

Ascites, Spontaneous Bacterial Peritonitis & Hepatorenal Syndrome

Grade 2 ascites, refractory ascites, hyponatremia, hepatic hydrothorax, SBP diagnosis/treatment/prophylaxis, AKI, HRS-AKI, and pediatric considerations.

FORMAT 56 guidance statements – expert-consensus format (not GRADE-rated); grouped by clinical theme.

1 Grade 2 Ascites — First-Line Treatment

GS	STATEMENT
1	Moderate sodium restriction (2 g/90 mmol/day) + diuretics (spironolactone ± furosemide) is first-line for grade 2 ascites
2	Taper diuretics to lowest effective dose once ascites is adequately mobilized, to prevent adverse effects
3	Fluid restriction not needed unless concomitant moderate/severe hyponatremia (Na ≤125 mmol/L)
4	Monitor body weight, creatinine, and sodium regularly during diuretic therapy
5	Albumin (20–40 g/week) or baclofen (10 mg/day, weekly uptitration) may be considered as adjuncts in select patients

2 Drugs to Avoid & Albumin Use

GS	STATEMENT
6	Avoid NSAIDs, ACE inhibitors, and ARBs in cirrhosis with ascites
7	Avoid aminoglycosides whenever possible for bacterial infections
8	Long-term albumin infusion in diuretic-responsive ascites: data controversial — no routine-use recommendation at present

3 Refractory Ascites — Medical Management

GS	STATEMENT
9	Continue dietary sodium restriction (<2 g/day) in refractory ascites (RA) to slow reaccumulation
10	Fluid restriction ineffective for RA itself, but restrict to <1000 mL/day for hyponatremia (<125 mEq/L)
11	Insufficient data to recommend long-term albumin infusions outside the setting of LVP in RA

4 RA — Large-Volume Paracentesis

GS	STATEMENT
12	LVP is first-line treatment for RA
13	Albumin infusion for LVP >5 L to mitigate post-paracentesis circulatory dysfunction risk; risk rises with >8 L removed
14	Albumin replacement dose: 6–8 g per liter of ascites removed

5 RA — TIPS, Transplant & NSBB Use

GS	STATEMENT
15	Careful patient selection is key to TIPS success in RA
16	Prefer small-diameter covered stent (<10 mm) to reduce post-TIPS complications, including HE
17	Ascites recurrence after TIPS: obtain venogram, revise if stenosis found; consider periodic Doppler surveillance
18	Consider LT in patients with RA
19	NSBBs not necessarily contraindicated in RA — use caution with hypotension, hyponatremia, or AKI

6 Hyponatremia Management

GS	STATEMENT
20	Mild hyponatremia (126–135 mEq/L) without symptoms: no specific management beyond monitoring/water restriction
21	Moderate (120–125): water restriction to 1000 mL/day + stop diuretics. Severe (<120): stricter restriction + albumin infusion

7 Hepatic Hydrothorax & Hernia Repair

GS	STATEMENT
22	First-line hepatic hydrothorax (HH) therapy: dietary sodium restriction + diuretics + thoracentesis as needed
23	TIPS as second-line for refractory HH in selected patients
24	Avoid chest tube in HH; indwelling tunneled catheters may be considered if refractory and not a TIPS candidate
25	Consider LT for HH
26	Elective hernia repair: multidisciplinary approach after ascites controlled and nutritional/overall status optimized
27	Consider TIPS before elective hernia repair, or after emergent repair, in uncontrolled ascites

8 SBP — Diagnosis

GS	STATEMENT
28	Emergent hospital admission with cirrhotic ascites: diagnostic paracentesis to rule out SBP even without infection signs
29	New infection signs/symptoms/labs: paracentesis for cell count + culture; diagnostic thoracentesis if pleural effusion and workup negative
30	Culture ascitic fluid at bedside in aerobic/anaerobic blood culture bottles before antibiotics
31	SBP/SBE diagnosis established with fluid PMN leukocyte count >250/mm ³

9 SBP — Treatment & Prophylaxis

GS	STATEMENT
32	Start IV antibiotics empirically for ascitic/pleural PMN >250/mm ³
33	Community-acquired SBP/SBE: IV third-generation cephalosporin first-line
34	Healthcare-associated/nosocomial infection, recent broad-spectrum antibiotics, sepsis, or septic shock: start broad-spectrum empirical therapy
35	Reassess response with repeat paracentesis/thoracentesis at 48h; PMN decrease <25% from baseline = poor response → broaden coverage, evaluate for secondary peritonitis
36	Add IV albumin to antibiotics for SBP (1.5 g/kg day 1, 1 g/kg day 3) — greatest benefit if AKI/jaundice present at diagnosis
37	Temporarily hold NSBBs in SBP with hypotension (MAP <65) or AKI
38	GI hemorrhage: short-term prophylactic antibiotics (IV ceftriaxone preferred, or oral norfloxacin); rule out SBP first
39	Primary prophylaxis: consider in high-risk cirrhosis — low ascitic protein (<1.5 g/dL) + advanced liver failure or renal impairment
40	Secondary prophylaxis: after first SBP episode, start long-term antibiotic prophylaxis (e.g., norfloxacin) given very high recurrence risk

10 AKI — Diagnosis & Prevention

GS	STATEMENT
41	On AKI diagnosis, promptly investigate/treat precipitants: fluid losses, infections, hemodynamic instability, nephrotoxic agents (esp. NSAIDs)
42	Hypovolemia-induced AKI: fluid replacement, correct underlying cause, withdraw diuretics
43	Differentiating AKI, HRS, and ATN is challenging — follow consensus diagnostic algorithm/criteria

11 HRS-AKI Treatment

GS	STATEMENT
44	First-line HRS-AKI treatment: vasoconstrictor + albumin; terlipressin (IV bolus or continuous infusion) preferred
45	Terlipressin unavailable: use norepinephrine; if neither available, trial oral midodrine + octreotide (low efficacy)
46	Monitor closely for vasoconstrictor/albumin side effects (ischemic complications, pulmonary edema)
47	Response = creatinine <1.5 mg/dL or within 0.3 mg/dL of baseline within 14 days; discontinue if no improvement by 4 days at max tolerated dose
48	Recurrence after discontinuation should be retreated
49	All cirrhosis + AKI patients should be considered for urgent LT evaluation given high short-term mortality even with vasoconstrictor response
50	RRT for LT candidates with worsening renal function/electrolytes/volume overload unresponsive to vasoconstrictors

12 Pediatric Considerations

GS	STATEMENT
51	Diagnose ascites/cause in children via comprehensive history, exam, and testing incl. abdominal ultrasound
52	Children with cirrhosis + ascites should be referred for LT evaluation
53	Initial pediatric ascites management: sodium restriction <2 mmol/kg/day + spironolactone (1–4 mg/kg/day) + furosemide (1–3 mg/kg/day divided)
54	Symptomatic grade 3/refractory ascites in children: usually therapeutic paracentesis (indications/risks not fully defined in children)
55	Pediatric LVP: 25% albumin infusion 0.5–1.0 g/kg, or 6–8 g/L of ascites removed
56	Diagnostic paracentesis in children with ascites + fever, abdominal pain, or clinical deterioration