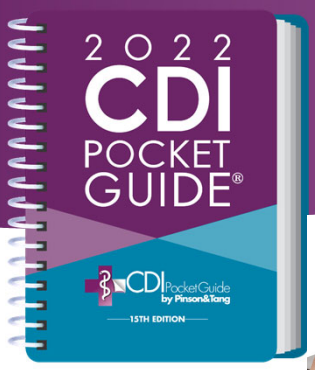
June 2022



CDI Pocket Guide®
Liver Disease & Failure

Pinson&Tang

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About Us

Richard Pinson
MD, FACP, CCS

Dr. Richard Pinson is a physician, educator, administrator, and healthcare consultant. He practiced Internal Medicine and Emergency Medicine in Tennessee for over 20 years having board certification in both.

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RHIA, CCS, CRC

Cynthia brings over 30 years of experience in coding and clinical documentation, health information management, and clinical resource management. For over 25 years she has traveled across the country implementing successful and sustainable coding and CDI programs in hundreds of hospitals.

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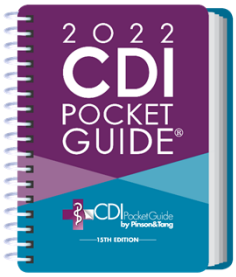

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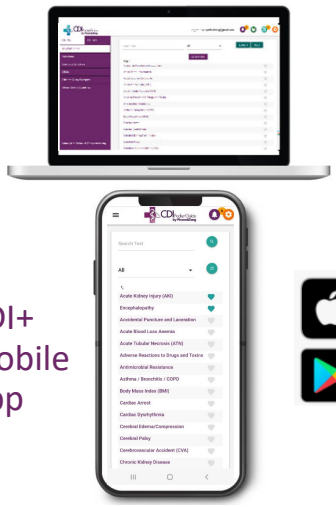

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Liver Disease and Failure

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Agenda

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DRG Assignment: Liver Disease

Overview of the Liver

Clinical Characteristics

Diagnostic Tests, Clinical Indicators, and Treatment

Hepatic Encephalopathy

Case Examples

Q&A

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DRG Assignment

Liver Disease/Failure as Principal Diagnosis

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DRG 432-434 Cirrhosis & alcoholic hepatitis

Liver / Biliary Cirrhosis	1.8808
Alcoholic Hepatitis	1.0299
Alcoholic Liver Failure	0.6207

DRG 441-443 Disorders of liver except malignancy, cirrhosis, alcoholic hepatitis

1.8795	Hepatitis: viral and not due to alcohol
0.9300	Toxic liver disease
0.6632	Hepatic failure NEC and encephalopathy

DRG 435-437 Malignancies of hepatobiliary system or pancreas

1.7534	Hepatobiliary malignancy
1.1215	Pancreatic cancer
0.8959	

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DRG Assignment

Liver Disease/Failure as Secondary Diagnosis

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MCC	• **Acute Hepatic Failure NEC** (K72.00) includes:
	  • Acute non-viral hepatitis NOS
	  • Ischemic hepatitis (shock liver)
	  • Acute hepatic encephalopathy
	  Excludes: Failure due to alcohol (K70.4-) or drugs (K71.1-) and postprocedural (K91.82)
	• **Hepatic Failure or Hepatitis (of any type) with Coma**

CC	• Acute/chronic **viral** hepatitis (B15-B19) • Liver cancer (C22.0-, C78.7) • Liver disease in diseases classified elsewhere (K77)

Non-CC	• **Acute/chronic alcoholic liver failure** • **Acute/chronic liver failure due to drugs** • Hepatic encephalopathy • Liver fibrosis & cirrhosis • Fatty liver disease (NAFLD) • Nonalcoholic steatohepatitis (NASH) • Chronic (non-viral) hepatitis • Chronic hepatic failure NEC

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New ICD-10 Code: Hepatic Encephalopathy

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K76 Other diseases of liver

K76.8 Other specified diseases of liver

K76.82 Hepatic encephalopathy
Hepatic encephalopathy, NOS
Hepatic encephalopathy without coma
Hepatocerebral intoxication
Portal-systemic encephalopathy

Code also underlying liver disease, such as:
acute and subacute hepatic failure without coma (K72.00)
alcoholic hepatic failure without coma (K70.40)
chronic hepatic failure without coma (K72.10)
hepatic failure with toxic liver disease without coma (K71.10)
hepatic failure without coma (K72.90)
icterus of newborn (P55-P59)
postprocedural hepatic failure (K91.82)
viral hepatitis without hepatic coma (B15.9, B16.1, B16.9, B17.10, B19.10, B19.20, B19.9)

Excludes1: acute and subacute hepatic failure with coma (K72.01)
alcoholic hepatic failure with coma (K70.41)
chronic hepatic failure with coma (K72.11)
hepatic failure with coma (K72.91)

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DRG Assignment

Other Liver Disease as Secondary Diagnosis

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K76 Other Diseases of the Liver

MCC	• Abscess of liver • Portal vein phlebitis • Central hemorrhagic necrosis of liver • Infarction of liver • Hepatorenal syndrome
CC	• Portal hypertension

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The Liver

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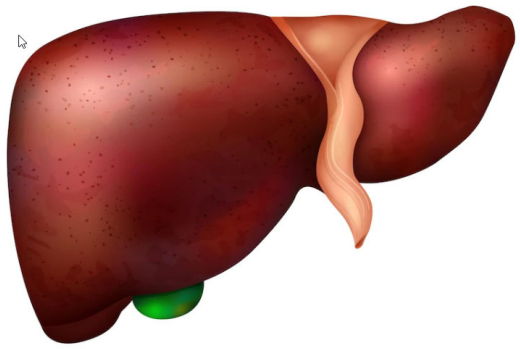
Largest solid organ in the body and part of the digestive system.
Primary functions:

- Filters waste (detoxification): bilirubin, alcohol, medications
- Protein synthesis: albumin
- Blood clotting: prothrombin
- Produces bile that breaks down fats during digestion

Bile flows out of the liver through the bile ducts into the gallbladder, where it's stored until the small intestine needs it for digestion.

Damage to the liver cells and ducts can lead to cirrhosis and liver failure.



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The Liver

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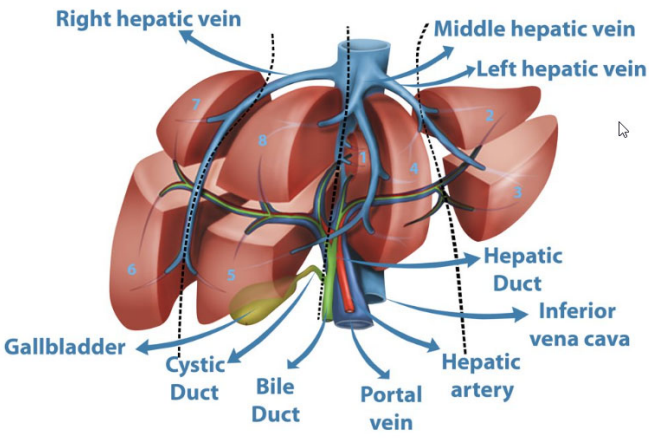
Hepatic duct	Carries bile out of the liver
Cystic duct	Carries bile into and out of the gall bladder
Bile duct	Continues to carry bile from hepatic and cystic ducts
Portal vein	Delivers blood from the intestines to the liver
Hepatic veins	Carries blood from the liver to the inferior vena cava
Hepatic arteries	Carries blood to the liver from the aorta



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Liver Disease and Failure

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Cirrhosis → **Failure** ← **Hepatitis**

Healthy liver cells are replaced by scar tissue (cirrhosis).

- **Stage I**: Fatty liver disease (steatosis), or inflammation of the bile duct or liver.
- **Stage II**: Scarring (fibrosis) of the liver due to chronic inflammation.
- **Stage III**: Permanent inflammation impacting liver function.
- **Stage IV**: Liver failure

Acute or chronic loss of liver function.

Acute: Typically, do not have cirrhosis or pre-existing liver disease. Common causes: drugs and toxins, viral hepatitis, malignancy, sepsis, severe hypotension (shock liver).

Chronic: Most common cause is cirrhosis resulting from alcohol abuse, hepatitis B or C, or non-alcoholic fatty liver disease.

Hepatitis is inflammation of the liver.

- Most common cause is viral infection: A, B, and C.
- Other causes: drugs, alcohol use, and autoimmune conditions.

Hepatitis B and C can result in long-term liver disease and ultimately failure.

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Hepatitis: Viral and Non-Viral

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Inflammation of the liver

Signs and symptoms: Elevated LFTs; fever, fatigue, abdominal pain, joint pain, nausea or vomiting, loss of appetite, jaundice, dark urine, pale stools. Some have no noticeable symptoms.

Causes:

1. Viral: Hepatitis A, B, C
2. Non-Viral: Heavy alcohol use, autoimmune conditions

Viral Hepatitis

Hepatitis A: Acute only.

Hepatitis B: Acute or chronic. Most adults clear the virus. Children are more likely to develop chronic hepatitis B. Some do not have symptoms until significant liver damage has occurred.

Hepatitis C: Acute or chronic. Some experience only an acute illness that resolves on its own. Over 50% develop chronic hepatitis C and eventually develop cirrhosis or liver cancer.

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Viral Hepatitis A, B, C

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Hepatitis	A	B	C
Transmission	Fecal-oral	Contact with blood and bodily fluids with HBV	Contact with blood that contains HCV
Incubation Period	15-50 days	60-150 days	14-84 days
Acute vs. chronic	Acute only	Acute or chronic. Most adults clear the virus; children who contract it are more likely to develop chronic hepatitis B. Patients with chronic hepatitis B often do not have symptoms until significant liver damage has occurred.	Acute or chronic. Pts may experience only an acute illness that resolves on its own. Over 50% develop chronic hepatitis C and eventually develop cirrhosis or liver cancer.
Treatment	Supportive care	Acute: Supportive care. Chronic: entecavir (Baraclude), tenofovir alafenamide (Vemlidy), tenofovir disoproxil fumarate (Viread)	Antiviral drugs can sometimes clear the virus: Daclatasvir (Daklinza), elbasvir/ grazoprevir (Zepatier), ledipasvir/ sofosbuvir (Harvoni), simeprevir (Olysio), sofosbuvir (Sovaldi)
Vaccine	Yes	Yes	No

Hepatitis D is the most severe form and can only be contracted if already has Hepatitis B (HBV).
Hepatitis E is not commonly acquired in the U.S. and found in developing countries.

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Acute vs. Chronic Liver Failure

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Acute Liver Failure	Chronic Liver Failure	Decompensated Cirrhosis
Patients typically do not have cirrhosis or pre-existing liver disease. Common causes are acetaminophen toxicity, drugs and toxins, acute viral hepatitis, malignancy, sepsis, severe hypotension ("shock liver"). **Diagnostic Criteria** Cause + Prolonged and progressively increasing prothrombin time: **INR of ≥ 1.5**. Other abnormal laboratory tests: ▪ Aminotransferase (AST & ALT) > 3x URL ▪ Elevated bilirubin ▪ Low platelet count (< 150K)	Patients usually have cirrhosis resulting from alcohol abuse, hepatitis B or C, or non-alcoholic fatty liver disease. **Diagnostic Criteria** Cause + Abnormal laboratory tests: ▪ Aminotransferase (AST & ALT) > 3x URL ▪ Elevated bilirubin ▪ Low platelet count (< 150K) Secondary renal failure (hepatorenal syndrome) and portal hypertension are often associated.	Acute manifestations: ▪ **Hepatic encephalopathy:** Altered brain function caused by the liver's inability to eliminate toxins from the blood. ▪ **Variceal bleeding:** Esophageal and gastric varices are caused by obstruction of the portal vein to the liver (portal hypertension). ▪ **Ascites**: Increasing fluid accumulation in the peritoneum (abdominal cavity).

Mild to moderate elevations of the liver enzymes are common and often found on routine labs in otherwise healthy individuals. Patients with chronic liver disease will have chronically elevated liver function tests.

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Diagnostic Testing

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Test	Test Results	May clinically indicate
Aminotransferase (ALT, AST, GGT)	Elevated >3x URL	Liver inflammation or destruction
Bilirubin	Above normal	Inadequate liver cell function
Alkaline phosphatase (ALP)	Elevated >1.5-2.0x URL	Liver and/or biliary damage
Albumin	Below normal	Inadequate liver cell function
Ammonia	Above normal	Hepatic encephalopathy
INR*	≥ 1.5	Required for the diagnosis of acute hepatic failure
Platelets	< 150K	Acute liver failure (but can be due to portal hypertension with splenomegaly or other diseases)

*Patients on Coumadin therapy have an expected therapeutic range 2.0-3.0. If a patient is being treated with Vitamin K, the INR may be indeterminate if < 1.5.

Note: ALT, AST is formerly known as SGOT, SGPT.

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Acute Liver Failure: Diagnosis

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Cause	Acute Liver Failure due to Acetaminophen	Ischemic Hepatitis "Shock Liver"	Acute Viral Hepatitis	Acute Alcoholic Hepatitis
Definition	Acute toxic liver failure	Decreased blood flow to the liver usually due to profound hypotension (shock).	Acute viral infection – usually without liver failure	Alcohol toxicity – with or without liver failure
Aminotransferase (ALT, AST)	25-250 times URL	Sudden elevation > 20 times URL	Elevated > 3x URL	Elevated > 3x URL
Ammonia	Normal or Elevated	Elevated	Normal or elevated	Normal or elevated
Bilirubin	High elevation	High elevation	Variable (normal or slight elevation)	Elevated
Prothrombin/INR*	≥ 1.5	≥ 1.5	≥ 1.5	≥ 1.5
Platelets	Variable	Variable	Normal or low	Normal or low

*Patients on Coumadin therapy have an expected therapeutic range 2.0-3.0. If a patient is being treated with Vitamin K, the INR may be indeterminate if < 1.5.

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Treatment

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- Management of underlying cause and any complications, such as ascites, variceal bleeding, autoimmune disorders
- Avoidance of hepatotoxic drugs (acetaminophen, alcohol)
- N-acetylcysteine for acetaminophen toxicity
- Lactulose for hepatic encephalopathy
- Vitamin K for increased INR
- Antiviral drugs (e.g., tenofovir, sofosbuvir) for Hepatitis B and C
- Liver transplant for most severe cases

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Other Liver Disease

MCCs

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Hepatorenal syndrome is acute kidney injury due to acute or chronic liver disease. It is characterized by a progressive rise in creatinine in patients with liver disease (not due to another cause). Clinical indicators:

- Meets AKI criteria, usually with ascites resistant to diuretics

Note the diagnosis of the hepatorenal syndrome is one of **exclusion.** The diagnosis is excluded if due to other causes, i.e., dehydration, contrast-induced, drugs/nephrotoxins, obstruction, glomerulonephritis, etc.

Portal hypertension is increased in the pressure within the portal vein (usually due to cirrhosis) due to obstruction of blood flow through the liver. This can cause varices to develop across the esophagus and stomach to get around the blockage, which become fragile and can bleed easily.

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Hepatic Encephalopathy

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Hepatic Encephalopathy and Hepatic Failure are two different diagnoses
Both are indexed to Hepatic Failure NEC (until Oct 1)

- A spectrum of **neurological impairment** in patients with severe liver disease/ failure
- **Symptoms**: disorientation, abnormal behavior, confusion, agitation, asterixis (hand flapping), combativeness, gait disturbance, somnolence that may progress to coma
- Caused by **elevated blood ammonia**
- Treated with lactulose
- Can be acute (overt), chronic or acute on chronic

Acute Hepatic Encephalopathy with Chronic Liver Disease/Failure

Acute or unspecified hepatic encephalopathy (**K72.00,** K72.90) is usually the principal diagnosis (acute manifestation) with the chronic liver disease/failure (underlying cause) as secondary diagnosis.

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Principal Diagnosis: Specific Coding Rules

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Decompensated Cirrhosis

Hepatic encephalopathy due to cirrhosis
- Hepatic encephalopathy (K72.90) is assigned as principal diagnosis since it is the acute manifestation of liver cirrhosis/failure and typically the reason for admission.

→ **DRGs 441-443**

Disorders of liver except malignancy, cirrhosis, alcoholic hepatitis
1.8795 0.9300 0.6632

Esophageal varices with bleeding with cirrhosis
- Liver cirrhosis (K74.60) is assigned as principal diagnosis based on the cause and effect (E/M coding rule)

Ascites due to liver cirrhosis
- Alcoholic cirrhosis of liver with ascites (K70.31)
- Liver cirrhosis (K74.60), ascites (R18.8)

→ **DRGs 432-434**

Cirrhosis & alcoholic hepatitis
1.8808 1.0299 0.6207

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Toxic Metabolic Encephalopathy due to Hepatic Encephalopathy

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Coding Clinic 2021 First Quarter, p. 13

Question: A 70-year-old patient with a history of **nonalcoholic steatohepatitis (NASH) cirrhosis** complicated by hepatic encephalopathy and diabetes presented to the ED secondary to altered mental status. The patient was admitted for a full work-up and was diagnosed with **toxic metabolic encephalopathy (TME) secondary to acute on chronic hepatic encephalopathy**.

Is it appropriate to separately report TME when due to hepatic encephalopathy? Would TME be considered inherent to hepatic encephalopathy? How should toxic metabolic encephalopathy due to acute on chronic hepatic encephalopathy be coded?

Answer: Assign codes K72.00, Acute and subacute hepatic failure without coma, K72.10, Chronic hepatic failure, without coma, and G92, Toxic encephalopathy, for toxic metabolic encephalopathy due to acute on chronic hepatic encephalopathy. Code G92 is assigned separately to specifically capture the toxic metabolic encephalopathy. All three codes are needed to capture the patient's diagnoses.

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Toxic Metabolic Encephalopathy due to Hepatic Encephalopathy: Clarification

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Coding Clinic 2022 First Quarter, p. 52

The encephalopathy that occurs with liver failure is metabolic in nature from toxins generated within the body, not from external toxins.

G92.8
Other toxic encephalopathy
Toxic encephalitis
Toxic metabolic encephalopathy
Code first poisoning due to drug or toxin, if applicable, (T36-T65 with fifth or sixth character 1-4 or 6)
Use additional code for adverse effect, if applicable, to identify drug (T36-T50 with fifth or sixth character 5)

This code assignment does not imply external toxins and a toxin does not have to come from outside the body in order to assign this code.

Toxic metabolic encephalopathy is not inherent to hepatic encephalopathy, therefore code G92.8 should be assigned separately to specifically capture the TME.

The Alphabetic Index for Encephalopathy, toxic, metabolic, leads to code G92.8 and the inclusion term "Toxic metabolic encephalopathy" confirms that this is the correct code assignment. Code assignment is based on the provider's documentation of the condition and is not based on a particular clinical definition or criterion.

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Question #1

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We see a lot of liver disease patients, and often the documentation will state **decompensated cirrhosis**. The patient is documented to have hepatic encephalopathy, INR 1.3, bilirubin normal, and AST/ALT slightly elevated but baseline. The documentation will read: "57-year-old male with past medical history of ETOH cirrhosis. Admitted with decompensated cirrhosis." The codes would be either ETOH cirrhosis with or without hepatic failure. What is the best way to query this type of documentation?

- Would you query for the acuity of the hepatic encephalopathy?
- Would you query to see if the ETOH cirrhosis was with or without hepatic failure?
- Would you automatically code ETOH Cirrhosis with hepatic failure based on the documentation of decompensated cirrhosis?

The acute manifestation of the decompensated cirrhosis, hepatic encephalopathy, would be assigned as the principal diagnosis if clinically valid (symptoms/elevated ammonia levels).

Since it is the principal diagnosis, it is not necessary to query for the acuity.

"Hepatic failure" is not clinically supported. Acute/chronic alcoholic hepatic failure is assigned to code K70.40 (non-CC).

PDX: Hepatic encephalopathy, K72.90
SDX: Alcoholic cirrhosis, K70.30

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Question #2

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Recently we have questioned the appropriate coding of **hepatic encephalopathy**. It is our understanding that this is a cognitive impairment of neuro function in patients with Cirrhosis, which can resolve with medication, but the patient continues to be on medication to prevent further episodes of impairment. Sometimes these patients are on the liver transplant list but not always.

Per the ICD-10 Index, hepatic encephalopathy codes to liver failure. Therefore, is it correct to code chronic liver failure if a patient is admitted with **cirrhosis of the liver** with a history of hepatic encephalopathy on preventive Lactoluse and Rifaximin who is AAO x 3 with no other symptoms of encephalopathy?

Would the hepatic encephalopathy be coded at all if the patient does not have current signs and symptoms of hepatic encephalopathy? Would the patients awaiting transplant status impact the coding of the hepatic encephalopathy?

Hepatic encephalopathy (K72.90, K72.10) would not be coded without signs and symptoms. Only the code for the patient's chronic liver disease diagnosis (e.g., liver cirrhosis, alcoholic liver failure, end stage liver disease) would be assigned.

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Case #1

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56-year-old male with severe cirrhosis due to chronic HCV infection taking lactulose admitted with intractable nausea, vomiting and confusion, disorientation, and combativeness.

Bilirubin 6.2 mg/dL (<1.2), ALT 221 (5-55), AST 297 (10-40), blood ammonia 110 µmol/L (35-65).

Diagnosis: Chronic liver failure with acute hepatic encephalopathy due to inability to take lactulose.

Principal Diagnosis:
- Acute hepatic encephalopathy (K72.00)

Other Diagnoses:
- Chronic liver failure (K72.10)
- Chronic viral hepatitis C (B18.2)
- Liver cirrhosis (K74.60)

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Case #2

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52-year-old female with alcohol cirrhosis who quit drinking last April 2020. She was sent over from IR post paracentesis for “somnolence” with concern for hepatic encephalopathy. She has an elevated ammonia of 89 (35-65) on admission.

Clinically indicates:

- Hepatic encephalopathy (K72.90)
- Alcoholic cirrhosis (K70.30)

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Case #3

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63-year-old male with PMHx of COPD admitted with fever and lethargy, O2 sats 85%. Diagnosed with COVID pneumonia and acute hypoxic respiratory failure treated with Remdesivir, Dexamethasone. Progress notes: diffuse liver disease. Patient expired.

AST 120 (10-40), ALT 202 (5-55)
Alk Phosphate: 476 (90-300)
Albumin: 2.8 (3.3-5.5)
Tprotein: 4.6 (6.0-8.3)
Tbilirubin: 1.1 (<1.2)

No INR, aPTT.

Principal Diagnosis:
- COVID (U07.1)

Secondary Diagnoses:
- COVID pneumonia (J12.82)
- Acute hypoxic respiratory failure (J96.01)
- Liver disease (K76.9)

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Case #4

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67-year-old male with ETOH cirrhosis and portal HTN admitted with hematemesis and hematochezia, lethargy, confusion, metabolic encephalopathy.

EGD: Esophageal varices likely cause of bleeding, banded during EGD to prevent further bleeding. Colonoscopy showed diverticuli; no active bleeding seen.

Discharge Summary:
- Esophageal varices
- Alcoholic liver cirrhosis
- Hepatic encephalopathy

Etiology-Manifestation rule applies

Principal Diagnosis:
- Alcoholic liver cirrhosis (K70.30)

Secondary diagnoses:
- Portal hypertension (K76.6)
- Secondary esophageal varices with bleeding (I85.11)
- Hepatic encephalopathy (K72.90)

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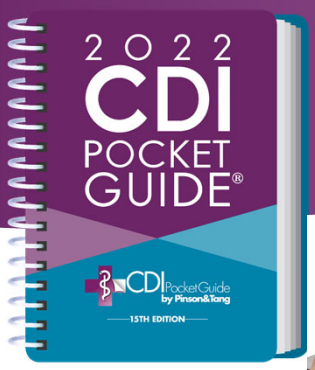

Q & A

THANK YOU!

All attendees will receive an email with a CEU evaluation link following the webinar

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