Objectives
1) Compensated vs. decompensated cirrhosis
2) Significance of MELD-Na score
3) Evaluation of acute decompensation
4) Management of common complications of cirrhosis

"The cirrhosis one-liner"

1. Cause of cirrhosis
   - EtOH (60-70%)
   - NASH (10%)
   - HCV/HBV (10%)
   - Hematomachrosis
   - Uncommon (AIH, PSC, PBC)

2. Compensated?
   - *yes* → *no complications*, *med survival: >12 y*
   - *no* → *+ complications*, *med survival: < 6 mos*

3. Baseline MELD-Na score?

Cr, Tbili, INR, Na

MELD-Na	3 month mortality
20	3-4%
30	27-32%
40	65-66%

4. History of complications?

ACUTE DECOMPENSATION

↑ MELD-Na or development of below complications

COMPLICATION	CAUSE/ PRECIPITANT	EVALUATION	MANAGEMENT
Ascites Hepatic hydrothorax	Diet Medications PVT	Diagnostic paracentesis RUQ US w/ doppler	Na restriction Diuretics Large volume para/ thora
AKI	HRS ↓ volume/ GI bleed Infection/ SBP	UA, urine lytes Albumin challenge Diagnostic paracentesis	*For HRS:* Albumin Octreotide/ Midodrine
Hepatic encephalopathy	Infection/ SBP Medications/ Drugs GI bleed PVT	Cultures Diagnostic paracentesis ± RUQ US w/ doppler ± ammonia level	Lactulose Rifaximin PEG
GI bleed	Varices PHG Hemorrhoids	CBC, coags, fibrinogen EGD	Pantoprazole Octreotide EGD
SBP	-	Diagnostic paracentesis	IV 3º cephalosporin Albumin

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ACUTE DECOMPENSATION

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	COMPLICATION	CAUSE/ PRECIPITANT	EVALUATION	MANAGEMENT
50%	Ascites Hepatic hydrothorax	Diet Medications PVT	Diagnostic paracentesis RUQ US w/ doppler	Na restriction Diuretics Large volume para/ thora
50%	AKI	HRS ↓ volume/ GI bleed Infection/ SBP	Albumin challenge Diagnostic paracentesis	*For HRS:* Albumin Octreotide/ Midodrine
30-40%	Hepatic encephalopathy	Infection/ SBP Medications/ Drugs GI bleed PVT	Cultures Diagnostic paracentesis ± RUQ US w/ doppler ± ammonia level	Lactulose Rifaximin PEG
	GI bleed	Varices PHG Hemorrhoids	CBC, coags, fibrinogen EGD	Pantoprazole Octreotide EGD
	SBP	-	Diagnostic paracentesis	IV 3^{o} cephalosporin Albumin

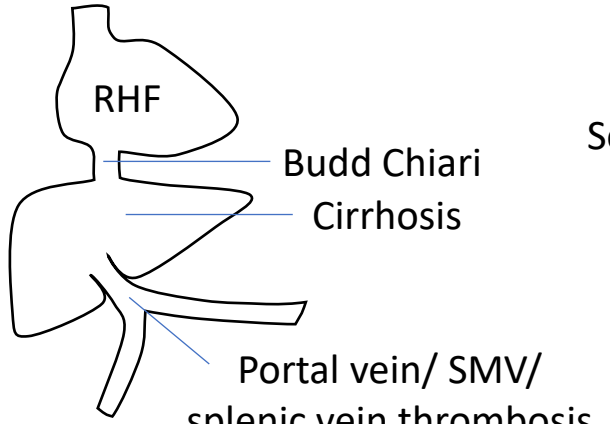
SAAG
(serum albumin – ascitic albumin)

≥1.1

Portal hypertension

AFTP > 2.5

AFTP < 2.5

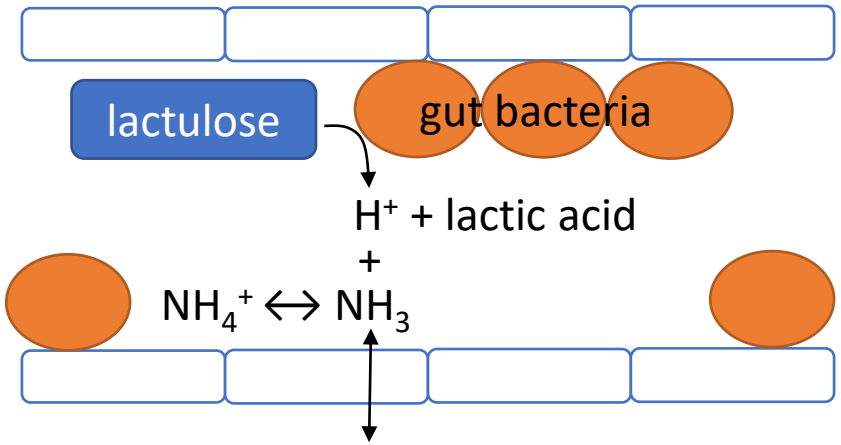


<1.1

Non-portal HTN causes

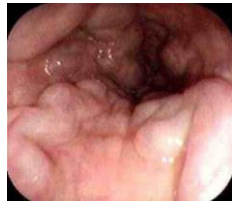
Malignant ascites*
Nephrotic syndrome
Secondary bacterial peritonitis*
Pancreatic ascites
Tuberculous ascites

*can have SAAG > 1.1 if there is underlying portal hypertension



Stages of hepatic encephalopathy

I	Sleep- wake disturbance ↓ attentiveness ± asterixis
II	Lethargic Disoriented + asterixis
III	Obtunded/ stuporous ± asterixis
IV	Comatose

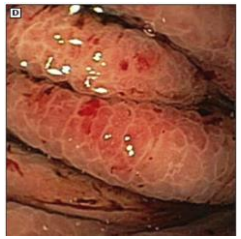


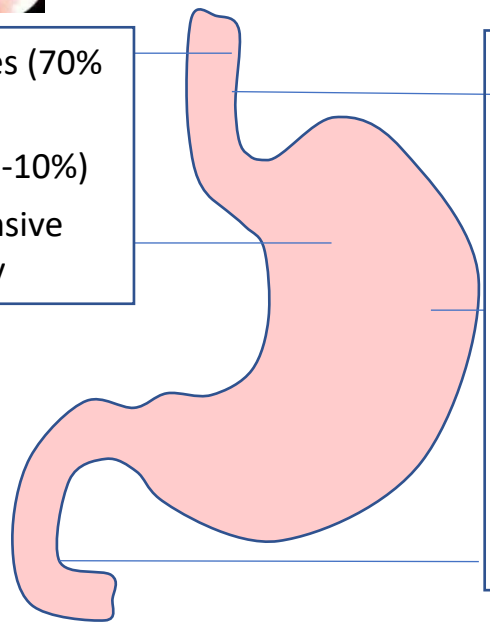
CAUSES OF UGIB

Esophageal varices (70% of UGIB)

Gastric varices (5-10%)

Portal hypertensive gastropathy





Esophagitis
Mallory Weiss tear

Gastric cancer

Gastritis/ PUD

GAVE (gastric antral vascular ectasia)

Duodenitis/ PUD

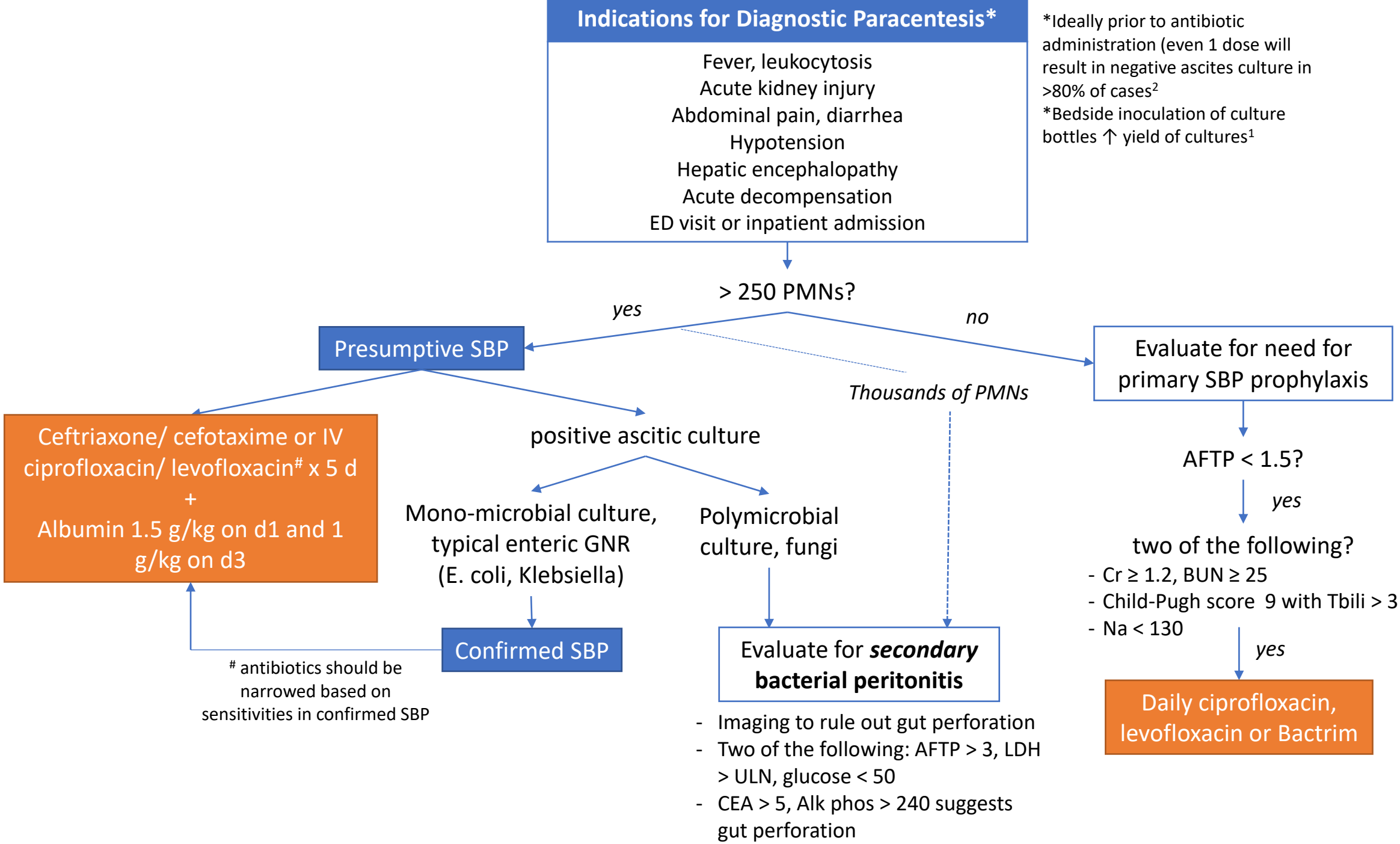
AVMs

Octreotide gtt

Pantoprazole

MANAGEMENT

Treatment	Rationale
2 large bore IVs (18G or larger)	Allows for faster fluid administration central lines
Pantoprazole or another PPI	IV BID PPI is non-inferior to PPI gtt[6]
Octreotide gtt	Splanchnic vasoconstriction shunts b from portal system
SBP ppx (e.g., ceftriaxone x 7 d)	↓ infection, recurrent GI bleeding ar mortality[2]
EGD within 12 hr	↑ mortality if delayed > 15h[2]
Transfusion goal Hct > 21/ Hgb > 7	Over-transfusion can increase portal distend varices and worsen bleedin Improved mortality in Child A/B cirrh


Indications for Diagnostic Paracentesis*
Fever, leukocytosis
Acute kidney injury
Abdominal pain, diarrhea
Hypotension
Hepatic encephalopathy
Acute decompensation
ED visit or inpatient admission
*Ideally prior to antibiotic administration (even 1 dose will result in negative ascites culture in >80% of cases[2]
*Bedside inoculation of culture bottles ↑ yield of cultures[1]
> 250 PMNs?
yes
no
Presumptive SBP
Thousands of PMNs
Evaluate for need for primary SBP prophylaxis
Ceftriaxone/ cefotaxime or IV ciprofloxacin/ levofloxacin# x 5 d
+
Albumin 1.5 g/kg on d1 and 1 g/kg on d3
positive ascitic culture
Mono-microbial culture, typical enteric GNR (E. coli, Klebsiella)
Polymicrobial culture, fungi
Confirmed SBP
antibiotics should be narrowed based on sensitivities in confirmed SBP
Evaluate for secondary bacterial peritonitis
- Imaging to rule out gut perforation
- Two of the following: AFTP > 3, LDH > ULN, glucose < 50
- CEA > 5, Alk phos > 240 suggests gut perforation
AFTP < 1.5?
yes
two of the following?
- Cr ≥ 1.2, BUN ≥ 25
- Child-Pugh score 9 with Tbili > 3
- Na < 130
yes
Daily ciprofloxacin, levofloxacin or Bactrim