Cirrhosis & Portal Hypertension

Decompensation · Ascites, varices, encephalopathy — and the transplant clock

SAAG ≥ 1.1
= portal hypertension

COMPENSATED OR DECOMPENSATED *the single most important prognostic split*

DECOMPENSATION EVENTS

Ascites (most common first event) · **variceal hemorrhage** · **hepatic encephalopathy** · **jaundice**. Median survival falls from over 12 years when compensated to around **2 years** once decompensated. **The first decompensation should trigger a transplant referral conversation.**

CHARACTERIZE THE ASCITES

Diagnostic paracentesis on every new ascites and every admission. Send cell count and differential, albumin, total protein, and culture. **SAAG = serum albumin − ascitic albumin. ≥ 1.1 g/dL means portal hypertension** with about **97% accuracy**; < 1.1 points to peritoneal disease, malignancy, TB, or nephrotic syndrome.

ASCITES — STEPWISE MANAGEMENT *salt restriction plus diuretics, in the right ratio*

1. **Sodium restriction to about 2 g/day.** Fluid restriction is **not** needed unless the sodium is under roughly 125. Adherence to sodium restriction is one of the main determinants of response.
2. **Spironolactone 100 mg + furosemide 40 mg** daily, kept in that **100:40 ratio** as you titrate. The ratio preserves potassium balance; spironolactone alone is slow, furosemide alone causes hypokalemia.
3. **Large-volume paracentesis** for tense or symptomatic ascites. If you remove **more than 5 L**, give **albumin 6–8 g per liter removed** to prevent post-paracentesis circulatory dysfunction.
4. **Refractory ascites** — unresponsive to maximal diuretics, or diuretic-intolerant. Options are **serial large-volume paracentesis** or **TIPS**. TIPS improves ascites control but **worsens encephalopathy**. **Refer for transplant.**
5. **Stop diuretics** if there is AKI, hyponatremia, encephalopathy, or hypotension. **Avoid NSAIDs entirely** — they blunt diuretic response and precipitate renal failure.

VARICES *screen, prevent, and know the bleeding protocol cold*

Stage	What to do
Screening	Upper endoscopy at diagnosis to stratify. Non-invasive assessment with liver stiffness and platelet count can defer endoscopy in low-risk compensated patients.
Primary prophylaxis	**Non-selective beta-blocker** — propranolol, nadolol, or **carvedilol** — titrated to heart rate, or **endoscopic band ligation**. Do not use nitrates alone.
Acute variceal bleed	**Resuscitate with a restrictive transfusion target (Hb ~7 g/dL)** — over-transfusion raises portal pressure and rebleeding. **Octreotide** infusion. **Prophylactic ceftriaxone** for every bleeding cirrhotic, which reduces infection and mortality. **Endoscopy with band ligation within 12 hours.**
Rescue	Balloon tamponade as a bridge, then **early TIPS** in high-risk patients. Add a beta-blocker plus repeat banding for secondary prophylaxis.

ENCEPHALOPATHY & SURVEILLANCE *always hunt the precipitant*

HEPATIC ENCEPHALOPATHY

Find the trigger: infection (tap the ascites), GI bleed, constipation, dehydration, electrolyte derangement, sedatives, or non-adherence. **Lactulose** titrated to 2–3 soft stools daily; add **rifaximin** for recurrence. **Ammonia levels do not guide management** — treat the patient. Do not restrict protein.

WHAT ELSE EVERY CIRRHOTIC NEEDS

HCC surveillance with ultrasound every **6 months**, with or without AFP. **Vaccinate** against hepatitis A and B, influenza, and pneumococcus. **MELD-Na** for transplant listing. **Complete alcohol cessation** and treat the underlying cause — antivirals, metabolic risk factors. Screen for and treat osteoporosis and malnutrition.

THE OTHER DECOMPENSATIONS *recognize these early, they change disposition*

Problem	Recognition and first moves
Hepatorenal syndrome	AKI with **no other cause**, no improvement after volume expansion, bland urine, and a very low urine sodium. **Stop diuretics and nephrotoxins, expand with albumin**, and start a **vasoconstrictor** (terlipressin where available, or norepinephrine, or midodrine plus octreotide). **Transplant is the definitive treatment.**
Hyponatremia	Dilutional from ADH excess and effective arterial underfilling. **Fluid restrict, stop diuretics**, and correct slowly — these patients are at **high risk of osmotic demyelination** because of coexisting alcohol use and malnutrition.
Hepatic hydrothorax	Pleural effusion, usually right-sided, from ascites tracking through diaphragmatic defects. Manage as ascites. **Avoid indwelling chest drains** — they cause protein loss, infection, and are hard to remove.
Acute-on-chronic liver failure	Decompensation with **organ failure** and very high short-term mortality. Look for the precipitant — infection, bleeding, alcohol, drugs. **Escalate to critical care and transplant assessment urgently.**
Coagulopathy	A raised INR in cirrhosis **does not mean auto-anticoagulation** — pro- and anticoagulant factors both fall. **Do not transfuse plasma to correct a number** before paracentesis; volume loading raises portal pressure. Cirrhotics can and do clot, including portal vein thrombosis.

THE ADMISSION BUNDLE *what to order on every decompensated cirrhotic*

DAY ONE

Diagnostic paracentesis · blood and urine cultures · LFTs, INR, creatinine, sodium, **MELD-Na** · ultrasound with Doppler · review every drug for nephrotoxicity and sedation · **thiamine and nutrition assessment** · daily weight and strict fluid balance.

BEFORE DISCHARGE

Secondary prophylaxis where indicated (SBP, varices, encephalopathy) · confirmed **HCC surveillance** booking · vaccination status · alcohol and metabolic risk factor intervention · **transplant referral if decompensated** · clear written diuretic and lactulose titration plan with a safety net.

PEARLS & PITFALLS

- **Tap the ascites on every admission**, even without fever or pain. SBP is frequently silent, and finding it changes everything.
- **NSAIDs are effectively contraindicated in cirrhosis with ascites** — they cause diuretic resistance and acute kidney injury.
- **Do not over-transfuse a variceal bleed.** Restrictive transfusion lowers portal pressure, rebleeding, and mortality.
- **Antibiotic prophylaxis is mandatory in any bleeding cirrhotic**, not optional — ceftriaxone reduces mortality.
- **Ammonia levels do not correlate with encephalopathy grade.** Stop trending them and find the precipitant.
- **Keep the 100:40 spironolactone-to-furosemide ratio** when titrating, to keep potassium in range.

References: AASLD 2021 Practice Guidance on Ascites, SBP and Hepatorenal Syndrome · AASLD/Baveno guidance on portal hypertension and variceal hemorrhage · Villanueva restrictive transfusion trial.

Educational aid; verify doses against local protocol, renal function, and patient factors.