

What is hepatic encephalopathy?

A poorly working liver may lead to the build-up of toxins. These toxins can cause problems such as:

- Falls
- Poor sleep
- Mood changes (crankiness)
- Poor concentration
- Inability to calculate (do bills, manage money)
- Less alertness

If it gets bad, these toxins can even cause a coma. See Figure 1, below. These changes are all symptoms of **hepatic encephalopathy**. Sometimes we call this “HE”.

Figure 1:

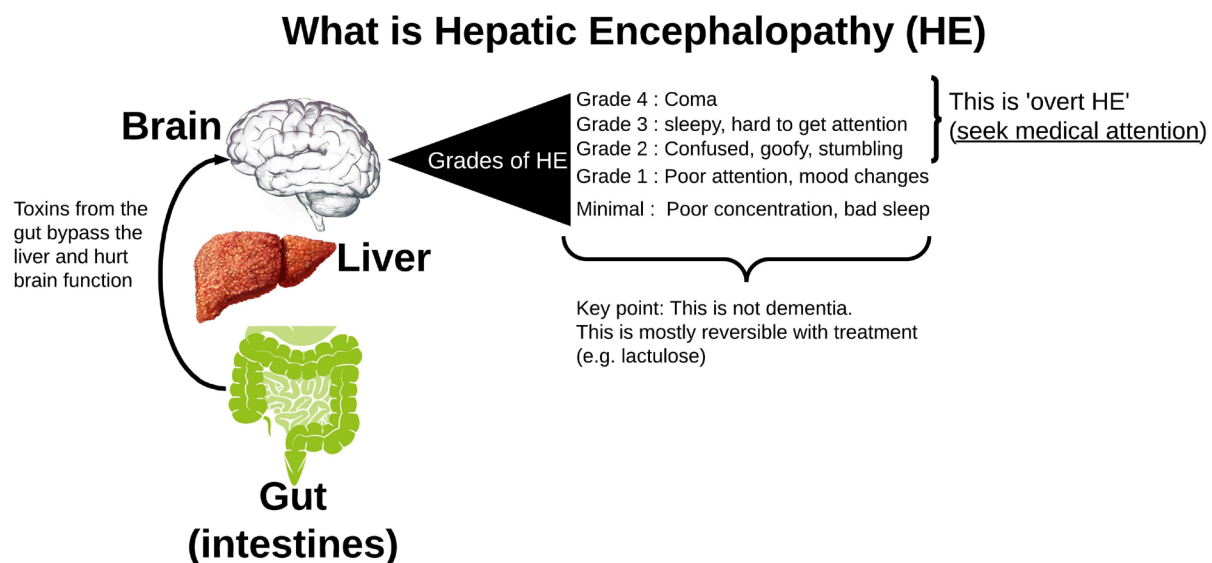


Figure 1 image description:

HE is when toxins from the gut bypass the liver and hurt brain function. There are different grades (levels) of HE. Grades 2-4 are serious and require immediate medical attention:

- Grade 4: Coma
- Grade 3: Sleepy, hard to get attention
- Grade 2: Confused, goofy, stumbling
- Grade 1: Poor attention, mood changes
- Minimal: Poor concentration, bad sleep

Key point: This is not dementia. This is mostly reversible with treatment such as lactulose.

How is Hepatic Encephalopathy diagnosed?

This diagnosis is made by a clinician such as a doctor, physician assistant, or nurse practitioner. We examine you, listen to you or your caregivers and use the information about what is happening in your life to make the diagnosis. There is no blood test for hepatic encephalopathy. It often occurs in people with high ammonia levels, but not always. People with low ammonia can have hepatic encephalopathy and people with high ammonia may not have hepatic encephalopathy.

How is Hepatic Encephalopathy treated?

1. Your doctor may stop medications that can make you confused. Some of the main medications we worry about are called benzodiazepines which include Ativan, Xanax, and valium. Some pain medications can also make hepatic encephalopathy worse.
2. Lactulose is the primary medication we use to treat hepatic encephalopathy. **Lactulose** is a syrup. It helps flush toxins from your gut by trapping them in your stool and making you poop more frequently. Other laxatives or medications that make you poop more will not do the same thing. People usually start with 2 or more tablespoons of lactulose syrup once or twice a

day. The dose is gradually increased until you are having about 2-4 soft stools a day. Lactulose is one of the only medicines where it is up to you and your family to adjust the dose.

- **Increase** the dose if:
 - Your stools are firm
 - You are having fewer than 2 stools per day
 - You are developing symptoms like worsening sleep, falls/stumbling, mood changes, or confusion.
 - **Decrease** the dose if you are having more than 4 loose stools per day.
3. Some people will need a medication called rifaximin (Xifaxan®). This is an **antibiotic** (used to treat infections caused by bacteria) that only works in the intestine. This medicine lowers your risk of developing an episode of severe hepatic encephalopathy.
 4. Your doctor will likely recommend a high protein diet. Your body's muscle plays a big role in cleaning your blood. We need to support it by making sure you eat enough protein. The general amount of protein we recommend is 1 gram protein for every kilogram (about 2 pounds) of your body weight). You may hear from other doctors or websites that high protein is bad. **That advice is outdated.** Without high protein you may lose muscle, experience more hepatic encephalopathy, and become weaker. For more information see "Cirrhosis Nutrition Therapy" here:
<http://www.med.umich.edu/libr/hepatology/CirrhosisNutritionTherapy> .

When should I go to the emergency room for Hepatic Encephalopathy?

Some people with this condition develop active and severe hepatic encephalopathy.

Get urgent medical attention if you are:

- Disoriented
- Confused
- Falling asleep inappropriately

We want you to be seen in the emergency department if you have these symptoms because hepatic encephalopathy can be a sign of infection, dehydration, or kidney damage, and those issues need to be treated urgently.

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