WELCOME TO
AK LIVER DISEASE ECHO

ALASKA NATIVE TRIBAL HEALTH CONSORTIUM

NPAIHB
Indian Leadership for Indian Health

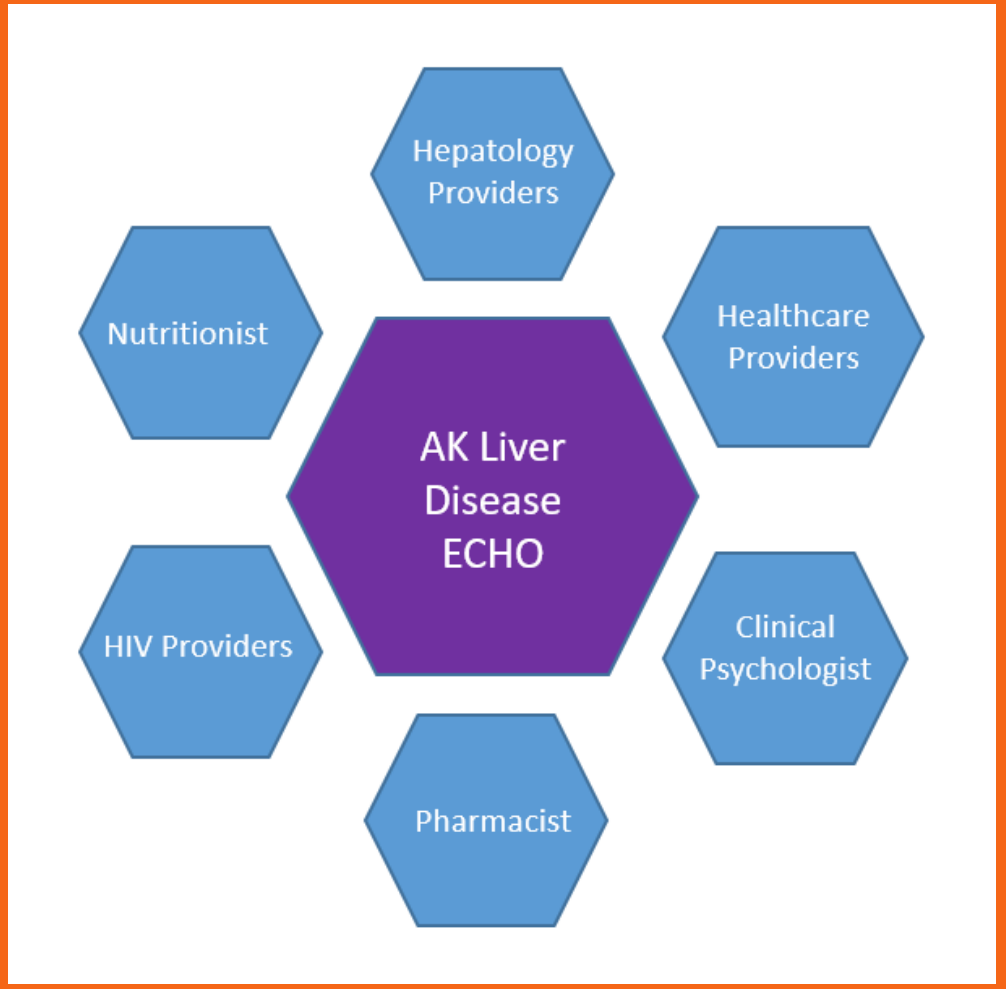
This project is supported by a grant from the Northwest Portland Area Indian Health Board and funding is provided from the HHS Secretary's Minority HIV/AIDS Fund.

WHAT WE DO

- Didactic Presentations pertaining to ECHO topics
- We're accepting **case presentations and questions pertaining to:**
  - Elevated Liver Function Tests
  - Cirrhosis
  - Managing Complications of Decompensated Cirrhosis – Ascites, encephalopathy, esophageal varices
  - Alcohol-related liver disease, including Alcohol Hepatitis
  - Autoimmune liver disease – Autoimmune Hepatitis, Primary Biliary Cholangitis, Overlap
  - Nonalcoholic fatty liver disease/Nonalcoholic steatohepatitis
  - Hepatocellular carcinoma
- Provide Expert Panelists

CONSULTANT TEAM

- Brian McMahon, MD Hepatologist
- Youssef Barbour, MD Hepatologist
- Lisa Townshend, ANP Hepatology Provider
- Annette Hewitt, ANP Hepatology Provider
- Leah Besh, PA-C HIV/Hepatology Provider
- Anne Fleetwood, MS, RDN, NDN
- Brittany Keener, PharmD, MPH, BCPS
- Lucia Neander, PhD Clinical Psychologist



Welcome to Alaska Liver Disease ECHO

Approved Provider Statements:
Alaska Native Tribal Health Consortium (ANTHC) is accredited by the Washington State Medical Association to provide continuing medical education for physicians.
ANTHC is approved as a provider of nursing continuing professional development by the Montana Nurses Association, an accredited approver with distinction by the American Nurses Credentialing Center's Commission on Accreditation.
The Alaska Pharmacists Association (AKPhA) in cooperation with ANTHC is accredited by the Accreditation Council for Pharmacy Education as a provider of continuing pharmacy education.

Contact Hours:
ANTHC designates this live activity for a maximum 12 AMA PRA Category 1 Credit(s) ™ for the entire series. Physicians should claim only the credit commensurate with the extent of their participation in the activity.
ANTHC designates this activity as meeting the criteria for one nursing contact hour credit for each hour of participation up to a maximum 12 hour(s), including 3 total pharmacotherapeutics (Rx) contact hours for the entire series.
To receive CPE credit, participants must complete an Evaluation/Attendance Form for each session attended. You will be required to enter your NABP e-profile ID number, & birthdate (mm/dd). CPE credit will be posted to the online CPE Monitor system within 60 days after completion of each activity. No credit will be reported to CPE Monitor for CEs that do not have a completed evaluation. There is no charge to process CPE credit for ANTHC employees and AKPhA members, but a fee may apply to participants not affiliated with either organization.

Conflict of Interest Disclosures:
Youssef Barbour, MD & Lisa Townshend-Bulson, APRN / faculty for this educational event, are primary investigators in an ANTHC sponsored hepatitis C study funded in part by Gilead Sciences; Anne Fleetwood, faculty for this educational event, is a contractor with Tandem Diabetes Care. All of the relevant financial relationships listed for these individuals have been mitigated.

Requirements for Successful Completion:
To receive CE credit please make sure you have actively engaged in the entire activity, your attendance is recorded by the facilitator, and complete the course evaluation form found here: https://forms.gle/R8vibUZgMbRcoScw9.

For more information contact
jlfielder@anthc.org or (907) 729-1387

ALASKA NATIVE TRIBAL HEALTH CONSORTIUM

PORTAL HYPERTENSION AND VARICES

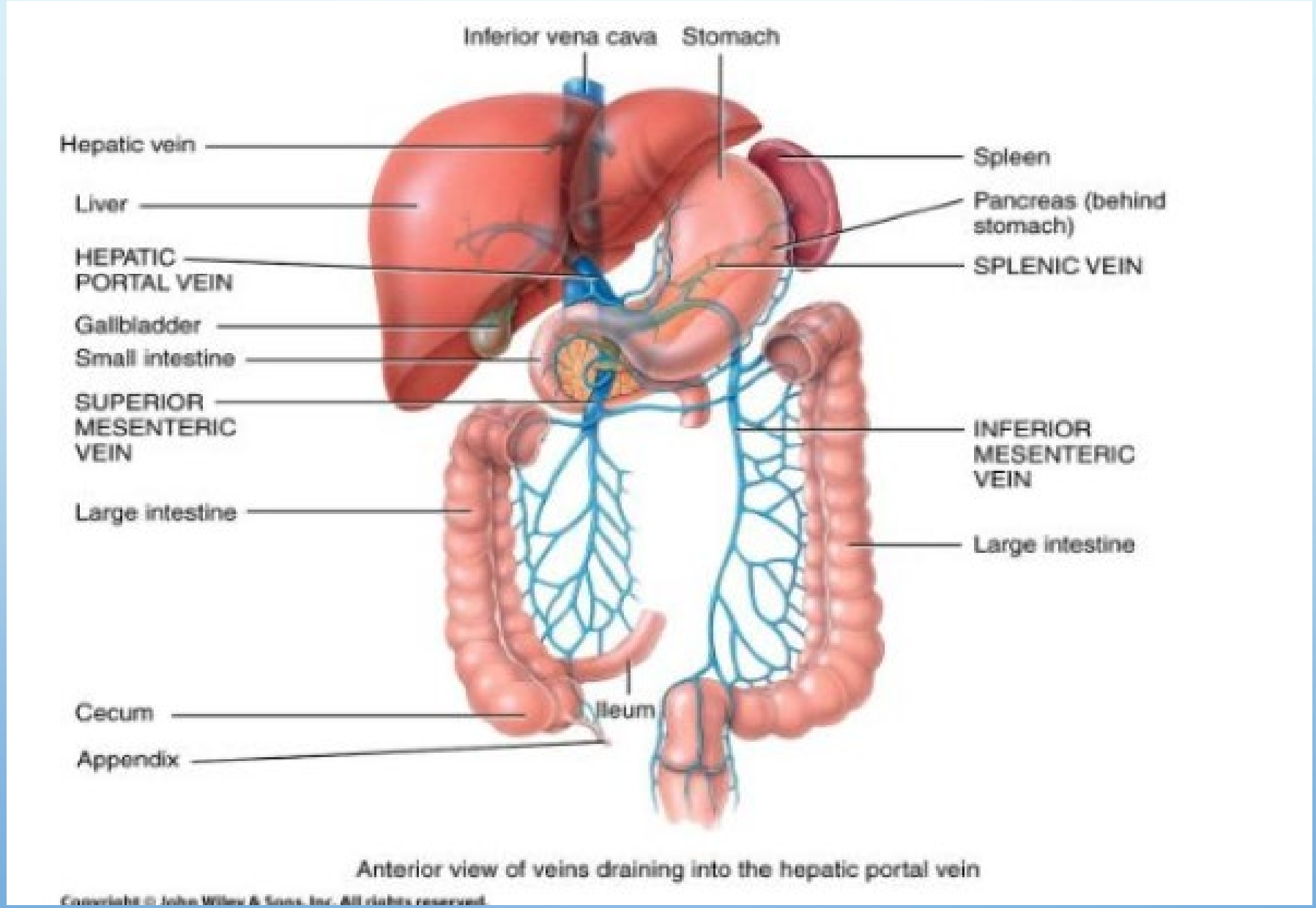
YOUSSEF BARBOUR M.D

LIVER DISEASE & HEPATITIS PROGRAM, ANTHC

CLINICALLY SIGNIFICANT PORTAL HYPERTENSION STARTS AT:

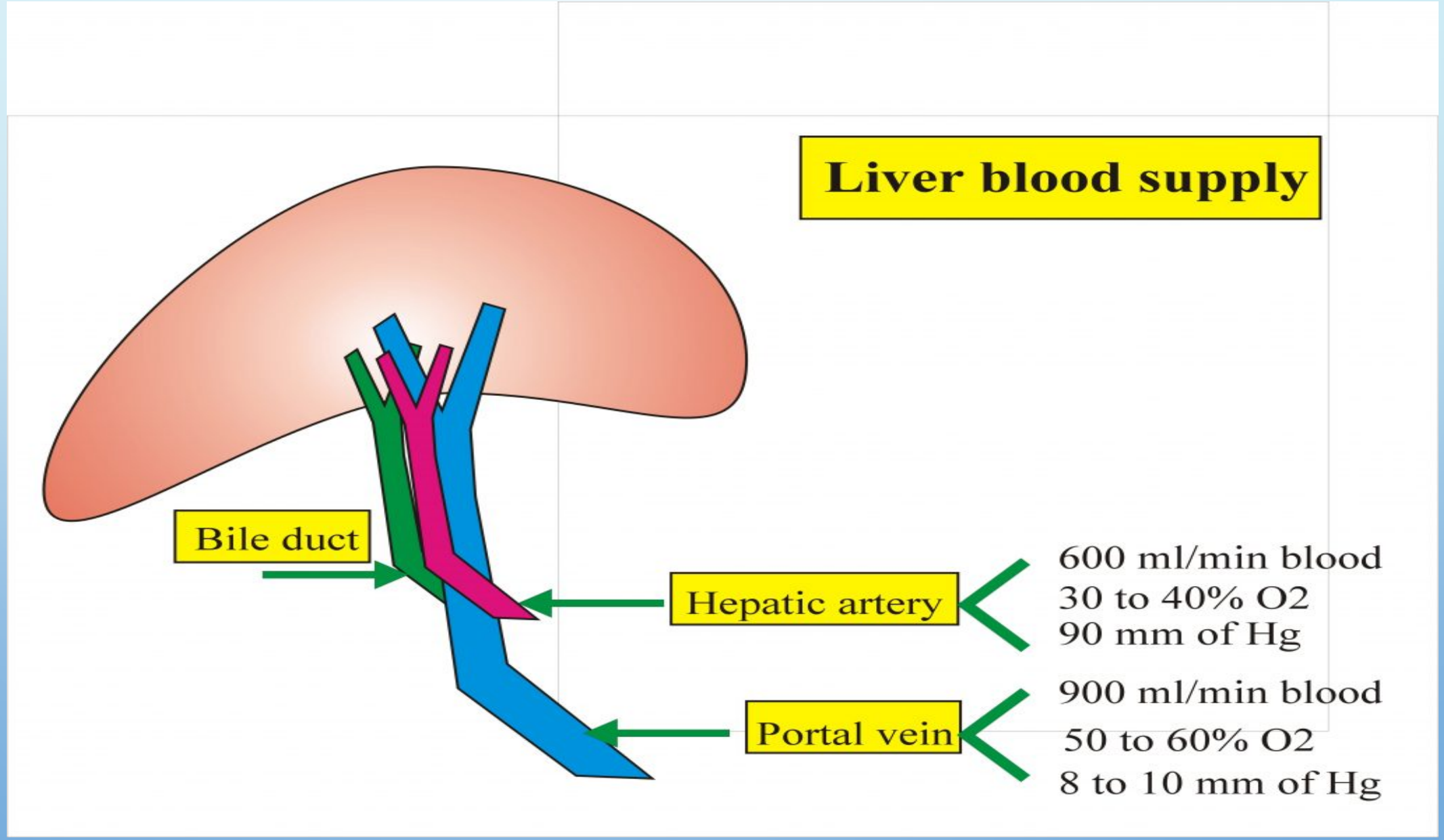
A. A. 1- 5 MMHG
B. 2- 8 MMGH
C. 3- 10 MMHG
D. 4- 12 MMHG

PORTAL CIRCULATION

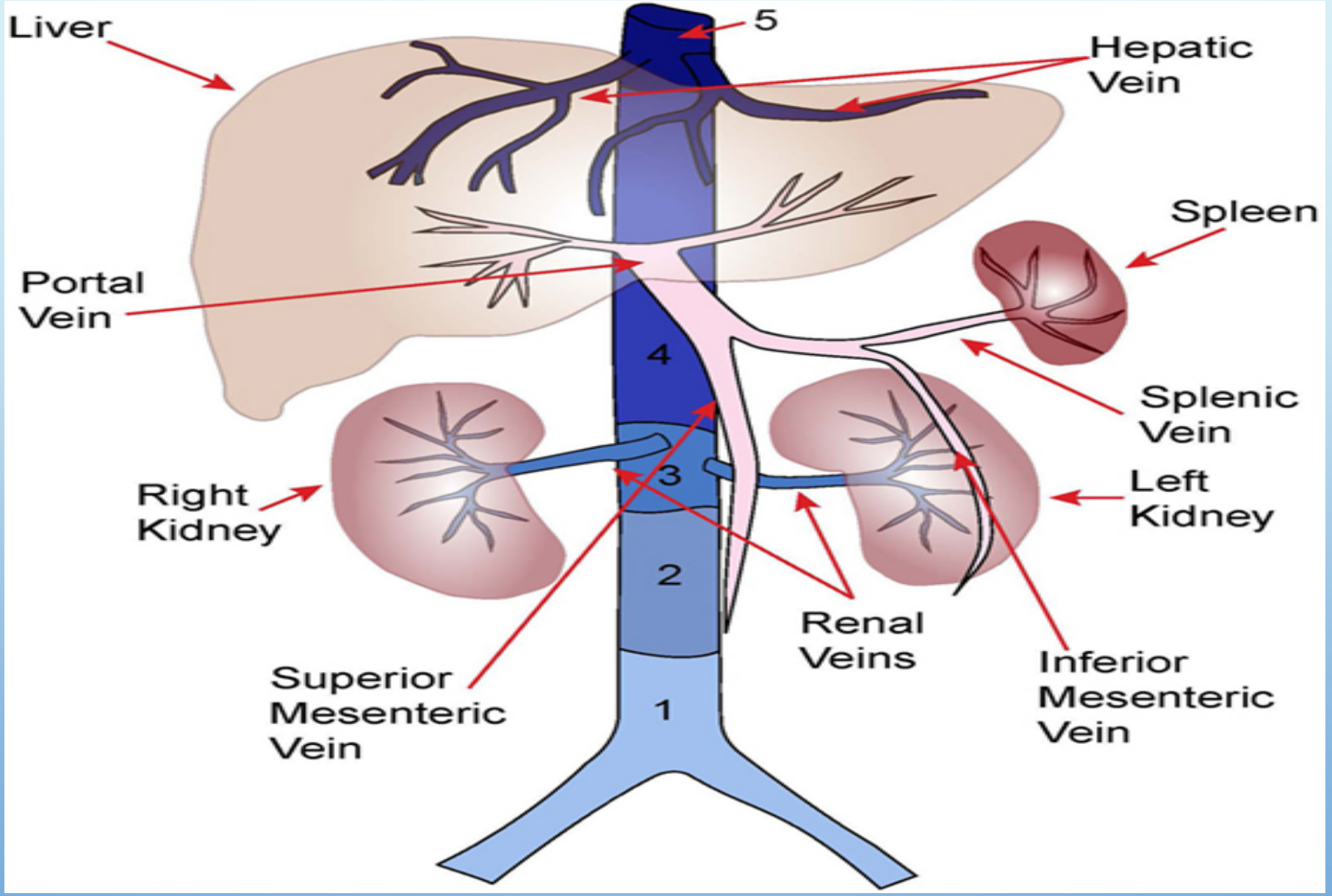


Anterior view of veins draining into the hepatic portal vein

LIVER BLOOD SUPPLY



HEPATIC VENOUS RETURN



DIRECT PORTAL PRESSURE MEASUREMENT VS. HEPATIC VEIN PRESSURE GRADIENT MEASUREMENT

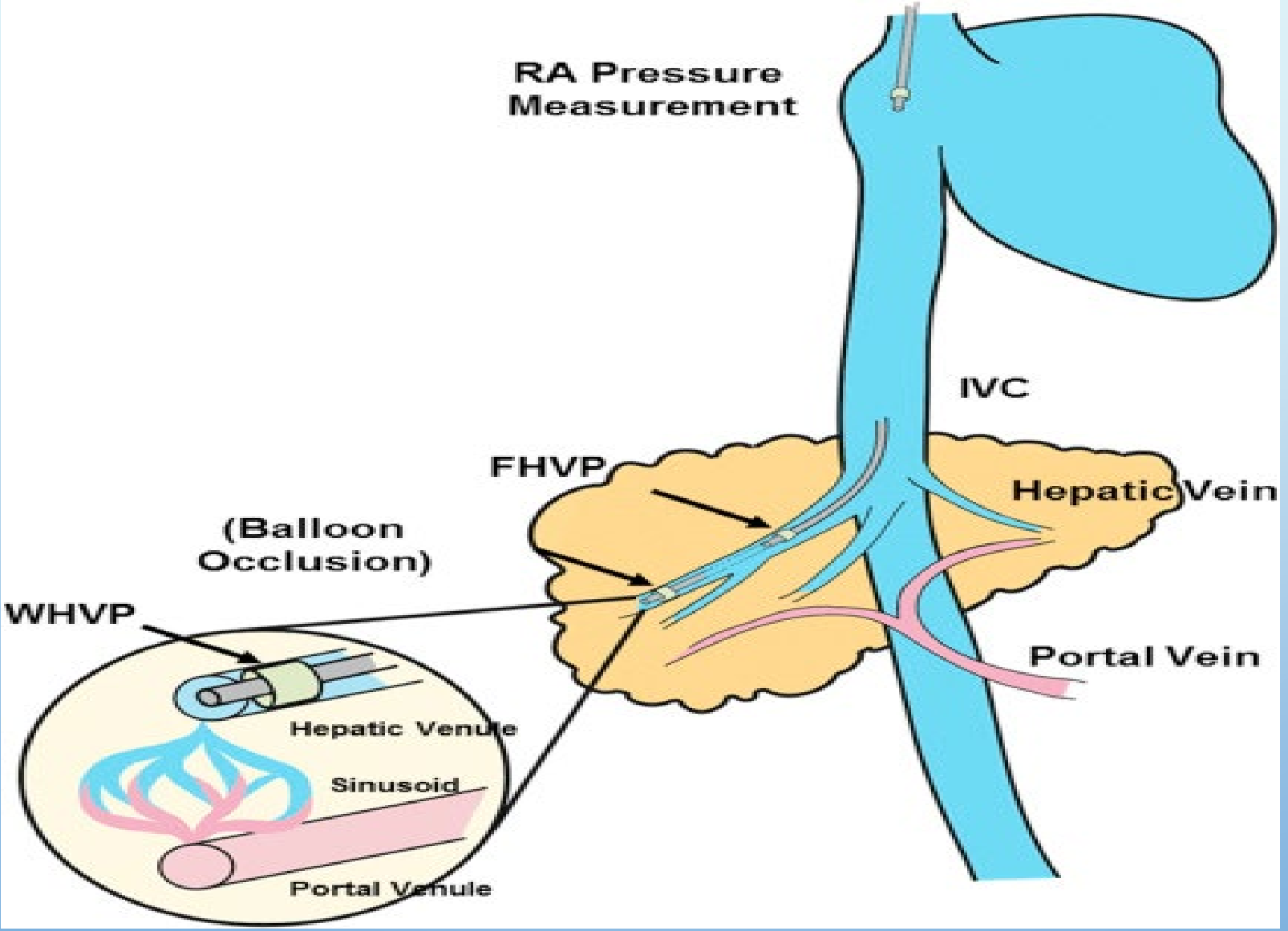
- **PORTAL VEIN PRESSURE** NORMALLY RANGES FROM 7 TO 12 MM HG AT REST AND IN FASTING CONDITIONS. MEASUREMENT OF PORTAL PRESSURE DIRECTLY IS INVASIVE, REQUIRING DIRECT CANNULATION OF PORTAL OR UMBILICAL VEINS. (NOT A COMMON PRACTICE).
- ALTERNATIVELY, PORTAL HTN CAN BE ACCURATELY DIAGNOSED BY THE **PRESSURE GRADIENT BETWEEN THE PORTAL VEIN AND THE INFERIOR VENA CAVA**, DEFINED AS THE HEPATIC VENOUS PRESSURE GRADIENT (HVPG).
- THE HVPG REPRESENTS THE ACTUAL LIVER PORTAL PERFUSION PRESSURE, AND IT RANGES FROM 1 TO 4 MM HG.

VALUES: > 5 MM HG INDICATES PORTAL HTN

> 10 MM HG CORRESPONDS TO CLINICALLY SIGNIFICANT PORTAL HTN (COMPLICATIONS)

12 MM HG OR MORE IS THE PRESSURE WHEN VARICES MAY BLEED.

HVPG MEASUREMENT



MECHANISMS OF PORTAL HTN IN CIRRHOSIS

- DEVELOPMENT AND PROGRESSION OF **LIVER FIBROSIS**, LEADING TO PERMANENT ARCHITECTURAL DISTORTION OF THE LIVER PARENCHYMA IN CIRRHOSIS ULTIMATELY CAUSING VASCULAR REMODELING, AND INCREASE IN **INTRAHEPATIC VASCULAR RESISTANCE.**
- *A DYNAMIC AND POTENTIALLY REVERSIBLE COMPONENT HAS BEEN REPORTED THAT ACCOUNTS FOR 30% OF THE TOTAL INCREASE IN INTRAHEPATIC VASCULAR RESISTANCE.*
- THIS MODIFIABLE FEATURE IS A RESULT OF EXAGGERATED PRODUCTION OF VASOCONSTRICTORS AND DEFICIENT RELEASE OF VASODILATORS

CAUSES OF PORTAL HTN

- CIRRHOSIS REMAINS THE MOST COMMON CAUSE IN WESTERN COUNTRIES (>90%)
- CAUSES ARE DIVIDED INTO PREHEPATIC, HEPATIC AND POSTHEPATIC.
- HEPATIC CAUSES ARE DIVIDED INTO PRESINUSOIDAL, SINUSOIDAL AND POSTSINUSOIDAL.
- CIRRHOSIS IS A SINUSOIDAL CAUSE.

Cause	Examples	Wedged Hepatic Venous Pressure	Free Hepatic Venous Pressure	HVPG	Treatment Options*
Prehepatic	Portal or splenic vein thrombosis, congenital portal vein stenosis, arteriovenous fistula, SVC occlusion (downhill varices)	Normal	Normal	Normal	Recanalize portal vein, occlude portosystemic collateral vessels, decrease demand (arterial or systemic venous inflow) on portal system
Hepatic	Presinusoidal: primary biliary cirrhosis Sinusoidal: cirrhosis, infiltrative liver disease, idiopathic portal hypertension, congenital hepatic fibrosis, nodular regenerative hyperplasia, polycystic liver disease Postsinusoidal: veno-occlusive disease	Increased†	Normal	Increased†	Create portosystemic shunt, occlude portosystemic collateral vessels, decrease demand (arterial inflow) on portal system
Posthepatic	Budd-Chiari syndrome; IVC webs; thrombosis; congestive heart failure, constrictive pericarditis, or tricuspid valve disease	Increased†	Increased	Increased†	Recanalize hepatic vein, create portosystemic shunt, occlude portosystemic collateral vessels, decrease demand (arterial inflow) on portal system

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PORTAL HTN CONSEQUENCES

- PORTAL HTN IS HVPG > 5 MM HG
- BETWEEN 5-10 MM HG, IS CONSIDERED SUBCLINICAL
- HVPG 10 MM HG AND ABOVE CONSIDERED CLINICALLY SIGNIFICANT PORTAL HTN.

CONSEQUENCES INCLUDE: 1- SPLENOMEGALY WITH HYPERSPLENISM AND THROMBOCYTOPENIA.

2- PORTAL SYSTEMIC COLLATERALS AND GASTROESOPHAGEAL VARICES AND BLEEDING VARICES

3- PORTAL HYPERTENSIVE GASTROPATHY OR ENTEROPATHY

4- HYPERDYNAMIC SYNDROME, SPLANCHNIC VASODILATION, AND HEPATORENAL SYNDROME.

5- ASCITES AND SPONTANEOUS BACTERIAL PERITONITIS

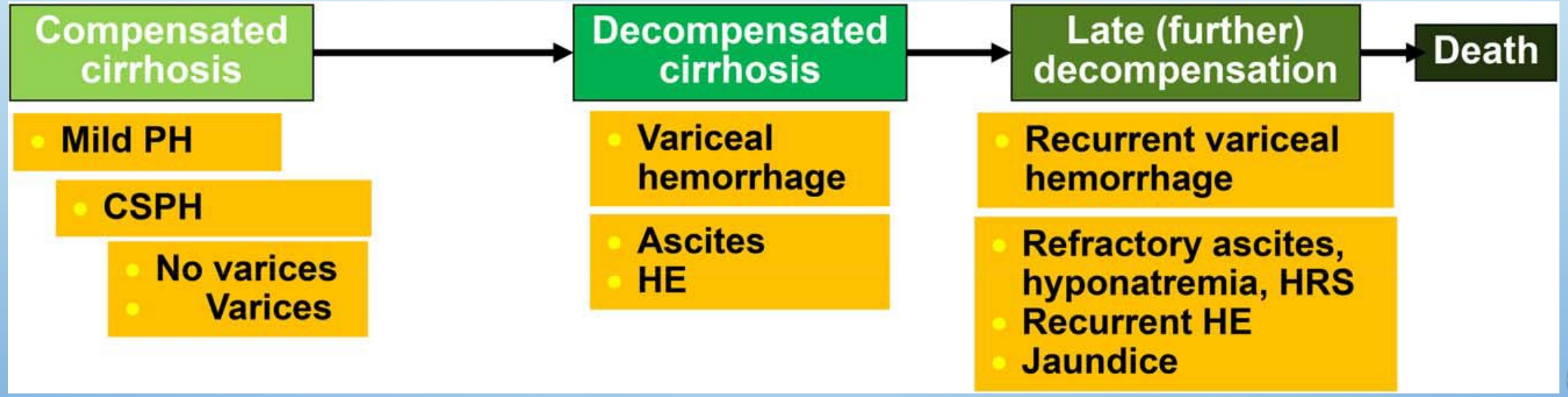
6- HEPATOPULMONARY SYNDROME AND PORTOPULMONARY SYNDROME

7- HEPATIC ENCEPHALOPATHY.

8- HEPATIC CARDIOMYOPATHY

- EVEN AFTER ADJUSTING FOR MELD SCORE, DECOMPENSATING EVENTS, AND AGE, THE HVPG REMAINS AN INDEPENDENT PROGNOSTIC VARIABLE WITH A 3% INCREASE IN MORTALITY RISK FOR EACH 1 MM HG GRADIENT INCREASE

STAGES AND SUB STAGES OF CIRRHOSIS



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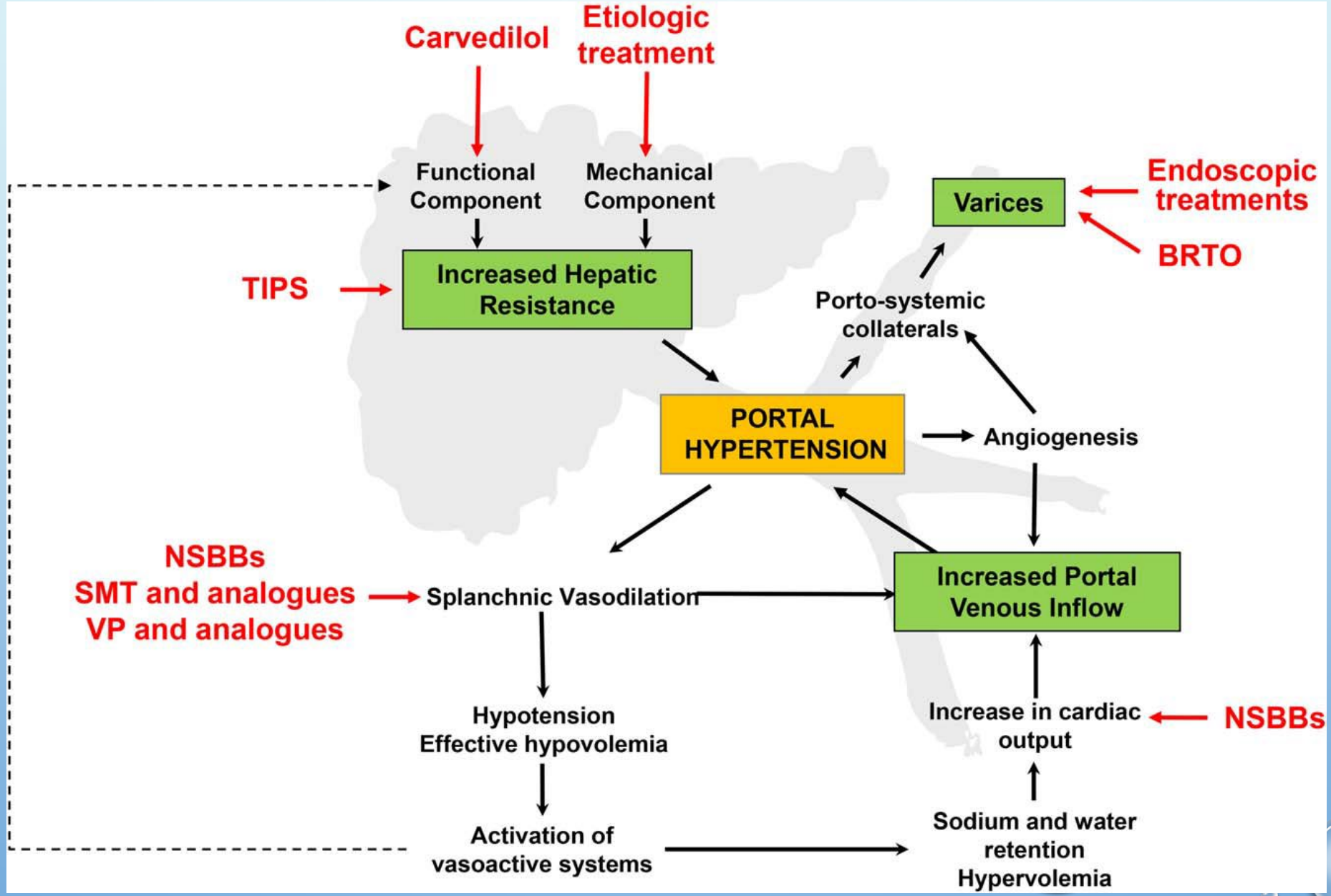
MEASUREMENT OF HVPG

- HVPG MEASUREMENT IS THE GOLD-STANDARD METHOD TO ASSESS THE PRESENCE OF CSPH, DEFINED ASAN HVPG 10MM HG.
- CSPH CAN BE IDENTIFIED BY NONINVASIVE TESTS:
  - LS > 20-25 KPA, ALONE OR COMBINED WITH PLATELET COUNT AND SPLEEN SIZE.
  - THE PRESENCE OF PORTOSYSTEMIC COLLATERALS ON IMAGING IS SUFFICIENT TO DIAGNOSE CSPH.
- PATIENTS WITH GEV ON ENDOSCOPY HAVE, BY DEFINITION, CSPH:
  - PATIENTS WITH AN LS <20 KPA AND PLATELET COUNT >150,000/MM3 HAVE A VERY LOW PROBABILITY(<5%) OF HAVING HIGH-RISK VARICES, AND EGD CAN BE CIRCUMVENTED.
  - IN PATIENTS WHO DO NOT MEET THESE CRITERIA, SCREENING ENDOSCOPY FOR THE DIAGNOSIS OF GEV IS RECOMMENDED WHEN THE DIAGNOSIS OF CIRRHOSIS IS MADE.

PATHOGENESIS OF PORTAL HTN WITH SITE OF ACTION OF CURRENTLY RECOMMENDED THERAPIES



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MANAGEMENT OF PATIENTS WITH MODERATE/ LARGE VARICES THAT HAVE NOT BLED

Therapy	Recommended Dose	Therapy Goals	Maintenance/Follow-up
Propranolol	• 20-40 mg orally *twice* a day • Adjust every 2-3 days until treatment goal is achieved • Maximal daily dose: ○ 320 mg/day in patients without ascites ○ 160 mg/day in patients with ascites	• Resting heart rate of 55-60 beats per minute • Systolic blood pressure should not decrease <90 mm Hg	• At every outpatient visit make sure that heart rate is on target • Continue indefinitely • No need for follow-up EGD
Nadolol	• 20-40 mg orally *once* a day • Adjust every 2-3 days until treatment goal is achieved • Maximal daily dose: ○ 160 mg/day in patients without ascites ○ 80 mg/day in patients with ascites	• Resting heart rate of 55-60 beats per minute • Systolic blood pressure should not decrease <90 mm Hg	• At every outpatient visit make sure that heart rate is on target • Continue indefinitely • No need for follow-up EGD
Carvedilol	• Start with 6.25 mg *once* a day • After 3 days increase to 6.5 mg twice-daily • Maximal dose: 12.5 mg/day (except in patients with persistent arterial hypertension)	• Systolic arterial blood pressure should not decrease <90 mm Hg	• Continue indefinitely • No need for follow-up EGD
EVL	• Every 2-8 weeks until the eradication of varices	• Variceal eradication (no further ligation possible)	• First EGD performed 3-6 months after eradication and every 6-12 months thereafter

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FOR HELPFUL INFORMATION

- VISIT OUR WEBSITE: WWW.ANTHC.ORG/HEP
- PROVIDERS PAGE: HTTPS://ANTHC.ORG/WHAT-WE-DO/CLINICAL-AND-RESEARCH-SERVICES/HEP/FOR-PROVIDERS/
  - CIRRHOSIS CARE

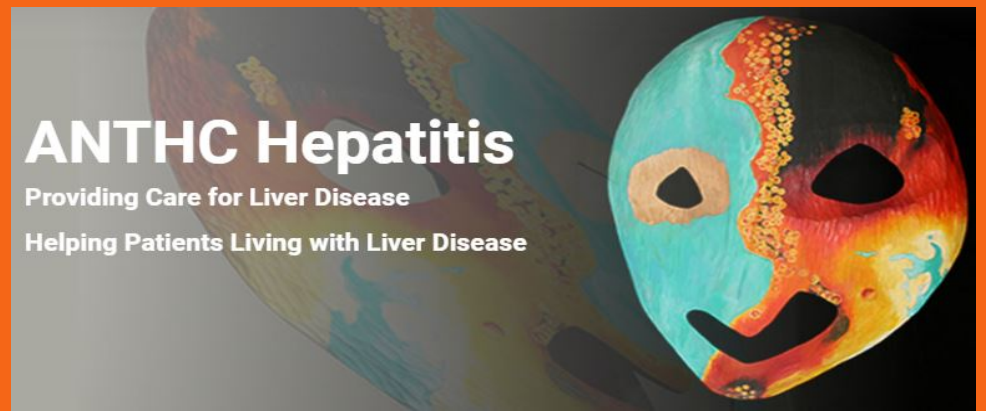
  ALSO AVAILABLE:
  - AIH CARE
  - PBC CARE
  - HEPATITIS B CARE
  - HEPATITIS C CARE
  - NAFLD CARE

LIVER DISEASE ECHO SCHEDULE AT A GLANCE

- August 19 Drug Induced Liver Injury – Brittney Keener, MPH, BCPS
- September 16 HCC Surveillance – Brian McMahon, MD
- October 21 Treatment of Acute Alcohol Hepatitis – Brian McMahon, MD
- November 18th Nutrition and the Liver – Anne Fleetwood, RD
- December 16th All About Portal Vein Thrombosis – Youssef Barbour, MD

ADDITIONAL LEARNING OPPORTUNITIES

- AK ID ECHO: HCV, HIV, PrEP, STIs
  - The 2nd Tuesday of every month from 12:00-1:00PM Alaska Standard Time
    - 1CE/CME offered per session
  - anthc.org/project-echo/hcv-hiv-prep-stis-echo
- LiverConnect Webinar Program
  - Second Tuesday of every month 8:00-9:00AM Alaska Standard Time
    - Full Hour didactic topics on Liver Disease and related topics 1CE/CME offered
  - anthc.org/what-we-do/clinical-and-research-services/hep/liverconnect/



AK LIVER DISEASE ECHO -TEAM CONTACTS

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- Northwest Portland Area Indian Health Board
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  - Jessica Leston: Clinical Programs Director, jleston@npaihb.org

Thank you

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