Hepatic Encephalopathy (HE) Overview

Hepatic encephalopathy (HE) is a brain dysfunction caused by liver insufficiency and/or portosystemic shunting. It is often a first complication of decompensated cirrhosis.[1]

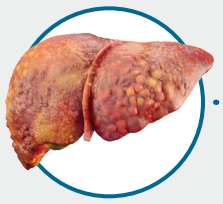
CLASSIFICATION AND SEVERITY

- Spectrum of neuropsychiatric changes[1]
- Classified as covert or overt based on whether symptoms are obvious on routine clinical examination and symptom severity[1]

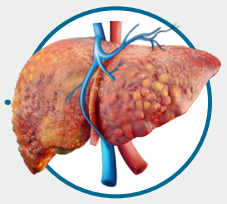
SYMPTOM SEVERITY

MINIMAL HE	**Covert HE** Little to no clinically evident neuropsychiatric changes[1]
GRADE I	
GRADE II	**Overt HE** Lethargy, apathy, somnolence, spatiotemporal disorientation, confusion, dyspraxia, asterixis, bizarre or inappropriate behavior, and, most seriously, coma[1]
GRADE III	
GRADE IV	

Pathophysiology of HE



AND/OR



Decompensated Liver Cirrhosis
Intestinal barrier disruption and dysbiosis increase liver exposure to toxins, causing chronic inflammation, fibrogenesis, and immune dysfunction[2]

Portosystemic Shunting
Diversion of blood away from liver and into systemic circulation[2]

Neurotoxin Accumulation
Including ammonia, lipopolysaccharide (LPS), proinflammatory mediators[2-4]

Risk of HE Occurrence and Recurrence

UP TO 80%
of patients with cirrhosis will eventually develop some form of HE[1]

40% cumulative risk of recurrence at 1 year
after first overt HE episode and at 6 months after second overt HE episode[1]

Treatment Patterns*

64% received HE medication within 30 days after initial hospital discharge,[5†] falling short of quality measures in cirrhosis put forth by the American Association for the Study of Liver Diseases (AASLD)[6]

10% had ≥80% adherence to medication 6 months after initial hospital discharge[5‡]

48% TO 70%
mean adherence rate at 6 months after initial hospital discharge[5‡]

20% of patients who did not receive HE medication within 30 days after initial hospital discharge were readmitted to the hospital for HE within 90 days after hospitalization[5§]

Long-Term Consequences of HE

Can lead to irreversible physiologic changes (eg, astrocyte deterioration in the central nervous system), resulting in persistent cognitive deficits in patients with cirrhosis[7]

*Based on retrospective claims data (regional Medicare Advantage plan in Texas) from 184 patients with hospitalizations or emergency department visits for HE between 2011 and 2018 and either an HE medication refill or outpatient visit ≤30 days after discharge. †HE medications were lactulose, rifaximin, or neomycin. ‡Adherence to medication was based on percentage of days covered and varied by medication used. §Hospitalization rate at 90 days was 14.4% (n=15/104) in patients taking medication and 20.0% (n=12/60) in those not taking medication.

1. Vilstrup H, et al. *Hepatology*. 2014;60(2):715-735. **2.** Rodrigues SG, et al. *Semin Immunol*. 2024;71:101859. **3.** Wu PS, et al. *Gut Pathog*. 2025;17(1):30. **4.** Gallego JJ, et al. *Metab Brain Dis*. 2025;40(1):100. **5.** Vadhariya A, et al. *Medicine*. 2020;99(16):e19603. **6.** Kanwal F, et al. *Hepatology*. 2019;69(4):1787-1797. **7.** Görg B, et al. *J Clin Exp Hepatol*. 2018;8(3):294-300.

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