AASLD 2024 Practice Guidance on Portal Hypertension and Varices in Cirrhosis

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Disclosure

- I am a paid speaker for Madrigal Pharmaceuticals and Echosens Medical Devices.
- The content shared in this presentation is educational and reflects the most recent clinical guidance
- The views and opinions expressed in this presentation are those of the presenter and do not reflect the official policy or position of the U.S. Department of Veterans Affairs
- All clinical recommendations and data are based on the 2024 AASLD Practice Guidance on Portal Hypertension and Varices in Cirrhosis

Scope of the Guidance

- Identifies, stratifies, and manages PH in cirrhosis and varices

- Focus: prevention of decompensation, management of variceal hemorrhage (AVH), and rebleeding

- Updates 2017 AASLD guidance

Question 1

- Which of the following is the recommended first-line therapy for primary prophylaxis of variceal bleeding in patients with medium-to-large varices?
  A. Endoscopic cyanoacrylate injection
  B. Nonselective beta-blockers (NSBBs)
  C. Esophageal stent placement
  D. Proton pump inhibitors (PPIs)

Question 2

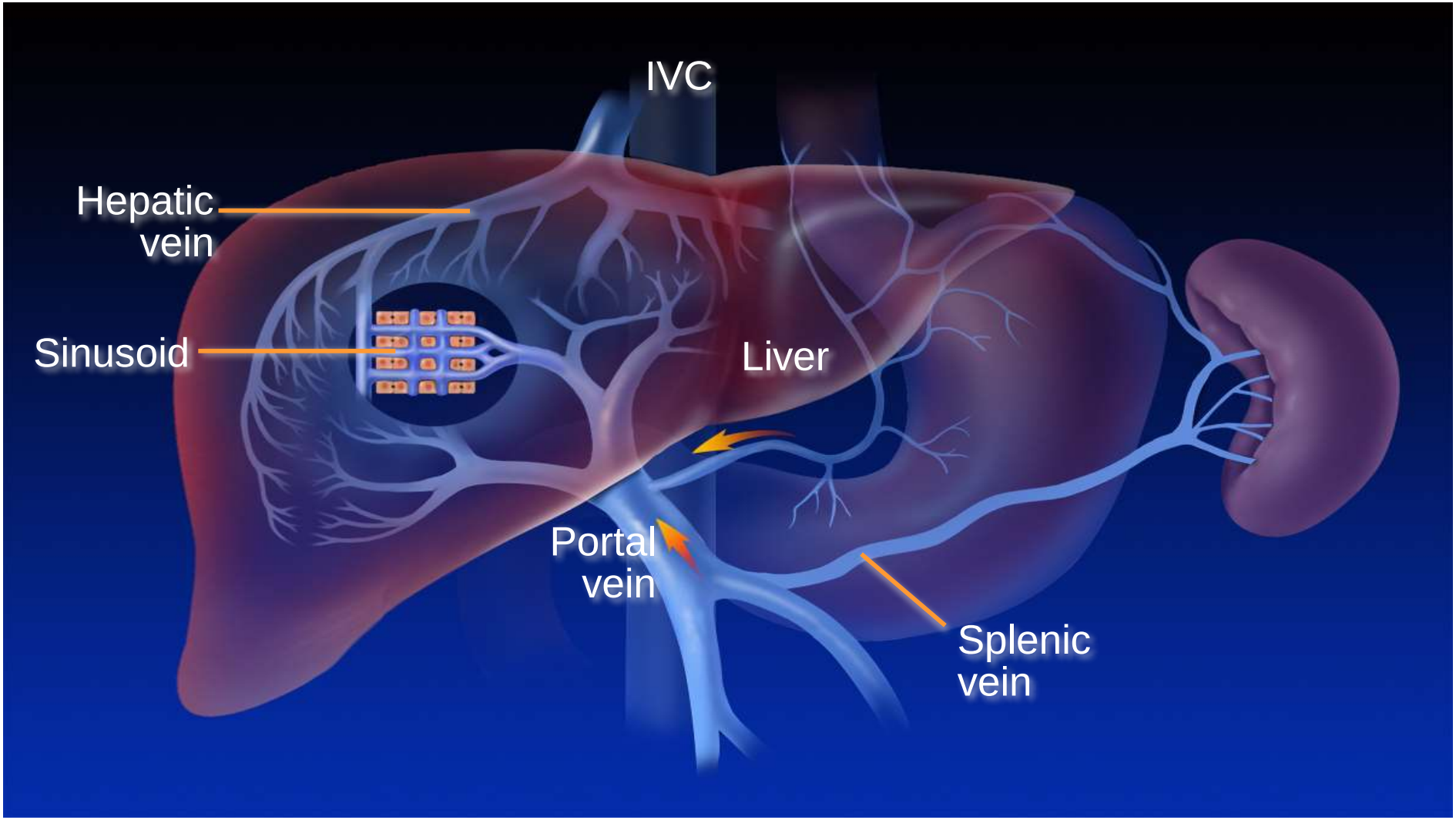
- In patients with acute variceal hemorrhage (AVH) and high-risk features (CTP C 10–13 or B with active bleeding), preemptive TIPS should ideally be placed within:
  A. 6 hours
  B. 24 hours
  C. 72 hours
  D. 7 days

Question 3

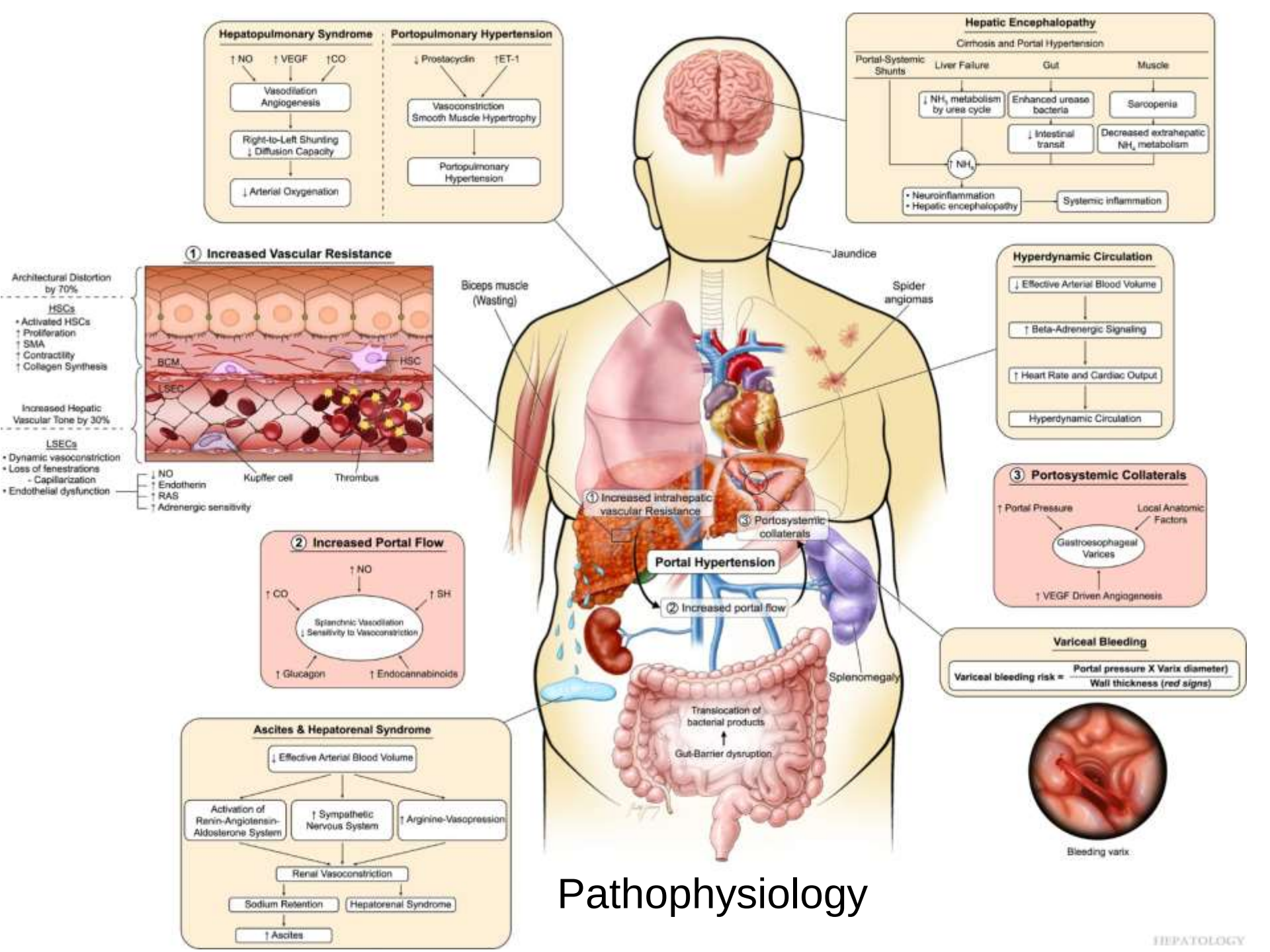
- **Which of the following statements about gastric or ectopic varices is TRUE according to the 2024 guidance?**

  A. TIPS is the first-line therapy for unbled fundal varices
  B. All patients with fundal varices require emergency endoscopy
  C. Imaging is essential to evaluate collateral anatomy before selecting therapy
  D. EBL is preferred over NSBBs in ectopic varices

Understanding the liver



What is Portal Hypertension?



Pathophysiology

Classification of Portal Hypertension

Classification	Level	Examples
Prehepatic	Portal vein and branches	Portal vein thrombosis
Intrahepatic	Presinusoidal (portal triads)	Schistosomiasis, primary biliary cholangitis, sarcoidosis, portosinusoidal vascular disorder
	Sinusoidal	Cirrhosis (all causes), alcohol-associated hepatitis
	Postsinusoidal (central veins)	Sinusodial obstruction syndrome
Posthepatic	Hepatic veins, inferior vena cava	Budd-Chiari syndrome, congestive hepatopathy (multiple causes including but not limited to pulmonary hypertension, heart failure, constrictive pericarditis)

Stages of cirrhosis

Stages of chronic liver disease	No cirrhosis	Compensated cirrhosis		Decompensated cirrhosis	
		Lower risk of decompensation	Higher risk of decompensation	First decompensation	Further decompensation
Clinical features (ascites, VH or HE)	None	None	None	One event	>1 event or complication of event*
Histological diagnosis	F0-F2	F3/F4 (thin septa)	F4 (thick septa)	Clinical	Clinical
Hemodynamic features (HVPG mmHg)	3-5	5-10	>10 (CSPH)	>20 worse outcomes in VH	>20 worse outcomes in VH
Endoscopic features	None	No varices	± Varices	± Varices	± Varices

Compensated Cirrhosis

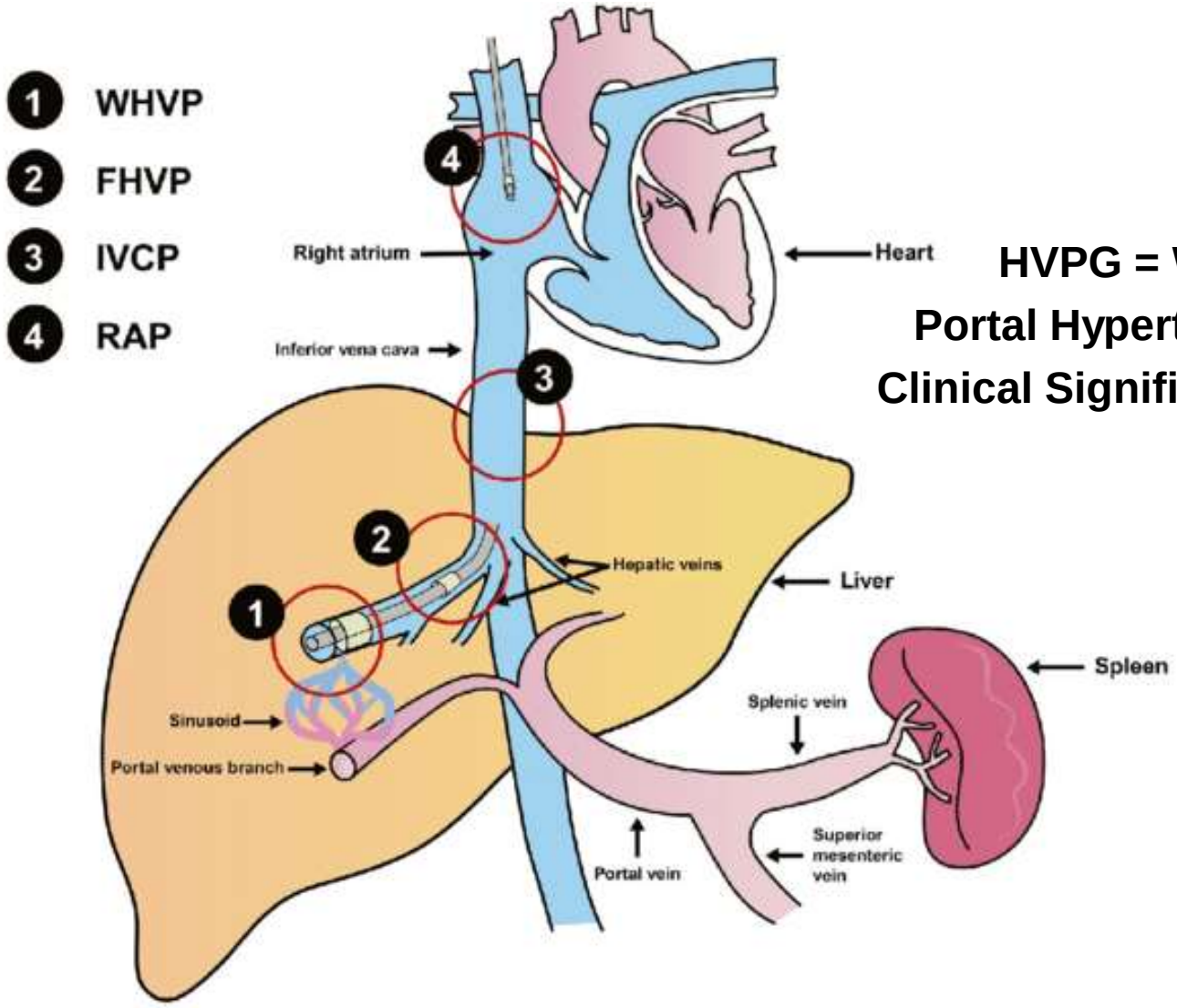
- 12 yrs survival

Decompensated Cirrhosis

- Variceal Haemorrhage, Ascites, Overt Hepatic Encephalopathy
  - 1.5 yr-survival

How can we make the diagnosis PH?

HVPG as a goal standard



HVPG = WHVP – FHVP

Portal Hypertension = 5 mmHg

Clinical Significant PH = 10 mmHg

HVPG as a goal standard

- Assess the presence and quantify the degree of PH
- It is moderately invasive and carries small risks of injury
  - Related to access of the jugular vein
  - Induction of arrhythmias
  - Exposure to radiation
- Requires specific expertise
- These limitations restrict its routine use to specialized centers
- Have stimulated efforts to validate noninvasive surrogates usable in regular clinical practice

How can I diagnose CSPH Non-Invasively?

What's New Doc?

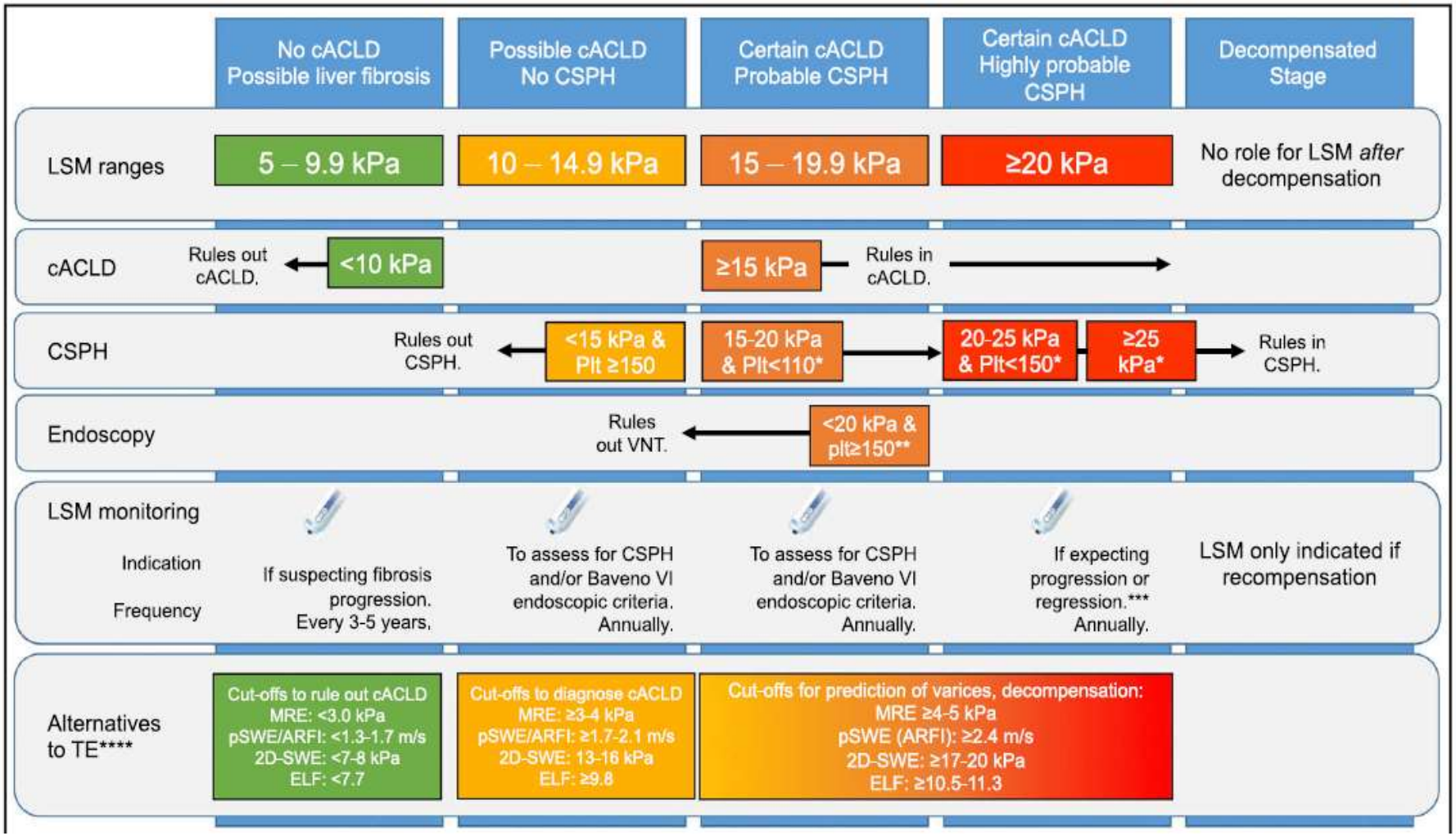
- Due to limited access to invasive tests like biopsy and HVPG
  - Noninvasive tools such as liver stiffness and platelet count are used to identify cirrhosis.
- The term "advanced chronic liver disease" (ACLD) refers to patients likely near cirrhosis without biopsy.
- Patients with ACLD and no prior decompensation are classified as cACLD.
- LSM <10 kPa rules out cACLD
  - While ≥15 kPa rules it in.

(B)

Non-invasive staging of chronic liver disease	No cACLD	Possible cACLD	Highly suggestive of cACLD	cACLD	
Liver stiffness (kPa)	<10	10-15	15-20	20-25	>25
Platelet count (K/mm³)	NR	NR	If <110 = CSPH	If <150 = CSPH	CSPH**

Risk of decompensation

Use of Noninvasive tests to stage and manage ACLD



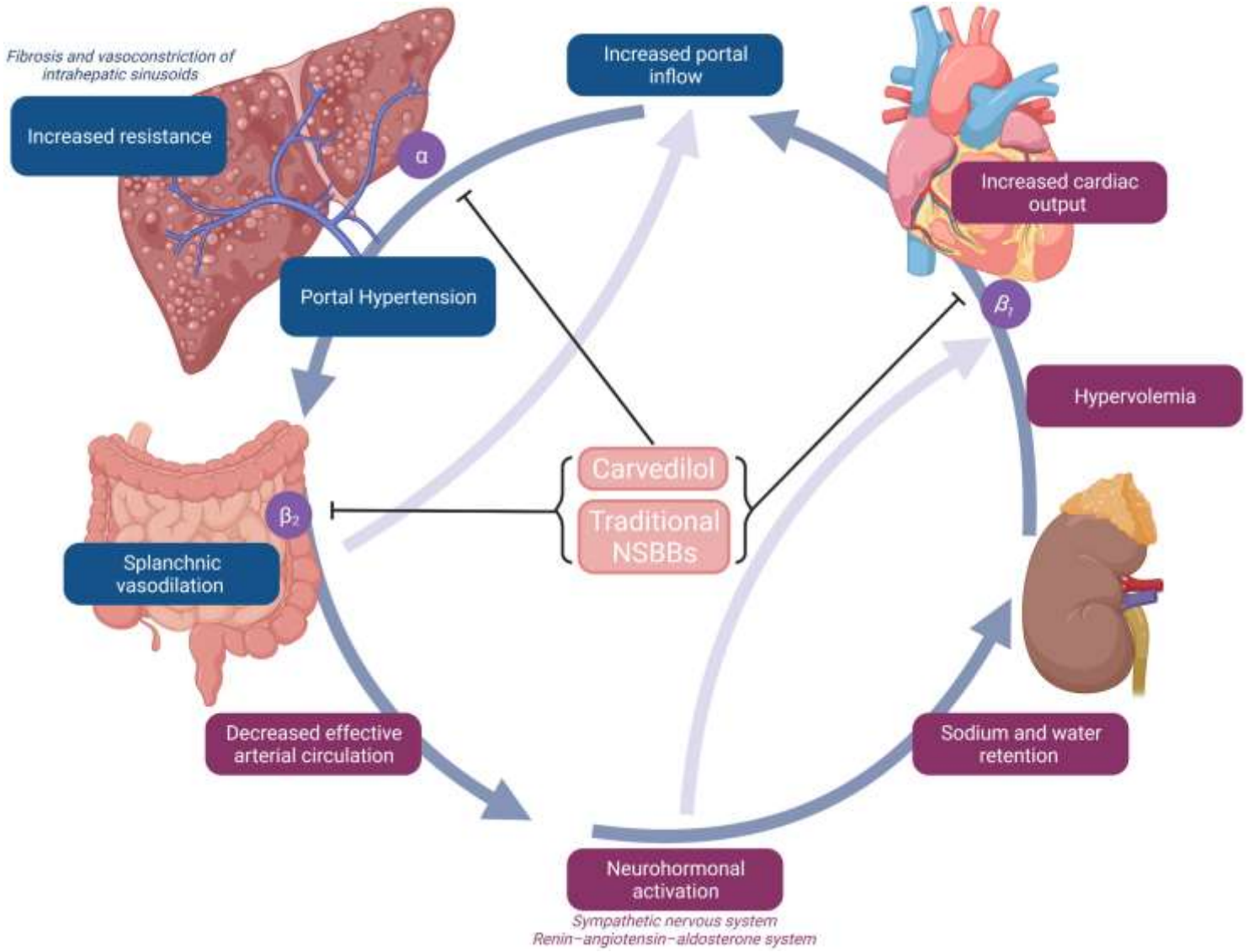
Guidance Statements

Guidance Statements:

- Annual LSM by TE and serum platelet counts
  - Provide prognostic information in patients with cACLD without baseline CSPH
  - Whom the underlying etiologies of cirrhosis remain active/uncontrolled.
- Lifestyle modification and treatment of underlying liver disease
  - Should be prioritized to prevent progression to CSPH and decompensation.

Guidance Statement: Everything you need to know about Beta Blockers ☺

Why Beta Blockers?



Guidance Statements

- Carvedilol is the preferred NSBB for treating portal hypertension in cirrhosis.
- Recommended maintenance dose
  - 6.25–12.5 mg/day, given once or twice daily.
- Dose may be increased in patients with coexisting hypertension or cardiac disease to address non-hepatic indications.
- NSBBs are not recommended in cirrhotic patients without CSPH for preventing decompensation.

Guidance Statement

- In compensated cirrhosis with CSPH, the goal is to prevent decompensation.
- NSBBs should be avoided in patients with asthma, advanced heart block, bradyarrhythmias, or other relative contraindications.
- Patients with cACLD and CSPH should be treated with NSBBs (if no contraindications) to prevent decompensation and avoid further need for screening endoscopy.

BOX 3 Contraindications to nonselective beta-blockers

Absolute contraindications
Asthma
2nd and 3rd degree atrioventricular block (in absence of implanted pacemaker)
Sick sinus syndrome
Extreme bradycardia (<50 bpm)
Relative contraindications
Psoriasis
Peripheral arterial disease
Chronic obstructive pulmonary disease
Pulmonary artery hypertension (controversial)
Insulin-dependent diabetes mellitus (interferes with symptoms of hypoglycemia)
Raynaud syndrome

TABLE 3 Nonselective beta-blockers used in portal hypertension

Therapy	Mechanism of action	Starting dose	Titration	Maximal dose	Goal	Common adverse effects	Maintenance
Propranolol	Decreased cardiac output; caused by decreased heart rate and contractility from beta-1 adrenergic blockade, plus	20–40 mg twice daily	Increase the dose every 2–3 d until treatment goal	Without ascites: 320 mg/day; with ascites: 160 mg/day	HR of 55–60 bpm if tolerated; SBP should be maintained ≥90 mm Hg	Fatigue, bradycardia, dyspnea, orthostasis, hypotension, constipation	Indefinitely or until TIPS or liver transplant. No indication for routine upper endoscopy
Nadolol	Splanchnic arterial vasoconstriction; caused by beta-2 blockade leading to unopposed alfa-adrenergic vasoconstriction	20–40 mg at bedtime		Without ascites: 160 mg/day; with ascites: 80 mg/day			
Carvedilol	Above plus decreased intrahepatic vascular resistance; caused by anti-alpha-adrenergic activity	6.25 mg once daily	Increase to 6.25 mg twice daily after 3 d	12.5 mg/day (higher doses could be considered for nonhepatic indications)	No HR goal; SBP should be maintained ≥90 mm Hg		

Abbreviations: SBP, spontaneous bacterial peritonitis; HR, heart rate.

Guidance Statements

Management of CSPH in compensated patients not tolerant to BB

- No varices:
  - Endoscopy every 2 years if disease uncontrolled
  - Every 3 years if controlled
- With varices (no bleeding):
  - Endoscopy every 1 year if disease uncontrolled
  - Every 2 years if controlled
- High-risk varices:
  - Primary prophylaxis with EVL if NSBBs are contraindicated
  - Repeat banding every 2–4 weeks until obliteration
  - Follow-up endoscopy at 6 months, then annually
- TIPS is not recommended for primary prevention of decompensation

Guidance Statements:
Management in decompensated patients without prior variceal bleeding

- Annual endoscopy if not on NSBBs and no history of variceal bleeding
- If high-risk varices are found:
  - Start NSBBs (preferred, e.g., carvedilol)
  - Or consider endoscopic band ligation if NSBBs are not suitable
- Reduce or stop NSBBs if:
  - Systolic BP <90 mm Hg
  - Severe adverse effects occur
  - Discontinuation should prompt endoscopy for potential EVL

Guidance Statements: Initial Management of Acute Variceal Hemorrhage (AVH)

- Start immediately:
  - Vasoactive agents (e.g., octreotide, somatostatin, terlipressin)
  - IV antibiotics (e.g., ceftriaxone 1 g/day × up to 5 days)
- If variceal bleeding is confirmed:
  - Continue vasoactive therapy for 2–5 days
  - Perform EVL during endoscopy
- Supportive care:
  - Transfuse PRBCs to maintain Hgb ~7 g/dL
    - (higher if comorbidities)
  - Avoid FFP/platelets based on INR or count
    - No proven benefit, potential harm
- Timing:
  - Endoscopy within 12 hours of presentation!!!!!!

TABLE 5 Vasoactive agents for acute variceal bleeding.

Agent	Dosing	Duration
Octreotide	Initial i.v. bolus of 50 mcg and continue infusion at a rate of 25–50 mcg/hour[151–153]	2–5 d
Somatostatin	Initial i.v. bolus of 250 mcg and continue infusion at a rate of 250–500 mcg/hour[154,155]	2–5 d
Terlipressin[a]	Initial 24–48 hours: 2 mg i.v. every 4–6 hours and then 1 mg i.v. every 4–6 hours [154,156–158]	2–5 d

[a]Not approved for this indication in North America.
References: Garcia-Tsao et al. *Hepatology*. January 2017[1]; Seo et al. *Hepatology*. September 2014.[159]

Guidance Statements:
Advanced Management of Acute Variceal Hemorrhage

Preemptive TIPS

Ideally <24h of initial EGD, within 72h of admission):

For CTP B >7 with active bleeding on EGD

Or CTP C score 10–13

Transfer if TIPS not available locally

Absence of absolute contraindication

If TIPS not performed:

Start NSBB once vasoactive therapy is stopped

Uncontrolled AVH:

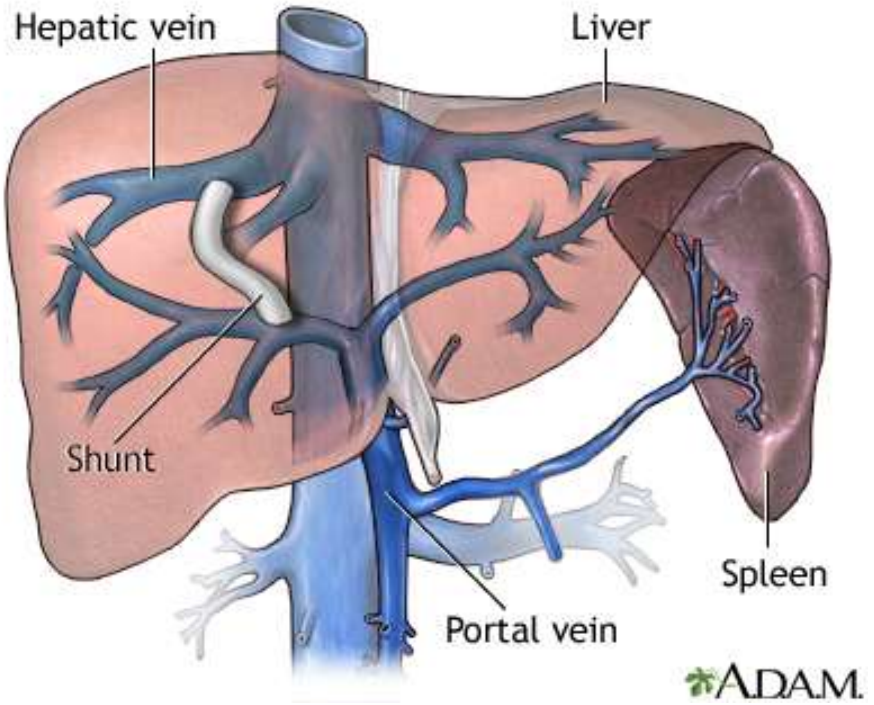
Use covered esophageal stent or balloon tamponade as bridge to TIPS

Consider TIPS

Salvage: uncontrolled (ongoing) variceal bleeding despite optimal medical and endoscopic therapy.

Rescue: early recurrent variceal bleeding (within 5 days) after initial control with standard therapy during the same admission.

Transhepatic intrajugular portosystemic shunt (TIPs)



Contraindication for TIPS

Absolute Contraindications

Congestive heart failure (Stage C or D, or a documented ejection fraction <50%)

Severe pulmonary hypertension (mean pulmonary artery pressure >45 mmHg)

Severe uncontrolled hepatic encephalopathy

Systemic infection or sepsis

Relative contraindications include:

Untreated biliary obstruction

Uncorrectable severe coagulopathy

Anatomical challenges, such as:

- Polycystic liver disease
- Hepatic or portal vein occlusion
- Intrahepatic tumors

Contraindication for TIPS

- Other considerations:
  - Patients with Child-Pugh >13 or age >75 years have generally been excluded from RCTs evaluating TIPS.
- A high MELD score is associated with increased mortality, but no specific MELD cutoff contraindicates TIPS.
- Risk-benefit tradeoffs vary by clinical scenario
  - (e.g., emergent vs elective TIPS).
- These contraindications help stratify who may be at higher risk for adverse outcomes post-TIPS and guide careful patient selection

Guidance statements

- Patients not receiving preemptive TIPS should undergo secondary prophylaxis with NSBB and band ligation.
- TIPS can be considered for secondary prophylaxis if other indications exist (e.g., refractory ascites).
- Enteral feeding should be started once AVH is controlled; variceal bands do not contraindicate feeding tube placement if indicated
- Proton pump inhibitors should be discontinued once AVH is confirmed as the bleeding source, unless other specific indications exist.

Guidance statements Gastric Varices

- Gastric or ectopic varices indicate CSPH; consider NSBBs to prevent rebleeding and decompensation.
  - Assess for portal vein thrombosis.
- For high-risk cardiofundal varices (≥10 mm, red signs, CTP B/C) intolerant to NSBBs, endoscopic cyanoacrylate injection may be used for primary prophylaxis
- TIPS and BRTO are not recommended to prevent first bleed in patients with unbled fundal varices.

Guidance Statements Management of Bleeding Gastric or Ectopic Varices

- Initial management: same as esophageal varices
  - vasoactive agents, antibiotics, restrictive transfusion, and endoscopy within 12 hours
- Cross-sectional imaging (with contrast) is essential to define collateral anatomy and detect portal/splenic vein thrombosis
- First-line therapies:
  - Endoscopic cyanoacrylate injection (ECI)
  - TIPS
  - Retrograde obliteration (BRTO, PARTO, CARTO) —
    - Preferred if TIPS is contraindicated

Guidance Statements
Management of Bleeding Gastric or Ectopic Varices

- Post-ECI: start NSBBs if tolerated, repeat ECI every 2–4 weeks until obliteration, and maintain long-term endoscopic surveillance
- If bleeding due to isolated splenic vein thrombosis: evaluate for splenectomy, splenic vein stenting, or splenic artery embolization

(A)

Acute gastrointestinal hemorrhage in patient with portal hypertension

Airway protection
Cardiovascular resuscitation
Restrictive transfusion (target hemoglobin 7 g/dl in absence of comorbidity)
Avoidance of routine FFP, platelet transfusion or cryoprecipitate
Initiation of vasoactive agents (octreotide, somatostatin, terlipression)
Initiation of antimicrobial prophylaxis

Upper endoscopy within 12 hours

Confirmation of varices

Bleeding esophageal or GOV1 varices

Bleeding GOV2/IGV or ectopic varices

GO TO FIGURE 5

Non-portal hypertension cause

Discontinue vasoactive therapy

Bleeding Portal Hypertensive Gastropathy (see text)

Esophageal Band Ligation

Hemostasis achieved

Yes

No

Balloon tamponade (Minnesota, Linton, or Sengstaken-Blakemore Tube) Esophageal stent

Salvage TIPS

CTP C10-13 or CTP B8-9 with active bleeding

CTP C>13

Best supportive care / Transplant

Yes

Pre-emptive TIPS

CTP A-B7 or no active bleeding

Supportive care
Start NSBB
Repeat endoscopic therapy until obliteration

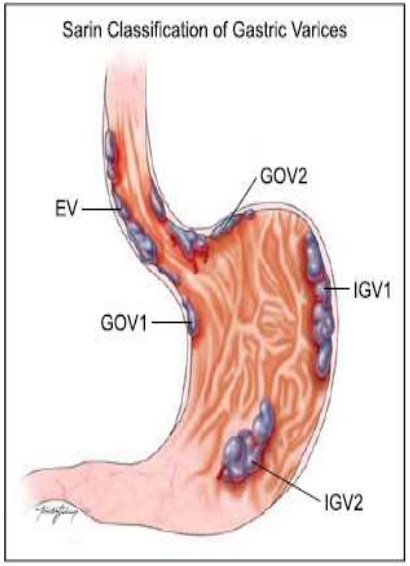
Rebleeding (particularly within 6 weeks)

Consider attempt at repeat EBL

TIPS

(B)

Sarin Classification of Gastric Varices



Bleeding GOV2/IGV or ectopic varices

Vascular Imaging if stable

Local expertise in Endoscopic Cyanoacrylate Injection

Yes

Endoscopic Cyanoacrylate Injection ± Endoscopic Coiling

No

Consider Balloon Tamponade (Linton-Nachlas or Minnesota)

Hemostasis achieved

No

?

Best supportive care / Transplant

CTP C>13

CTP C10-13 or CTP B8-9 with active bleeding

Vascular imaging (contrast CT. MRI with gadolinium, doppler US)

TIPS ± Variceal Obliteration (e.g. BRTO)

Variceal obliteration (e.g. BRTO, BATO, CARTO)

Splenectomy, pSAE, splenic vein stenting

Yes

Supportive care
Start NSBB
Repeat endoscopic therapy until obliteration

CTP A-B7 or no active bleeding

Yes

Rebleeding (particularly within 6 weeks)

Pre-emptive TIPS

Guidance Statements
Portal Hypertensive Gastropathy

- Moderate/severe PHG suggests CSPH → consider NSBBs to prevent decompensation, bleeding, and IDA
- For acute bleeding: use vasoactive agents (e.g., somatostatin, octreotide, terlipressin) for 2–5 days
- NSBBs are recommended to prevent rebleeding from PHG and portal hypertension-related polyps
- If bleeding persists despite NSBB and becomes transfusion-dependent, consider TIPS placement

Guidance Statements
Variceal Management in HCC

- Prevention and treatment of AVH and decompensation should follow standard cirrhosis protocols
- If CSPH is present, NSBBs are recommended for primary prophylaxis of VH and prevention of decompensation
- With occlusive bland or malignant PVT, perform upper endoscopy to assess for varices
  - If varices are present, treat with NSBBs or band ligation
- NSBBs preferred (e.g., carvedilol) due to added benefits beyond VH prevention

Guidance Statements

- Pregnancy
  - Patients with cirrhosis or noncirrhotic PH planning pregnancy should have an upper endoscopy within 1 year before conception
  - If unscreened, perform EGD **early in the second trimester**
- Endoscopy before TEE
  - Routine upper endoscopy prior to TEE in patients with cirrhosis is not recommended.
- Preoperative TIPS
  - May be considered on a case-by-case basis, especially in patients with advanced cirrhosis undergoing high-risk surgery.
  - Decision-making should weigh the potential surgical benefits (e.g., reduced portal pressure, lower risk of decompensation) against procedure-related risks, such as hepatic encephalopathy and worsening liver function.

Emerging Therapies in Portal Hypertension

- Statins (simvastatin/atorvastatin):
  - May improve hepatic endothelial function and reduce portal pressure.
  - Suggested survival benefit in cirrhosis, particularly in decompensated patients.
  - Being evaluated as an adjunct or alternative to NSBBs in ongoing trials.
- Aspirin:
  - Investigated for its anti-inflammatory and antifibrotic properties in cirrhosis.
  - May have a protective effect against hepatic decompensation and HCC development.
  - Not currently standard of care; under study.
- Other nontraditional options under investigation:
  - SGLT2 inhibitors (especially in NAFLD/MASLD-related PH)
  - GLP-1 receptor agonists
  - Anti-coagulants for PVT prevention
- These are not yet guideline-endorsed treatments but reflect active research directions in portal hypertension management.

Summary- Key Takeaways

- Noninvasive risk stratification (LSM, platelets) is now central; invasive testing often avoidable
- CSPH diagnosis guides both variceal screening and preventive strategies
- NSBBs remain first-line for primary and secondary prophylaxis; carvedilol preferred in cACLD
- Preemptive TIPS improves outcomes in high-risk AVH (CTP C 10–13 or B with active bleeding)
- Gastric/Ectopic varices require individualized management (ECI, TIPS, BRTO) with imaging guidance
- PHG, HCC, and pregnancy have special considerations but follow core principles
- Emerging therapies (statins, aspirin, SGLT2i) show promise—under investigation, not yet standard
- Multidisciplinary care and personalized approach are essential for optimal outcomes

References

- - AASLD Guidance 2024

Question 1

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  B. All patients with fundal varices require emergency endoscopy
  C. Imaging is essential to evaluate collateral anatomy before selecting therapy
  D. EBL is preferred over NSBBs in ectopic varices

1st GUIDE TO THE GUIDELINES

GI Guidelines Review

El Conquistador Resort & Casino
Fajardo, Puerto Rico
JUNE 6-8, 2025