

Cirrhosis Treatment Recommendations- Version 2

Management of compensated cirrhosis (no ascites, variceal hemorrhage, encephalopathy, or jaundice)	HCC surveillance (every 6 months): <ul style="list-style-type: none"> • Ultrasound • AFP 		For result interpretation and management algorithm, HCC algorithm and Quicknotes .			
	Varices surveillance (upper endoscopy)	No varices	<ul style="list-style-type: none"> • Repeat endoscopy in 3 years (sooner if decompensation occurs) 			
		Small varices	<ul style="list-style-type: none"> • In a CTP class B or C patient or varices with red signs 	<ul style="list-style-type: none"> • Nonselective beta-blockers (propranolol or nadolol) 	<ul style="list-style-type: none"> • Start propranolol (20 mg BID) or nadolol (40 mg QD) • Titrate to maximum tolerable dosage or a heart rate of 55-60 beats/min • No need to repeat endoscopy 	
			<ul style="list-style-type: none"> • In a CTP class A patient, without red signs 	<ul style="list-style-type: none"> • Nonselective beta-blockers optional • If no beta-blockers given, repeat endoscopy in 2 years (sooner if decompensation occurs) 		
Medium/Large varices → prevention of first variceal hemorrhage	Nonselective beta-blockers (propranolol, nadolol) OR Endoscopic variceal ligation (choice depends on patient characteristics and preferences, local resources)	<ul style="list-style-type: none"> • Start propranolol (20 mg BID) or nadolol (40 mg QD) • Titrate to maximum tolerable dosage or a heart rate of 55-60 beats/min • No need to repeat endoscopy 				
Management of decompensated cirrhosis (patient has developed ascites, variceal hemorrhage, encephalopathy, or jaundice)	HCC surveillance (every 6 months): <ul style="list-style-type: none"> • Ultrasound • AFP 		For result interpretation and management algorithm, refer to HCC algorithm and Quicknotes .			
	Variceal hemorrhage (if no history, follow guidelines for varices surveillance in compensated cirrhosis)	Acute variceal hemorrhage	Diagnosis	Any of the following findings on upper endoscopy performed within 12 hours from admission: <ul style="list-style-type: none"> • Active bleeding from a varix • Stigmata of variceal hemorrhage (white nipple sign) • Presence of gastroesophageal varices without another source of hemorrhage 		
			General management	<ul style="list-style-type: none"> • Cautious transfusion of fluids and blood products, aiming to maintain a hemoglobin of ~8 g/dL • Antibiotic prophylaxis (3-7 days) with: <ul style="list-style-type: none"> ○ Ciprofloxacin 500 mg BID (PO) or 400 mg BID (IV) OR ○ Ceftriaxone 1 g/day (IV) particularly in facilities with known quinolone resistance 		
			Specific initial management	<ul style="list-style-type: none"> • Pharmacologic therapy initiated as soon as diagnosis is suspected <ul style="list-style-type: none"> ○ Octreotide 50 mcg IV bolus followed by continuous infusion 50 mcg/hour (3-5 days) • Endoscopic therapy (ligation preferable) performed at time of diagnostic endoscopy (performed within 12 hours of administration) 		
			Rescue management	Considered in patients with bleeding esophageal varices who have failed pharmacologic + endoscopic therapy or in patients with bleeding gastric fundal varices who have failed one endoscopic therapy: <ul style="list-style-type: none"> ○ TIPS shunt ○ Shunt therapy (CTP class A patients where available) 		
	Prevention of rebleeding (should be instituted before patient leaves hospital)	First-line therapy	Nonselective beta-blockers (propranolol, nadolol) AND Endoscopic variceal ligation	<ul style="list-style-type: none"> • Start propranolol (20 mg BID) or nadolol (20 mg QD) • Titrate to maximum tolerable dosage or a heart rate of 55-60 beats/min • No need for repeat endoscopy 		
			<ul style="list-style-type: none"> • Ligate every 1-2 weeks until variceal obliteration • First surveillance endoscopy 1-3 months after obliteration, then every 6-12 months 			
Second-line therapy (if combined pharmacologic + endoscopic treatment has failed)		<ul style="list-style-type: none"> • TIPS • Shunt surgery (CTP class A patients, where available) 				

Spontaneous bacterial peritonitis (SBP)	Active SBP	Diagnosis	Consider SBP and perform diagnostic paracentesis if: <ul style="list-style-type: none"> • Symptoms/signs (abdominal pain, fever, chills) • Patient is in ER or admitted • Worsening renal function or encephalopathy SBP present if ascites PMN count >250 cells/μL (if fluid bloody, subtract 1 PMN per 250 RBC/μL)		
		General management	<ul style="list-style-type: none"> • Avoid therapeutic paracenteses during active infection • Intravenous albumin (1 g/kg of body weight) if BUN >30 mg/dL, creatinine >1 mg/dL, bilirubin >4 mg/dL; repeat at day 3 if renal dysfunction persists • Avoid aminoglycosides 		
		Specific management		<ul style="list-style-type: none"> • Cefotaxime OR • Ceftriaxone OR • Ampicillin/sulbactam 	2 g IV every 12 hours
					2 g every 24 hours
				2g/1g IV every 6 hours	
	Follow-up	<ul style="list-style-type: none"> • Continue therapy for 7 days • Repeat diagnostic paracentesis at day 2 • If ascites PMN count decreases by at least 25% at day 2, IV therapy can be switched to oral therapy (quinolone such as ciprofloxacin or levofloxacin 250 mg PO BID) to complete 7 days of therapy 			
	Preventing recurrent SBP (should be instituted before patient leaves hospital)	Recommended therapy	Oral norfloxacin 400 mg PO QD (preferred) OR Oral ciprofloxacin 250 mg QD OR Oral levofloxacin 250 mg QD		
		Alternative therapy	TMP-SMX 1 double-strength tablet PO QD (Patients who develop quinolone-resistant organisms also may have resistance to TMP-SMX)		
		Duration	Prophylaxis should be continued until the disappearance of ascites, time of transplantation, or death		
	Ascites	Uncomplicated ascites	General management	<ul style="list-style-type: none"> • Treat ascites once other complications have been treated • Avoid NSAIDs • Norfloxacin prophylaxis (400 mg PO QD) in patients with an ascites protein level of <1.5 g/dL, impaired renal function (serum creatinine level \geq1.2 mg/dL, BUN \geq25 mg/dL, serum sodium level \leq130 mEq/L), or severe liver failure (Child-Pugh score \geq9 points with serum bilirubin level \geq3 mg/dL) 	
Specific management			Salt restriction	<ul style="list-style-type: none"> • 1-2 g/day • Liberalize if restriction results in poor food intake 	
			Diuretics	Spironolactone based: <ul style="list-style-type: none"> • Spironolactone alone (start at 50-100 mg QD, single morning dose) OR <ul style="list-style-type: none"> • Spironolactone (50-100 mg QD) + furosemide (start at 20-40 mg QD, single morning dose) 	
			LVP	Use as initial therapy only in patients with tense ascites; give IV albumin (6-8 g/L of ascites removed)	
Follow-up and goals		<ul style="list-style-type: none"> • Adjustment of diuretic dosage should be performed every 4-7 days • While adjusting dose: 1) weigh weekly.; 2) get labs (BUN, creatinine and electrolytes) every 1-2 weeks • Double dosage of diuretics if: <ul style="list-style-type: none"> ◦ Weight loss <2 kg a week AND ◦ BUN, creatinine, and electrolytes OK • Halve dosage of diuretics or discontinue if: <ul style="list-style-type: none"> ◦ Weight loss \geq0.5 kg/day OR ◦ Abnormalities in BUN, creatinine, or electrolytes • Maximum diuretic dosage is spironolactone (400 mg QD) and furosemide (160 mg QD) 			

			Definition	<ul style="list-style-type: none"> Ascites that is not eliminated even with maximum diuretic therapy Ascites that is not eliminated because maximum dosages of diuretics cannot be attained given the development of diuretic-induced complications 						
		Refractory ascites	Recommended therapy	<ul style="list-style-type: none"> Total paracentesis + IV albumin (6-8 g/L of ascites removed) If <5 L of ascites is removed, a synthetic plasma volume expander may be used instead of albumin Continue with salt restriction and diuretic therapy as tolerated 						
			Alternative therapy	<ul style="list-style-type: none"> TIPS shunt for patients who require frequent paracenteses (every 1-2 weeks) and whose CTP score is ≤11 Peritoneovenous shunt for patients who are not TIPS shunt or transplant candidates 						
	Hepatorenal syndrome (HRS)	Diagnosis	<p>Consider HRS in a patient with cirrhosis and ascites and a creatinine level of >1.5 mg/dL. It is a diagnosis of exclusion; before making the diagnosis, the following need to be ruled out and treated:</p> <ul style="list-style-type: none"> Sepsis (patient needs to be pancultured) Volume depletion (hemorrhage, diarrhea, overdiuresis) Vasodilators Organic renal failure (urine sediment, kidney ultrasound) <p>Diuretics should be discontinued and intravascular volume expanded with IV albumin. If renal dysfunction persists despite above, diagnose HRS.</p>							
		Recommended therapy	Liver transplant (priority dependent on MELD score). If patient is on transplant list, MELD score should be updated daily and communicated to transplant center; if patient is not on transplant list, packet should be prepared urgently.							
		Alternative (bridging therapy)	Vasoconstrictors AND IV albumin (both for at least 7 days)	<ul style="list-style-type: none"> Octreotide PLUS Midodrine 	<table border="1"> <tr> <td>100-200 mcg SC TID</td> <td rowspan="4">Goal to increase MAP by 15 mmHg</td> </tr> <tr> <td>7.5-12.5 mg PO TID</td> </tr> <tr> <td>0.5-2.0 mg IV every 4-6 hours</td> </tr> <tr> <td>0.01-0.08 U/minute IV infusion</td> </tr> </table>	100-200 mcg SC TID	Goal to increase MAP by 15 mmHg	7.5-12.5 mg PO TID	0.5-2.0 mg IV every 4-6 hours	0.01-0.08 U/minute IV infusion
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			<ul style="list-style-type: none"> Terlipressin Vasopressin 							
	Hepatic encephalopathy (HE)	Acute HE	General management	<ul style="list-style-type: none"> Identify and treat precipitating factor (GI hemorrhage, infection, prerenal azotemia, constipation, sedatives) Short-term (<72 hours) protein restriction may be considered in severe HE 						
			Specific therapy	<ul style="list-style-type: none"> Lactulose enemas (300 cc in 1 liter of water) in patients who are unable to take it PO Lactulose 30 cc PO every 1-2 hours until bowel evacuation then adjust to a dosage that will result in 2-3 formed bowel movements per day (usually 15-30 cc PO BID) Lactulose can be discontinued once precipitating factor has resolved 						
		Chronic HE	General management	<ul style="list-style-type: none"> No long-term protein restriction Protein from dairy or vegetable sources is preferable to animal protein Avoid sedatives and tranquilizers Avoid constipation 						
			Specific therapy	Lactulose dosage that produces 2-3 soft, formed bowel movements per day, starting at 15-30 cc PO BID						
			Alternative therapy	<ul style="list-style-type: none"> Rifaximin 400 mg PO TID in patients who cannot tolerate lactulose 						
When to refer for transplant evaluation		Calculate: <ul style="list-style-type: none"> CTP score MELD score 	CTP calculator	<ul style="list-style-type: none"> Prepare transplant evaluation packet if CTP score ≥7 						
	MELD calculator		<ul style="list-style-type: none"> Prepare transplant evaluation packet if: <ul style="list-style-type: none"> MELD score ≥15 MELD score 11-13 and patient has refractory ascites or hyponatremia (sodium <130 mmol/L) HCC criteria met 							
Frequency of follow-up visits	Depends on MELD score	MELD calculator	<ul style="list-style-type: none"> ≤10: every 6-12 months 11-18: every 3 months 19-24: every month ≥25: every week 							