



# Cost Analysis of Inpatient Originator Infliximab (Remicade) vs Biosimilar Infliximab (Renflexis) for Acute Severe Ulcerative Colitis: A Cost Minimization Study

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## INTRODUCTION

Infliximab (IFX) is a standard, inpatient salvage therapy for treatment of refractory acute severe ulcerative colitis (ASUC)<sup>1</sup>. Inpatient IFX, as the originator Remicade, significantly increases colectomy-free survival in this population. The biosimilar Renflexis offers reduced cost as compared to Remicade<sup>2</sup>. We performed a cost-minimization analysis to compare costs with Remicade and Renflexis for inpatient treatment of ASUC.

## METHODS

Retrospective clinical and financial data was obtained from 34 inpatients with refractory ASUC who had received treatment with Renflexis (17) or Remicade (17) between 2019-2021. Clinical data included admission and discharge serum albumin (alb), hemoglobin (Hgb), C-reactive protein (CRP), and colectomy rate within 30 days of treatment (CR-30). Financial data included a decision support drug cost (DSDC), depicting the total cost associated with inpatient infliximab administration, and total inpatient care cost, depicting the full cost of the inpatient admission. The following equation generated a ratio (rDSDC) which represents the percentage of how much the DSDC accounts for the total inpatient care cost, after controlling for dose of infliximab and length of stay.

$$\left[ \frac{\text{DSDC of IFX/Number of Units of IFX}}{\text{Total Inpatient Cost of Care/Length of Stay in Days}} \right]$$

Mean and unpaired T-test (parametric test) were used for clinical data analysis. Median and non-parametric test called Wilcoxon ranked sum test were used for financial data analysis.

Table 1.

		Remicade (n=17)	Renflexis (n=17)	P-Value
Admission	CRP	117.73 mg/L	103.98 mg/L	0.6400
	Albumin	2.74 g/dL	2.45 g/dL	0.1294
	Hgb	11.34 g/dL	10.82 g/dL	0.5051
Discharge	CRP	17.18 mg/L	30.99 mg/L	0.1244
	Albumin	2.36 g/dL	2.4 g/dL	0.8728
	Hgb	10.11 g/dL	9.71 g/dL	0.4875
Colectomy rate within 30 days of Treatment		23.53% (n=4)	29.41% (n=5)	0.6975
Median ratio of decision support drug cost to total inpatient cost of care after accounting for number of units of IFX administered and length of inpatient stay in days		0.04	0.024	<b>0.0025</b>

## RESULTS

No differences were found in baseline or discharge clinical parameters including baseline CRP (P=0.64), alb (P=0.1294), Hgb (P=0.5051), discharge CRP (P=0.1244), alb (P=0.8728), Hgb (P=0.4875), or CR-30 (23.53% vs. 29.41%, p=0.6975) (Table 1).

Without adjusting, total median DSDC accounts for 38.72% of the total inpatient cost of care in the Remicade group as compared to 24.12% in the Renflexis group (fig. 1 & 2).

After adjusting for length of stay and number of doses, the median rDSDC was 0.04 vs. 0.024 in the Remicade vs. Renflexis groups, respectively (fig. 3, p = 0.0025), indicating the decision support drug cost per dose per day for Remicade accounted for around 4% of total inpatient cost of care as compared to 2.4% for Renflexis. This represents a relative cost reduction of ~40% in the Renflexis group as compared with Remicade (Figure 3).

Figure 1. & 2. Unadjusted DSDC as part of total cost

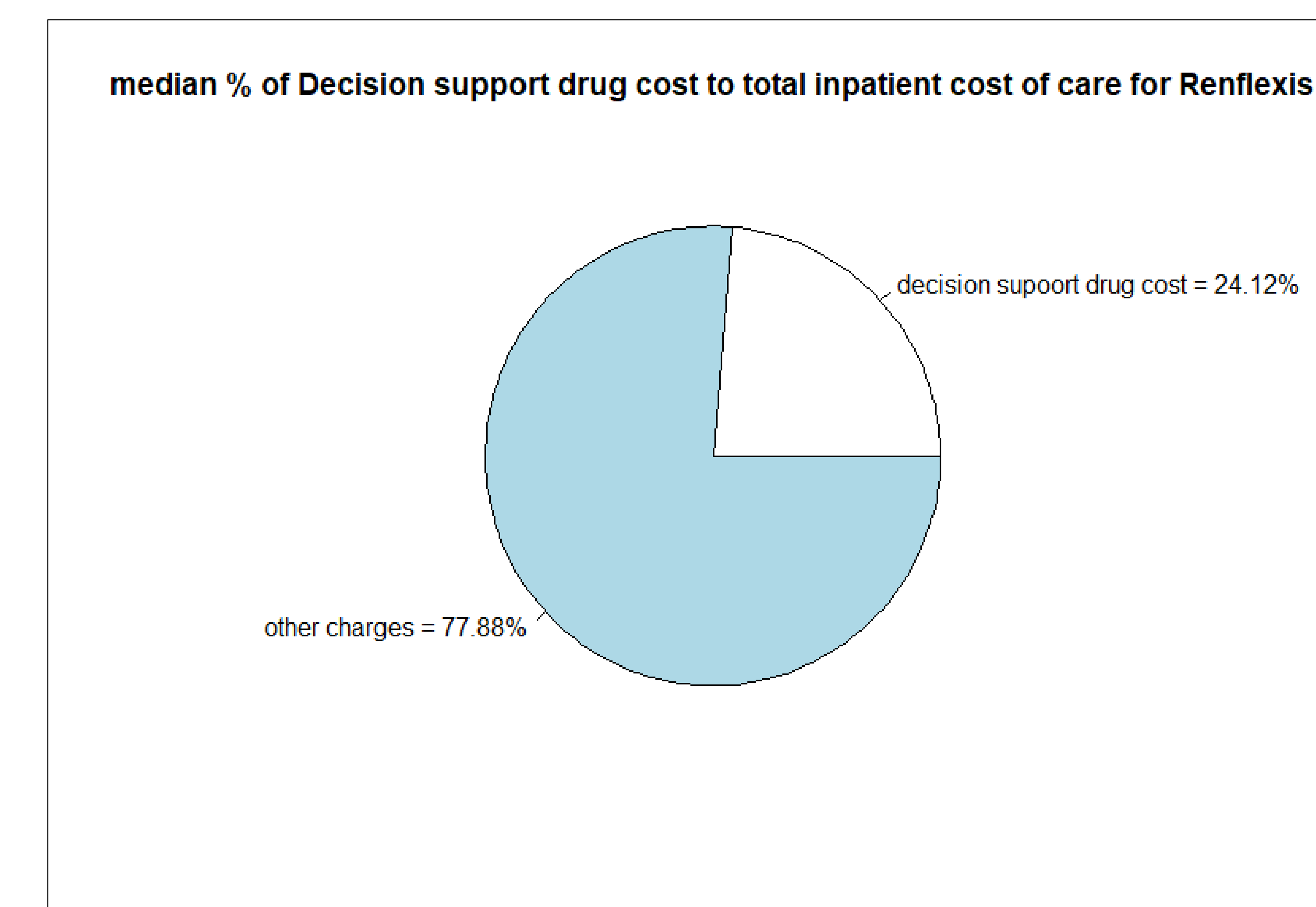
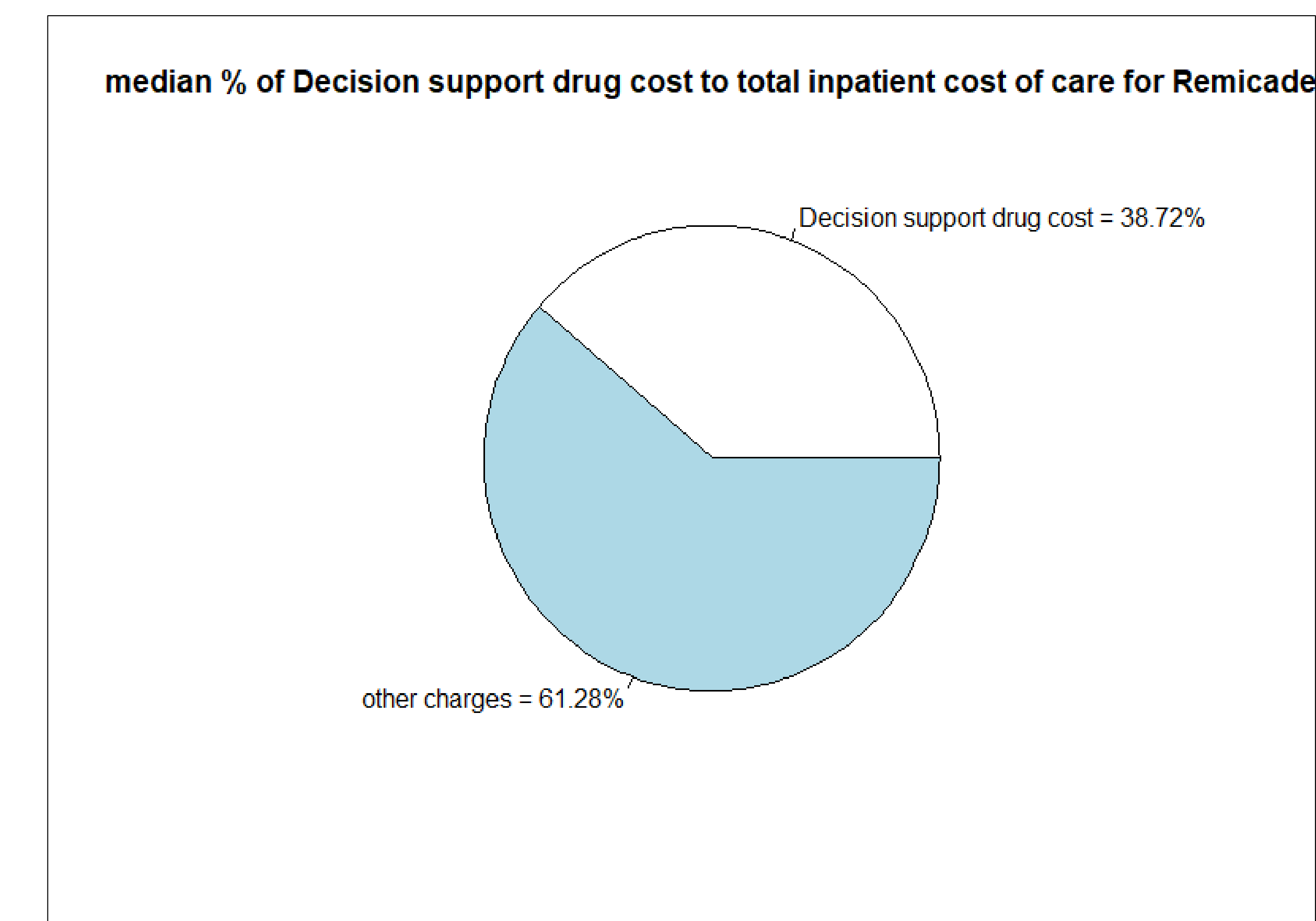
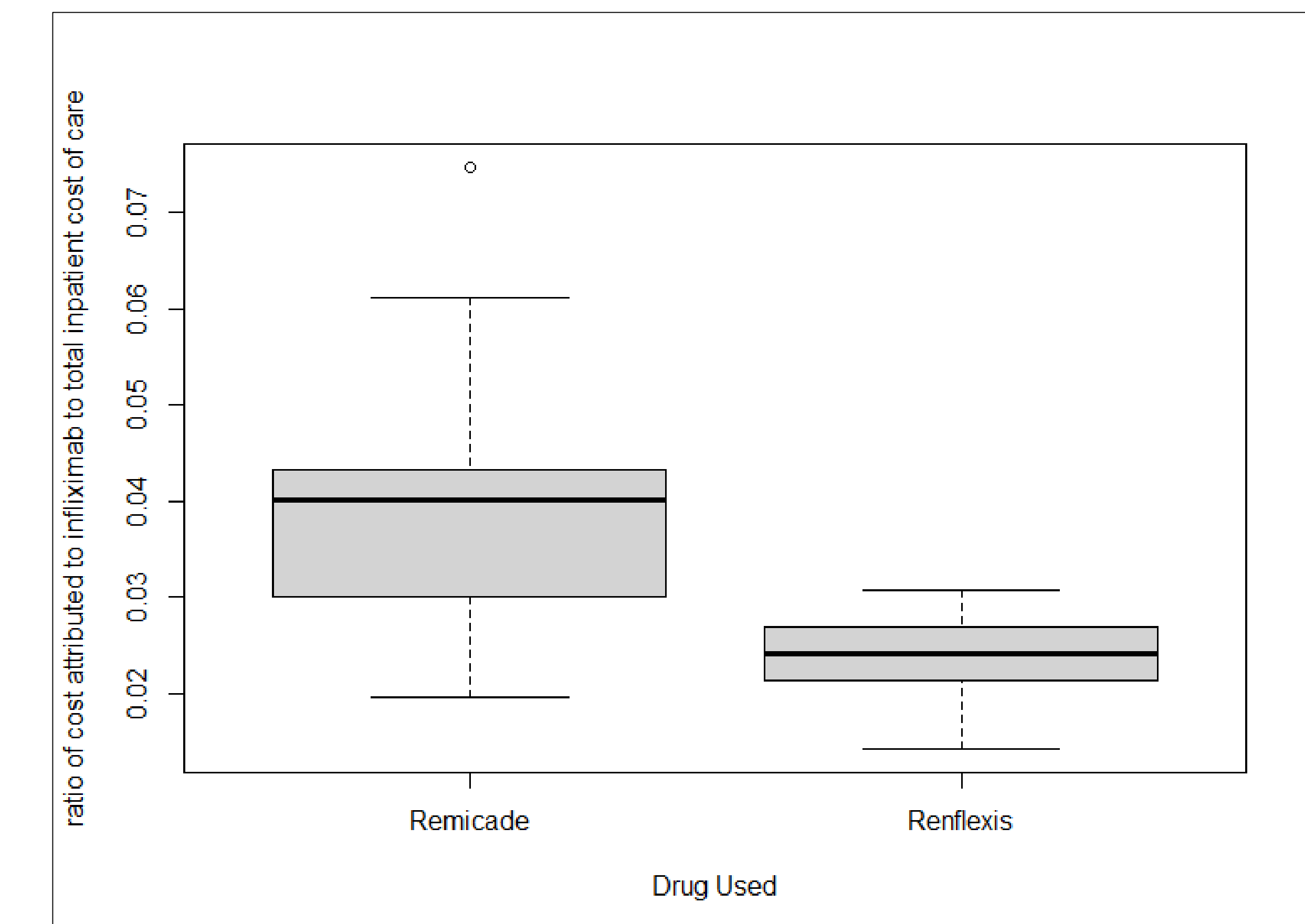


Figure 3. adjusted ratio of DSDC to total cost



## DISCUSSION

A 40% relative reduction in cost attributed to DSDC per dose per day was found using Renflexis, as compared to Remicade, for treating inpatient ASUC. Our calculation included median decision support drug cost as a percentage of the total inpatient care cost, controlling for dose of infliximab and length of stay. Such a reduced cost structure promotes use of Renflexis for ASUC inpatients, which may result in improved utilization, improved health outcomes, and reduced costs for patients and hospitals. Further studies may further confirm non-inferiority and demonstrate cost-effectiveness.

## REFERENCES

1. Sjöberg M, Magnuson A, Björk J, et al. Infliximab as rescue therapy in hospitalised patients with steroid-refractory acute ulcerative colitis: a long-term follow-up of 211 Swedish patients. *Alimentary pharmacology & therapeutics*. 2013;38(4):377-387. doi:10.1111/APT.12387.
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