

Excess Healthcare Costs Associated with Hepatic Encephalopathy and Other Decompensations Among Patients with Cirrhosis in the United States

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STUDY OBJECTIVE

To estimate the excess healthcare costs associated with HE and other decompensations (i.e., ascites and varices with bleeding)

KEY MESSAGES

1. Costs increased prior to decompensation:

Healthcare costs increased during the 3 months prior to the first decompensation event.

2. Substantial and sustained excess costs:

Following decompensation, patients incurred significant excess healthcare costs that remained consistently elevated in the follow-up period (12 months), largely driven by medical expenses.

3. Consistent trends across populations:

Trends were consistent across payer and decompensation types, with higher costs observed among patients with HE and ascites; results for commercially insured patients with HE are shown as a representative example.

CONCLUSION

These findings demonstrate the substantial and sustained burden of decompensated cirrhosis, particularly for HE and ascites. The persistent elevated costs underscore the importance of effective disease management and strategies to delay or prevent decompensation.



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BACKGROUND

- Decompensation events, including hepatic encephalopathy (HE), ascites, and varices with bleeding, occur frequently in patients with cirrhosis and are associated with poor clinical outcomes and increased healthcare utilization and mortality¹⁻⁴
- As the prevalence of cirrhosis is rising globally, understanding the burden of decompensation is essential to support strategies aimed at preventing or delaying its onset¹

METHODS

Data source

- Claims data from Komodo Research Database (01/01/2016-11/30/2024) were used

Study periods and design

- A retrospective cohort study design was used
- The index date was defined as the first decompensation event (HE, ascites, or varices with bleeding) after the first cirrhosis diagnosis
- The baseline period included the 12 months prior to the index date
- The follow-up period was defined as the first of the following: time from index date until the earliest of end of the study period (11/30/2024), death date, or end of continuous healthcare plan eligibility or data availability

Sample selection

- Patients met the following criteria:
 - ≥ 2 diagnoses of cirrhosis on distinct dates ≥ 30 days apart
 - ≥ 1 decompensation event ≥ 30 days after first cirrhosis diagnosis
 - ≥ 12 months of continuous enrollment in healthcare plan before index date
 - No liver transplant or diagnosis for secondary malignant neoplasm of the liver on or before the index date
 - ≥ 18 years old as of index date

Statistical analysis

- Monthly excess healthcare costs** were estimated by comparing post-decompensation all-cause costs with pre-decompensation 'steady period' monthly costs (Months -12 to -4), using a fixed-effects panel regression stratified by payer and index decompensation

RESULTS

Table 1. Patient characteristics¹

Overall, N = 53,789

Age, years	
Mean ± SD [median]	63.4 ± 12.2 [63.5]
Sex, N (%)	
Male	30,255 (56.2%)
Female	22,552 (41.9%)
Unknown	982 (1.8%)
Race/ethnicity, N (%)	
Known	46,237 (86.0%)
White	31,431 (68.0%)
Hispanic or Latino	7,390 (16.0%)
Black or African American	4,471 (9.7%)
Asian or Pacific Islander	1,392 (3.0%)
Other	1,553 (3.4%)
Unknown	7,552 (14.0%)
Region of residence ² , N (%)	
South	18,176 (33.8%)
Midwest	12,459 (23.2%)
Northeast	13,411 (24.9%)
West	9,730 (18.1%)
Payer type ³ , N (%)	
Commercial	22,751 (42.3%)
Medicare Advantage	21,492 (40.0%)
Medicaid	9,530 (17.7%)
Index decompensation, N (%)	
Ascites	32,547 (60.5%)
Hepatic encephalopathy	14,037 (26.1%)
Varices with bleeding	7,205 (13.4%)

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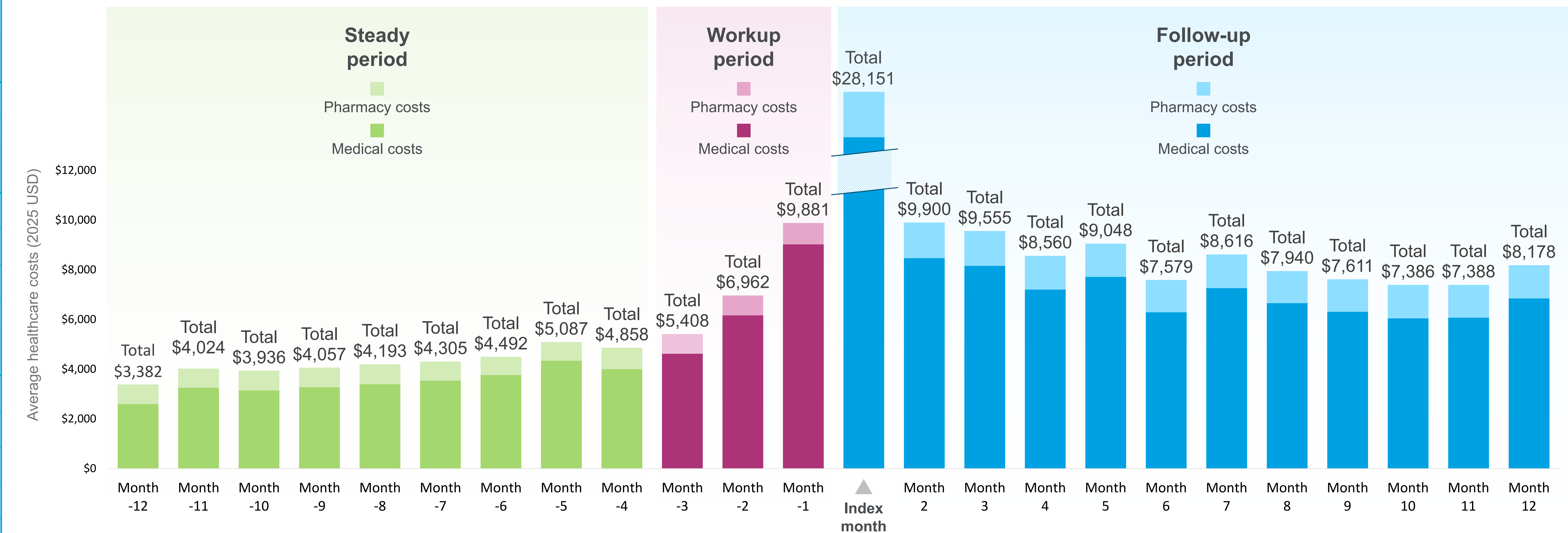
Abbreviations: IQR: interquartile range; N: number; SD: standard deviation.

1. Assessed on the index date (i.e., first decompensation event).

2. 13 patients (<0.1%) had an unknown or other region of residence (e.g., Puerto Rico or Guam).

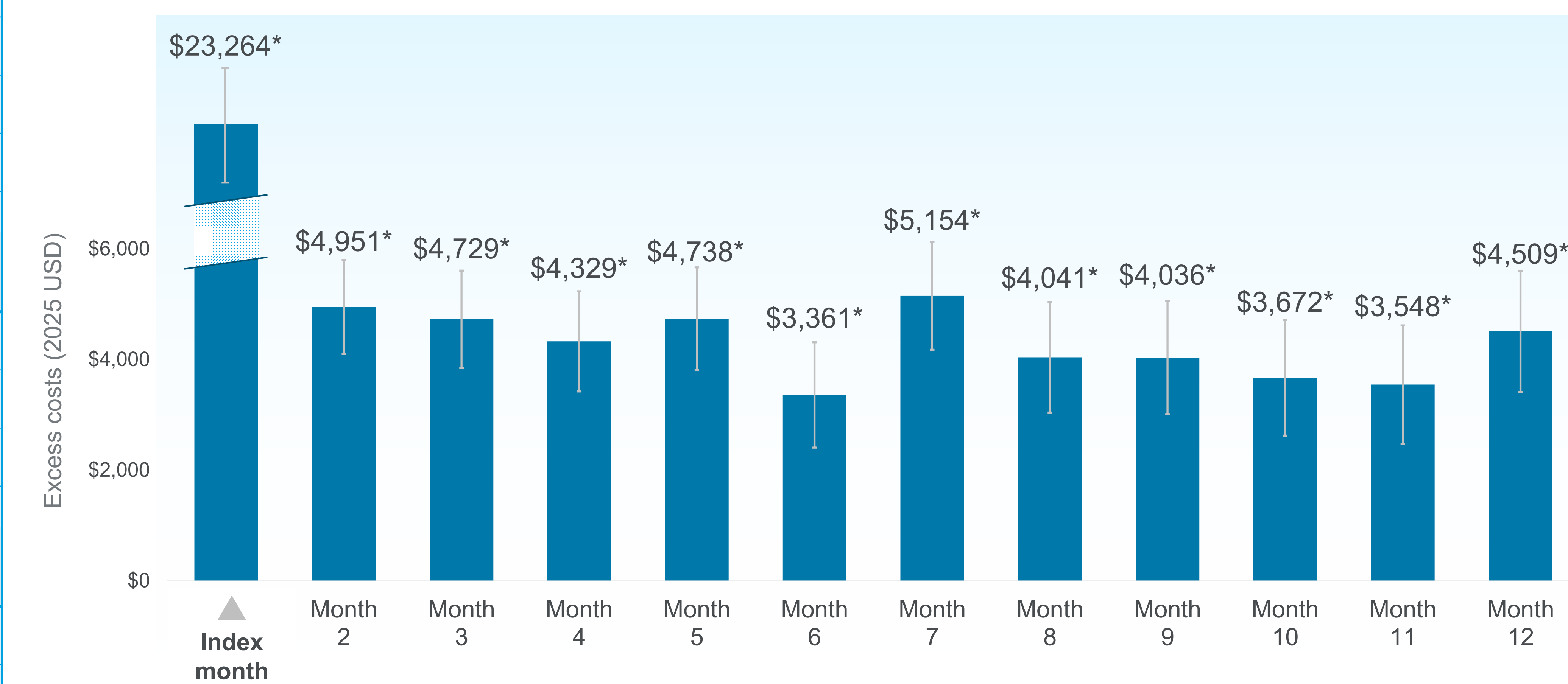
3. 16 patients had an unknown payer type.

Figure 1. Average monthly total healthcare costs – Commercially insured patients with HE



- Costs rose substantially during the three months prior to the first HE event (workup period).
- Costs trended higher after the first HE relative to the steady period.
- Trends were consistent across payers and decompensation types.

Figure 2. Monthly excess healthcare costs post-decompensation¹ – Commercially insured patients with HE



- Post-decompensation, monthly costs were statistically significantly higher than during the steady period.
- Results were consistent across payers and decompensation types.

*Indicates significant at 5%.

1. This approach compares monthly post-decompensation costs to pre-decompensation costs incurred during Months -12 to -4 among patients with ≥1 HE event occurring ≥90 days after cirrhosis diagnosis.

Table 2. Cumulative excess healthcare costs 12 months post-decompensation¹

	Commercial	Medicare	Medicaid
HE	\$70,333	\$29,213	\$40,806
Ascites	\$81,583	\$32,607	\$34,449
Varices with bleeding	\$42,912	\$21,640	\$21,673

Sustained excess costs associated with decompensation rapidly accumulated across all payers and decompensation types.

1. The cumulative costs represent the mean of the summed significant monthly excess costs over the first 12 months post-index (see Figure 2).

References

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Limitations

- Misclassification bias attributable to incorrect diagnosis coding or data omissions may exist
- Komodo imputed missing costs, which may not have represented true costs incurred by payers

Disclosure

ABJ has provided paid consulting services to Salix/BHC, Mallinckrodt Pharmaceuticals, and Madrigal Pharmaceuticals. Other authors: AV, MLL, NH, RS, PGS, and AG are employees of Analysis Group, a consulting company that has provided paid consulting services to Bausch Health. LPC and OO are employed by Bausch Health. This study was undertaken by Analysis Group, sponsored by Bausch Health.