

Standard Operating Procedure

# Diagnosis and Management of Ascites in Liver Cirrhosis

Special Region (1)  
Union of Myanmar

**Version:** 1.0

**Effective Date:** 3rd March 2026

**Review Date:** 3rd March 2028

**Approved by:** Internal Medicine Unit

## 1. PURPOSE

To provide a standardized, evidence-based approach for the diagnosis, evaluation, and management of ascites in patients with liver cirrhosis in SR-1 hospitals.

## 2. SCOPE

Applicable to Internal Medicine Unit, Emergency Department, Wards, ICU/HDU.

## 3. DEFINITION

Ascites is pathological accumulation of fluid in the peritoneal cavity. In cirrhosis, ascites is caused by portal hypertension, splanchnic vasodilation, RAAS activation, and renal sodium retention.

## 4. CLASSIFICATION

Grade 1 – Mild (ultrasound only)

Grade 2 – Moderate (visible abdominal distension)

Grade 3 – Large/tense ascites

Refractory Ascites – Ascites not responding to maximal diuretics or recurring within 4 weeks.

## 5. DIAGNOSIS

Clinical features: abdominal distension, shifting dullness, fluid thrill.

Ultrasound confirms fluid, nodular liver, splenomegaly.

Diagnostic paracentesis is mandatory in all new-onset ascites and hospitalized cirrhotic patients.

## 6. ASCITIC FLUID ANALYSIS

Send for: Cell count & differential, ascites albumin, serum albumin, Culture.

SAAG = Serum albumin – Ascitic albumin.

SAAG  $\geq 1.1$  g/dL indicates portal hypertension.

SBP diagnosed if PMN  $\geq 250$  cells/mm<sup>3</sup>.

Optional ascites fluid parameters are: protein, LDH and glucose.

## 7. INVESTIGATION AND MONITORING

**DAILY ASSESSMENT OF** body weight, urine output, hematemesis, melaena, BP, PR, Temperature, flapping tremor, conscious level

**Base line investigation:** CP auto, electrolytes, creatinine, liver function test, INR, serum albumin, USG abdomen (if not done within past 3-6 months), alpha fetoprotein (if not done within past 3-6 months), HBs antigen and HCV Ab (if not investigated before).

**Test weekly during hospital stay** – CP auto, electrolytes and creatinine.

OGD scopy should be offered once cirrhosis develops to screen for varices and to prevent upper GI bleeding.

## 8. GENERAL MANAGEMENT

- Sodium restriction <2 g/day.
- Spironolactone 100 mg/day (max 400 mg).
- Furosemide 40 mg/day (max 160 mg).
- Maintain 100:40 ratio.
- Target weight loss 0.5–1 kg/day.

Choose to start spironolactone alone or spironolactone with frusemide

With leg edema	Frusemide + Spironolactone
Without leg edema	Spironolactone

Titration of spironolactone

### Dose titration

- 100 mg OD for 3-5 days
- 100 mg BD for 3-5 days
- 150 mg BD for 3-5 days
- 200 mg BD for 3-5 days

### When to escalate the dose

- Daily body weight is not reduced by 0.5 kg per day in patients with ascites

### When to stop/withhold spironolactone

- Oliguria with feature of hyperkalemia in ECG
- Potassium > 6
- Overt hepatic encephalopathy
- Hypotension/shock
- Na <120
- Cr >2

### When to add frusemide

- Not responding to max dose of 400 mg per day

## Titration of Frusemide and spironolactone

### Dose titration

- spironolactone 100 mg OD + frusemide 40 mg OD for 3-5 days
- spironolactone 100 mg BD + frusemide 40 mg BD for 3-5 days
- spironolactone 150 mg BD + frusemide 60 mg BD for 3-5 days
- spironolactone 200 mg BD + frusemide 80 mg BD for 3-5 days

### When to escalate the dose

- Daily body weight is not reduced by 1 kg per day in patients with ascites and leg edema

### When to stop spironolactone

- Oliguria with feature of hyperkalemia in ECG
- Potassium > 6
- overt hepatic encephalopathy
- Hypotension/shock
- Na <120
- Cr >2

### When to stop/reduce furosemide

- Potassium <3 (reduce furosemide)
- overt hepatic encephalopathy
- Hypotension/shock
- Na <120
- Cr >2
- Muscle cramps (reduce furosemide and add calcium for a few days)

## 9. THERAPEUTIC PARACENTESIS

	Types of paracentesis
>5 L of ascites fluid removal	Large volume paracentesis (LVP)
≤ 5 L of ascites fluid removal	Small volume paracentesis (SVP)

It is indicated for tense ascites.

Albumin 6–8 g per liter removed if >5 L removed.

In the absence of albumin treatment, removal at most 4 L of ascites fluid per session is a safe option for the patient.

Repeated paracentesis should be performed based on recurrence of tense or symptomatic ascites rather than fixed time intervals, in accordance with AASLD and EASL guidelines.

Internal Medicine Unit of Special region (1) recommends that 1-2 weekly interval is necessary for repeated paracentesis.

## 10. Spontaneous Bacterial Peritonitis (SBP) TREATMENT

Clinical features of SBP are fever, abdominal pain and tenderness, altered mental status, renal dysfunction, hypotension and sepsis. However, SBP may be asymptomatic in up to 10–20% of patients.

Cefotaxime 2 g IV every 8 hours OR Ceftriaxone 2 g IV daily for 5–7 days.

Albumin Day 1: 1.5 g/kg; Day 3: 1 g/kg.

If not responsive after 48 hours of treatment, repeat diagnostic paracentesis whether ascites PMN decrease 25 % or not. If not, suspect for drug resistant or suspect for secondary bacterial peritonitis which is explained in detail on section 14.

## 11. REFRACTORY ASCITES

Repeated LVP + albumin.

Consider TIPS or transplant referral.

## 12. HEPATORENAL SYNDROME

Stop diuretics, give IV albumin, consider terlipressin if available.

Refer to the topic "AKI in cirrhosis of liver" for detailed management if suspicious for hepatorenal syndrome.

## 13. PROPHYLAXIS OF SBP

### **Primary prophylaxis (no history suggestive of SBP before)**

Indication to start primary prophylaxis

Ascitic protein <1.5 g/dL

AND at least one of the following:

- Serum creatinine  $\geq$ 1.2 mg/dL
- BUN  $\geq$ 25 mg/dL
- Serum sodium  $\leq$ 130 mmol/L
- Child-Pugh  $\geq$ 9 with bilirubin  $\geq$ 3 mg/dL

### *Treatment*

Norfloxacin 400 mg OD or ciprofloxacin 500 mg OD for long term until live transplant.

### **Secondary SBP prophylaxis (patient has the history suggestive of SBP)**

Norfloxacin 400 mg OD or ciprofloxacin 500 mg OD for long term until live transplant.

## 14. DIAGNOSIS OF SECONDARY BACTERIAL PERITONITIS

### Diagnostic criteria (Runyon's Criteria)

At least 2 of the following 3 are highly suggestive of secondary bacterial peritonitis:

Parameter (ascites fluid)	Cut-off
Total protein	>1 g/dL
Glucose	<50 mg/dL
LDH	> upper limit of normal serum LDH

Multiple organisms from culture result and very high ascites fluid PMN (>10,000) are also suggestive of secondary bacterial peritonitis.

## 15. BETA BLOCKERS ROLE in ascites with Cirrhosis of Liver

Cautious use of beta blockers if

- MAP <65 mmHg
- Refractory ascites
- SBP
- HRS
- Na <130

## 16. TREATMENT for Underlying Conditions of cirrhosis

In our country, alcohol, hepatitis B and Hepatitis C are main culprits to cause cirrhosis of liver. Therefore, the following interventions are suggested to do:

- Quit alcohol
- Treat hepatitis B and Hepatitis C