being shorter, possibly indicating that among those who were hospitalized, more intensive services were provided to

■ **Table 2.** Days Between Infusions by Cohort Assignment

Infusion	Overall Maintenance Group			One Induction Dose			Two Induction Doses			Three Induction Doses		
	No.	Mean	Median	No.	Mean	Median	No.	Mean	Median	No.	Mean	Median
1st to 2nd	354	21.7	14	27	74.8	56	83	24.9	21	244	14.7	14
2nd to 3rd	351	37.5	28	24	64.6	56	83	58.4	55	244	27.7	28
3rd to 4th	334	60.4	56	21	65.6	56	69	62.1	56	244	59.4	56
4th to 5th	312	59.5	56	20	54.1	56	59	58.4	56	233	60.2	56
5th to 6th	283	57.5	56	17	61.3	59	53	54.3	56	213	58.0	56
6th to 7th	260	56.1	56	14	55.7	57	48	57.2	56	198	55.8	56
7th to 8th	223	55.7	56	8	51.6	56	37	53.4	56	178	56.3	56

## Persistence With Infliximab

■ **Table 3.** UC-Related Hospitalizations and Inpatient Costs Among All UC Patients by Cohort Assignment

Variable	All UC Patients (N = 420)		Patients With Maintenance (N = 354)	
	Maintenance	No Maintenance	Therapeutic Persistence (≥80%)	No Therapeutic Persistence (<80%)
N (%)	354 (84.3)	66 (15.7)	202 (57.1)	152 (42.9)
Mean (SD) UC-related hospitalizations	0.12 (0.36)	0.32 (0.59)	0.03 (0.21)	0.22 (0.46)
Mean (SD) UC-related inpatient costs	\$3118 (\$13,242)	\$8610 (\$22,237)	\$423 (\$2998)	\$6678 (\$19,420)

UC indicates ulcerative colitis.

■ **Table 4.** UC-Related Hospitalizations, Lengths of Stay, and Inpatient Costs Among All UC Patients With at Least 1 Hospitalization

Variable	All UC Patients (N = 420)			Patients With Maintenance (N = 354)		
	Maintenance	No Maintenance	P	Therapeutic Persistence (≥80%)	No Therapeutic Persistence (<80%)	P
No. (%)	39 (11.0)	17 (25.8)	.001	6 (3.0)	31 (20.4)	<.001
Mean (SD) UC-related hospitalizations	1.10 (0.31)	1.24 (0.44)	.201	1.17 (0.41)	1.10 (0.30)	.646
Mean (SD) UC-related inpatient costs	\$28,302 (\$29,958)	\$33,429 (\$33,577)	.487	\$14,243 (\$11,187)	\$32,745 (\$31,880)	.046
Mean (SD) inpatient length of stay (days)	8.90 (7.18)	11.65 (9.92)	.260	6.67 (4.97)	9.71 (7.50)	.147

UC indicates ulcerative colitis.

patients who were not persistent with maintenance therapy. The cost of infliximab, when administered in the inpatient setting, was included in the overall inpatient cost results. The cost of infliximab, when administered in the outpatient setting, was not included. Future analyses may include an assessment of the impact of infliximab on total UC-related healthcare resource utilization and costs, rather than just those in the inpatient setting.

Several limitations were associated with this analysis. First, we used an administrative database, and no disease severity or clinical information was available to incorporate into the analysis. Second, information regarding the dose of infliximab given at each infusion was not available, so while the infusion patterns were consistent with prescribing recommendations, the actual dose was unknown. Third, the impact of infliximab treatment on clinical outcomes such as mucosal healing could not be evaluated, as clinical measures were not captured in the database. While multivariate analyses were used to control for key baseline characteristics, other factors not available in the administrative database could have influenced a patient's likelihood of persistence with maintenance therapy. These unobservable characteristics may have contributed to any potential bias in the results, such as infliximab antibody formation and clinical response

as evidenced by remission. The ACT trials showed that approximately two-thirds of patients with moderate to severe UC had a response after 8 weeks of therapy, and approximately 50% had a response after 30 weeks.<sup>5</sup> Data from this administrative claims analysis could not identify or assess the level of response or control for patients who discontinued therapy due to lack of efficacy and whose disease course deteriorated as a result; however, the 2010 American College of Gastroenterology and 2007 American Gastroenterological Association evidence-based clinical practice guidelines state that patients who fail to respond after the first 2 doses of infliximab are unlikely to respond to the third dose.<sup>4,9</sup> Despite the lack of certain unobservable clinical data in this claims analysis, the maintenance treatment phase assessed in this study design suggests that if a patient entered maintenance treatment, the clinician may have had a signal of positive clinical response; however, the resultant outcomes observed in this analysis may vary under other circumstances where patients treated with infliximab did not have an adequate response or lost their response over time. Finally, this database contained information largely from commercial payers in the United States; therefore, the results may not be generalizable to patients covered by Medicare or Medicaid or to patients outside the United States.

## CONCLUSION

Despite these limitations, the findings of this study support approved labeling for infliximab and clinical trial data showing that induction and subsequent maintenance infliximab therapy may significantly reduce negative outcomes of UC. Infliximab induction and maintenance infusion patterns during the first year of therapy were consistent with prescribing recommendations, especially for patients receiving 3 induction doses. Continuing to maintenance therapy was associated with a trend toward lower inpatient utilization, as was therapeutic persistence with maintenance therapy. Among hospitalized patients, persistence with maintenance therapy was associated with slightly greater utilization but a statistically significant decrease in costs, indicating a reduction in intensity of services. These data might suggest that UC patients who respond to infliximab should be monitored to ensure that appropriate infliximab maintenance therapeutic regimens are followed.

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**Authorship Information:** Concept and design (CTC, DBS, HCW); acquisition of data (CTC, DBS); analysis and interpretation of data (CTC, HL, PS, DBS, HCW); drafting of the manuscript (CTC, HL, HCW); critical revision of the manuscript for important intellectual content (CTC, HL, DBS, HCW); statistical analysis (PS, DBS); obtaining funding (CTC, HCW); administrative, technical, or logistic support (CTC); and supervision (CTC, HL, HCW).

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