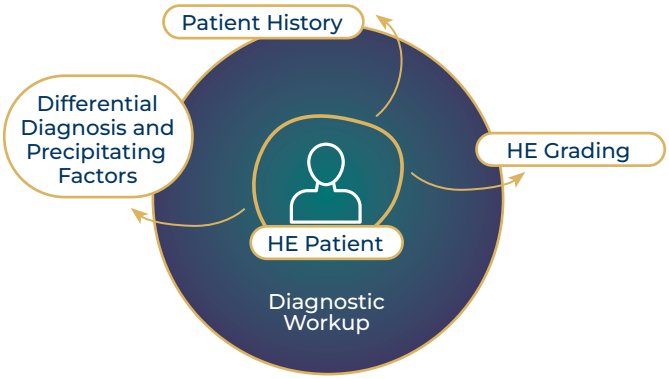
Diagnosing Hepatic Encephalopathy (HE) in Patients With Liver Disease

An HE diagnosis is often referred to as a diagnosis of exclusion.[1]

Clinical suspicion of HE using patient medical history and clinical examination, awareness of common HE symptoms, and exclusion of alternative etiologies may help inform diagnosis. There are also a number of tests and more advanced clinical tools that can be used.[1]



- A clinical diagnosis of overt HE (OHE) can be determined by altered mental status and impaired neuromotor function in patients with liver disease.[2]
- Diagnosing the progression of covert HE (CHE) to OHE early on can impact a patient's quality of life.[2]
- HE severity is graded using the West Haven Criteria. OHE is more severe than CHE.[2]

Patients with cirrhosis and 1 of the following conditions are at a higher risk for OHE.[1]

- Portal hypertension HVPG ≥10 mm Hg[3]
- Transvenous intrahepatic portosystemic shunt (TIPS) placement
- Sarcopenia
- FIB-4 score >2.67; ELF ≥9.8[4]
- Renal failure
- Hyponatremia/refractory ascites
- Diabetes mellitus
- Liver stiffness measurement (LSM) >25* *or* 20-25 kPa plus platelet count <150,000/μL[3,5]
- Histology—F4[3]

ELF, enhanced liver fibrosis; HVPG, hepatic venous pressure gradient.
*In nonobese patients.

Precipitating factors of OHE[1]

- Gastrointestinal bleeding
- Infection: urinary tract infection (UTI), spontaneous bacterial peritonitis (SBP), bacteremia
- Certain medications that may impact the nervous system, such as sedatives, pain medications, psychoactive tranquilizers
- Electrolyte abnormalities: hypernatremia, hyperglycemia
- Renal failure
- Dehydration
- Dietary
- Medication noncompliance

Neurologic manifestations of OHE[1]

Common

- Confusion or coma
- Asterixis
- Loss of fine motor skills
- Hyperreflexia

Less Common

- Cognitive deficits detected by special testing
- Babinski sign
- Slow, monotonous speech
- Extrapyramidal-type movement disorders
- Clonus
- Decerebrate posturing
- Decorticate posturing
- Hyperventilation
- Seizures

Tests that help diagnose and manage HE

Testing options	Description
West Haven Criteria	Considered the gold standard, West Haven Criteria is a clinical scale used to analyze the severity of HE.[6]
MELD Calculator	This model for end-stage liver disease (MELD) calculator uses the international normalized ratio time (INR), the serum creatinine, and serum bilirubin values in order to provide a score on the severity of the chronic liver disease.[7]
Child-Turcotte-Pugh (CTP) Calculator	Use this interactive calculator to estimate the severity of cirrhosis.[8]
PHES—The Psychometric Hepatic Encephalopathy Score (PHES)	This is a series of 5 tests: number connection test-A (NCT-A), number connection test-B (NCT-B), serial dotting test (SDT), line tracing test (LTT), and digital symbol test (DST). Can be used to assess motor speed, motor accuracy, concentration, attention, visual perception, visual-spatial orientation, visual construction, and memory.[1]
Glasgow Coma Scale	For patients with significantly altered mental status, the Glasgow Coma Scale may provide additional diagnostic insight.[6]
Caregiver questionnaire	Use a caregiver intake questionnaire to ask your patient's caregiver questions about their loved one's current mental and physical condition.
Lab testing	In patients with cirrhosis and suspected HE, lab testing may help identify precipitating factors such as ammonia levels, gastrointestinal bleeding, renal failure, drug and alcohol use, etc. For example, elevated ammonia (along with other factors) can be indicative of an HE diagnosis; elevated ammonia alone is not diagnostic of HE.[1,6]
Imaging tests	Magnetic resonance imaging (MRI) and computerized tomography (CT) scans as well as an electroencephalogram (EEG) may look at changes in the brain as part of the diagnostic workup.[6]
FIB-4 Noninvasive Risk Score	A high FIB-4 score >2.67 is a risk factor for cirrhosis.[4]
Baveno VII Noninvasive Risk Assessment	Certain risk of clinically significant portal hypertension and a decompensation event when LSM >25 *or* 20-25 kPa plus platelet count <150,000/µL.[3,5]
Stroop Test	Stroop tests evaluate mental speed and flexibility through a combination of ink colors and words to determine a person's cognitive abilities. Not applicable for color-blind individuals.[1]

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