

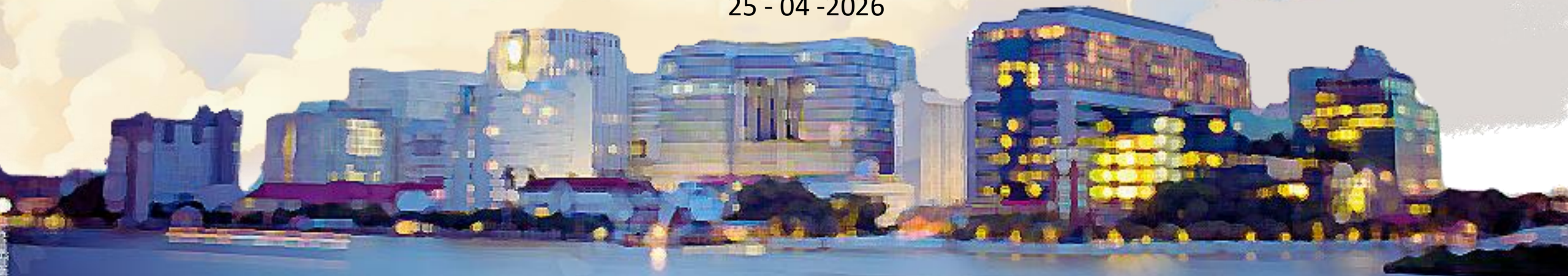


Gastroenterology *MCQ tutorial* for internists

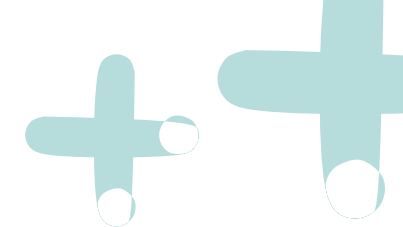
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25 - 04 - 2026

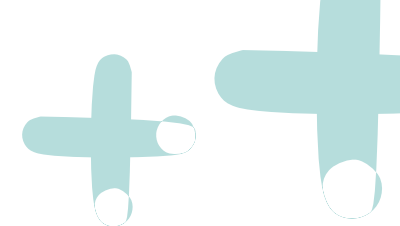


Gastroenterology



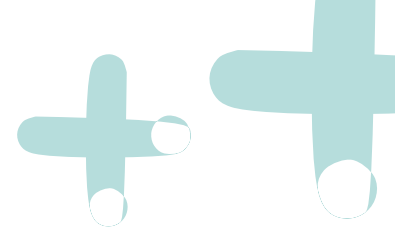
Upper GI	Intestine
• GERD	• Ulcerative colitis
• Gastric ulcer	• Crohn's disease
• Duodenal ulcer	• Radiation enteritis
• Acute gastritis	• Toxic gastroenteritis
• Dyspepsia	• Allergic gastroenteritis
• Oesophagitis	• Noninfective gastroenteritis
• Achalasia	• Diverticular disease
• Esophageal ulcer	• IBS
• Esophageal obstruction	• Constipation
• Mallory-Weiss syndrome	• Fecal impaction
• Alcoholic gastritis	• Acute vascular disorder
• Chronic gastritis	• Chronic vascular disorder
• Portal hypertensive gastropathy	• Angiodysplasia
• Duodenitis	• Paralytic ileus
• Pyloric stenosis	• Intestinal adhesion obstruction
• Duodenal obstruction	• Anorectal abscess
	• Radiation proctitis

Gastroenterology



Peritoneum	Liver
<ul style="list-style-type: none">• Acute peritonitis	<ul style="list-style-type: none">• Alcoholic liver disease
<ul style="list-style-type: none">• Secondary peritonitis	<ul style="list-style-type: none">• Chronic hepatitis
<ul style="list-style-type: none">• Hemoperitoneum	<ul style="list-style-type: none">• Cirrhosis
<ul style="list-style-type: none">• TB peritonitis	<ul style="list-style-type: none">• NASH
Biliary / Pancreas	<ul style="list-style-type: none">• NAFLD
<ul style="list-style-type: none">• CBD stones/ gallstones	<ul style="list-style-type: none">• Toxic liver disease
<ul style="list-style-type: none">• Cholangitis	<ul style="list-style-type: none">• Liver abscess
<ul style="list-style-type: none">• Bile duct obstruction	<ul style="list-style-type: none">• Hepatitis unspecified
<ul style="list-style-type: none">• Acute pancreatitis	<ul style="list-style-type: none">• Portal hypertension
<ul style="list-style-type: none">• Chronic pancreatitis	<ul style="list-style-type: none">• Acute liver failure
<ul style="list-style-type: none">• Acalculous cholecystitis	<ul style="list-style-type: none">• Primary biliary cirrhosis
<ul style="list-style-type: none">• Chronic cholecystitis	<ul style="list-style-type: none">• Autoimmune hepatitis
<ul style="list-style-type: none">• Sphincter of Oddi spasm	<ul style="list-style-type: none">• Cardiac cirrhosis
<ul style="list-style-type: none">• Sphincter of Oddi stenosis	<ul style="list-style-type: none">• Shock liver
Others	<ul style="list-style-type: none">• Hepatorenal syndrome
<ul style="list-style-type: none">• GI bleeding	
<ul style="list-style-type: none">• Pancreatic steatorrhea	

GERD



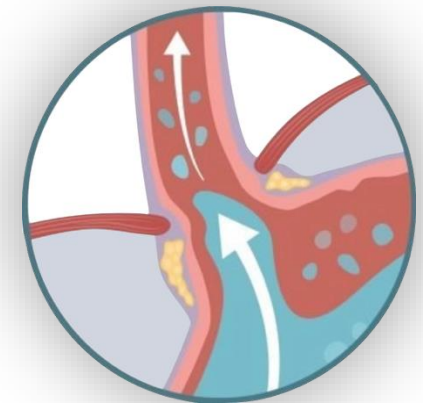
- **Reflux of stomach contents:** acid, non-acid, gas
- **Typical reflux:**
 - **Heartburn:** retrosternal burning sensation
 - **Regurgitation:** perception of gastric content into mouth/hypopharynx

Pathophysiology

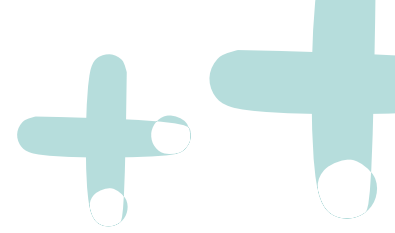
Visceral hypersensitivity

Impaired esophageal clearance

Impaired gastroesophageal barrier
(acid pocket, frequent TLESR)



GERD



Esophageal Syndromes

Symptomatic Syndromes

- **Typical reflux Syndrome**
- **Reflux chest pain Syndrome**

Syndromes with Esophageal injury

- Reflux esophagitis
- Reflux stricture
- Barrett's esophagus
- Esophageal adenocarcinoma

Extraesophageal Syndromes

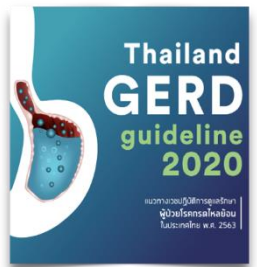
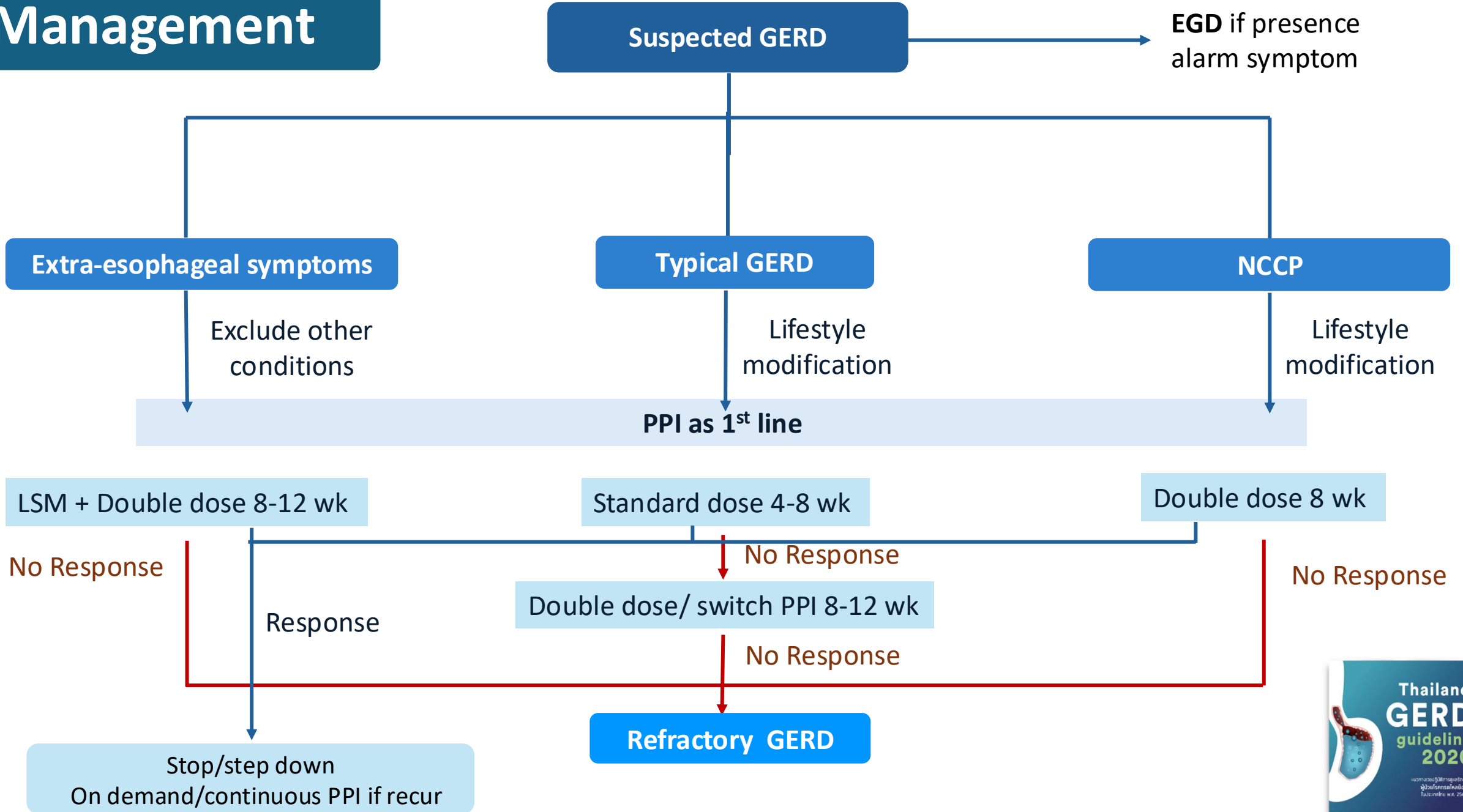
Established Associations

- Pharyngitis
- Sinusitis
- Idiopathic pulmonary fibrosis
- Recurrent otitis media

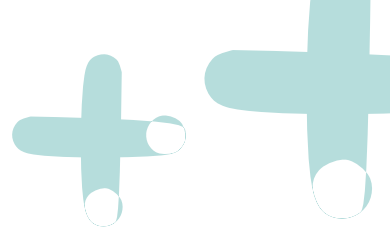
Proposed Associations

- Reflux cough syndrome
- Reflux laryngitis syndrome
- Reflux asthma syndrome
- Reflux dental erosion Syndrome

Management



Lifestyle modification



- **Lose weight** if overweight
- **Avoid smoking and alcohol** consumption
- Food triggers vary among individuals; identify and **avoid their own triggers**
- Avoid **spicy** foods, **fatty** foods, **carbonated** drinks, tea, coffee
- Avoid eating **large meals**
- Avoid eating close to bedtime; allow at least **3 hours** before lying down
- Engage in moderate-intensity **exercise**
- **Elevate the head** of bed about 8 inches, or sleep on **left side**



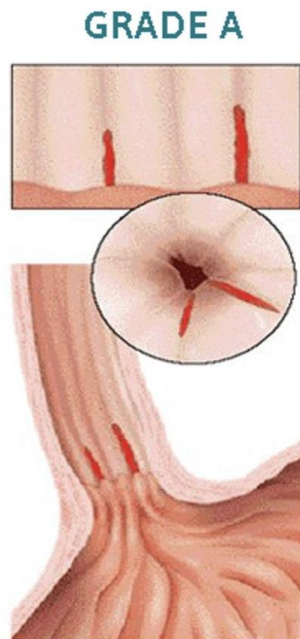
Management

Refractory GERD

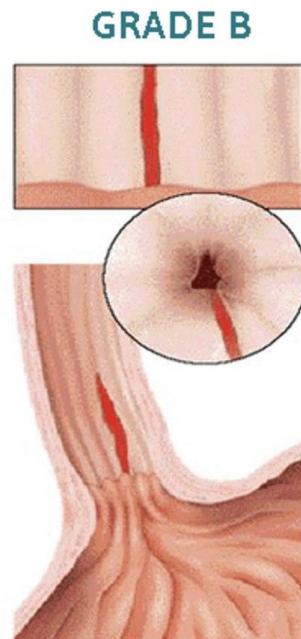
1. True symptom?
2. Correct diagnosis?

Endoscopy

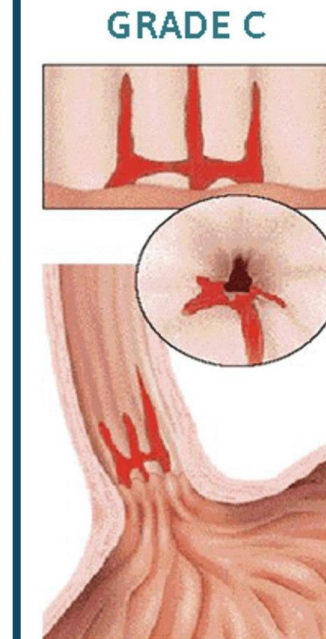
Los Angeles classification of esophagitis



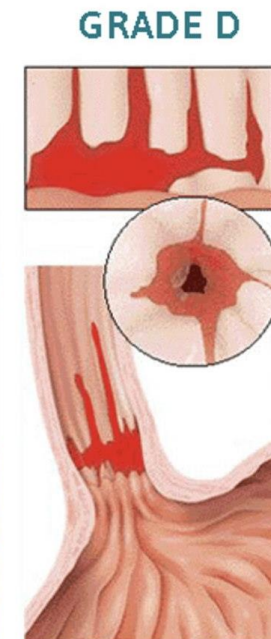
One or more mucosal break **<5mm** that does not extend between the tops of two mucosal folds



One or more mucosal break **>5mm** that does not extend between the tops of two mucosal folds



One or more mucosal break that is continuous between the tops of two or more mucosal folds but that involves **<75%** of the circumference



One or more mucosal break that involves **>75%** of the esophageal circumference

Management

Refractory GERD

1. True symptom?
2. Correct diagnosis?

Endoscopy

Exclude other structural disease

Erosive esophagitis/BE

Normal

HRM, 24-hour pH monitoring

Esophageal hypersensitivity

Acid exposure

Response to PPI

++++

+++

++

+/-

Erosive esophagitis

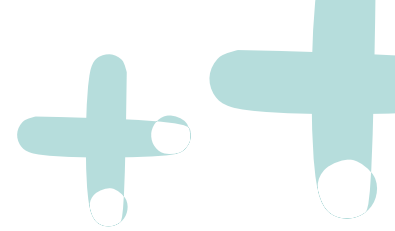
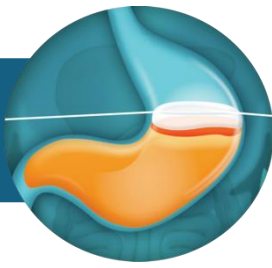
NERD

Reflux hypersensitivity

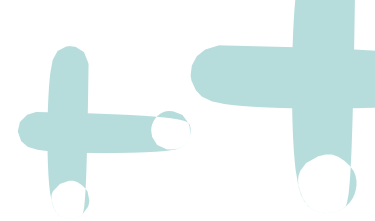
Functional heartburn



GERD in pregnancy

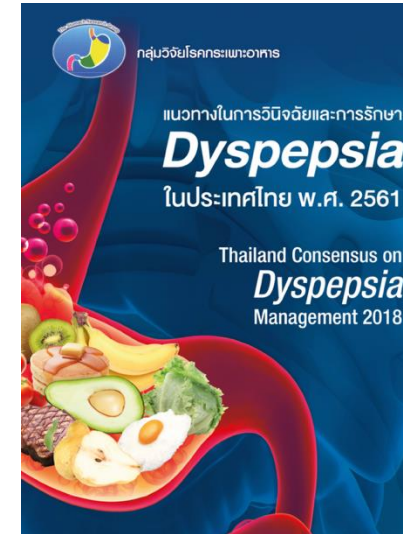


Class	Examples	FDA category	Comments
Antacids	Aluminium, Magnesium, Calcium	None	Safe; avoid sodium bicarbonate, Mg trisilicate long-term
Alginate	Gaviscon	None	Safe; forms barrier
H2RA	Famotidine	B	Safe
PPI	Omeprazole (C), Pantoprazole (C), Esomeprazole (B),..	B/C	Generally safe; omeprazole most data
Prokinetic	Metoclopramide	B	Use short-term; EPS risk



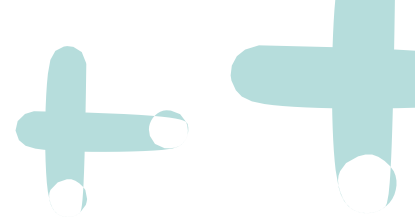
Uninvestigated Dyspepsia

“Uninvestigated dyspepsia (UD)” หมายถึง dyspepsia ที่ยังไม่ได้รับการตรวจเพิ่มเติมเพื่อหาสาเหตุของ dyspepsia ผู้ป่วยต้องได้รับการซักประวัติและตรวจร่างกายเพื่อระบุสาเหตุของ dyspepsia ที่รักษาหายได้ เช่น กินยาบางชนิดหรือการปฏิบัติตัวในชีวิตประจำวันที่ไม่เหมาะสม หากผู้ป่วยได้รับการตรวจโรคเพิ่มเติมพบความผิดปกติและพบสาเหตุของ dyspepsia จะเรียกภาวะนี้ว่า “secondary dyspepsia” ตาม Rome IV¹



Functional Dyspepsia

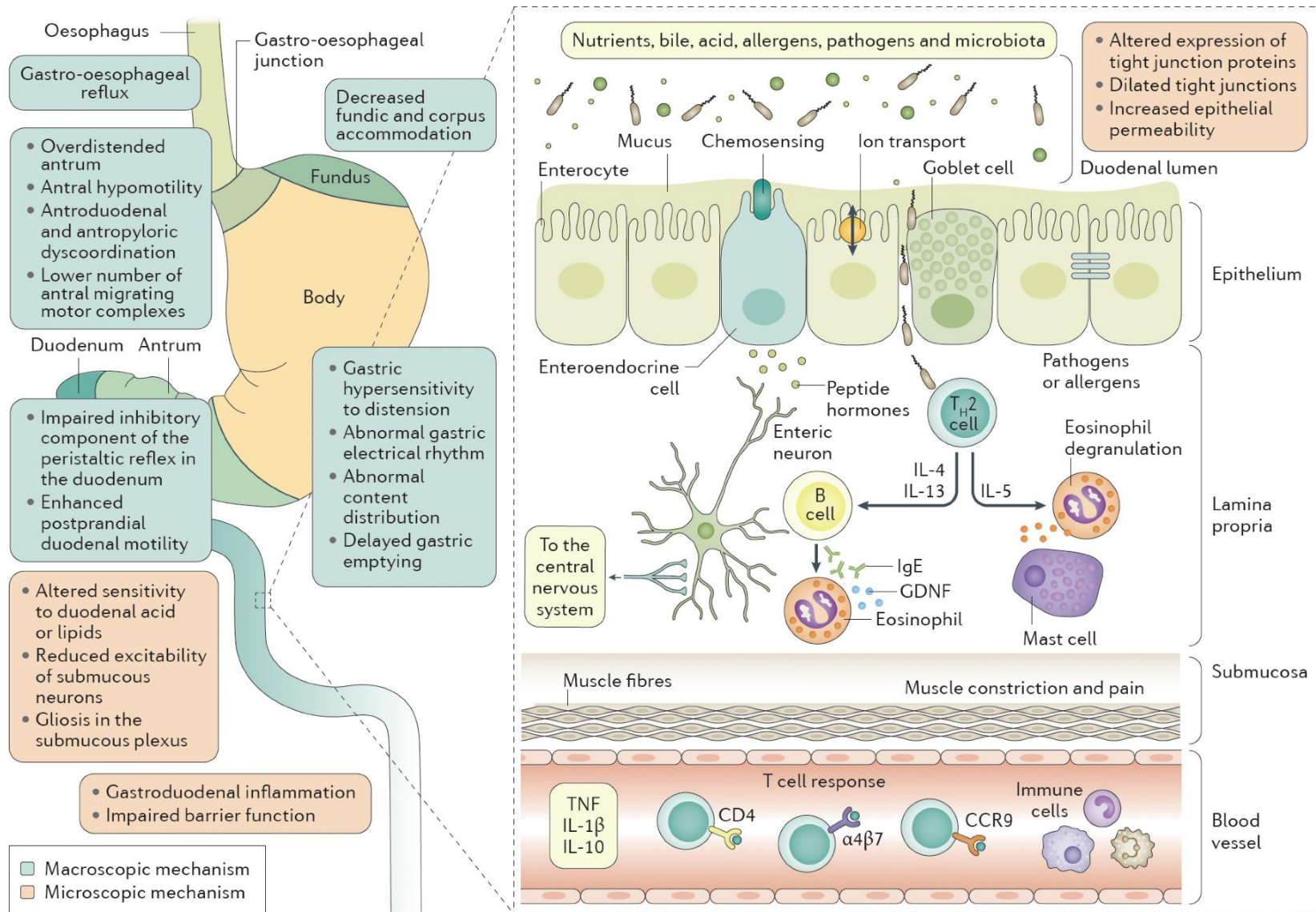
“Functional dyspepsia (FD)” หมายถึง dyspepsia ที่มีผลการส่องกล้องทางเดินอาหารส่วนบน (esophagogastroduodenoscopy, EGD) ที่ไม่อธิบายอาการ และตรวจไม่พบการติดเชื้อ *Helicobacter pylori*



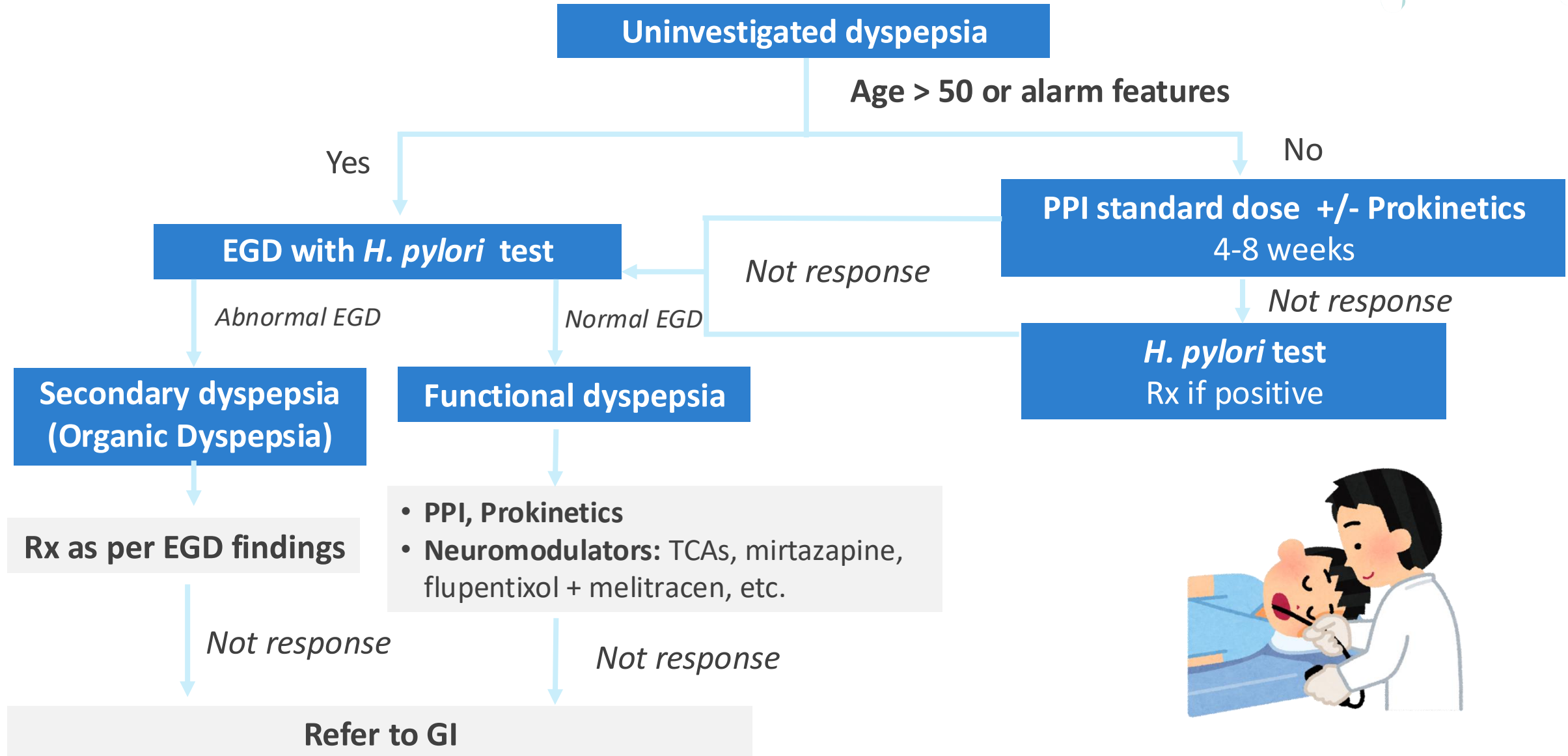
- Discomfort or pain in the upper abdomen, often related to food intake, but with no obvious organic cause
 1. One or more of the following:
 1. Bothersome **postprandial fullness**
 2. Bothersome **early satiation**
 3. Bothersome **epigastric pain**
 4. Bothersome **epigastric burning**
- AND 2. No evidence of structural disease** (including at EGD) that is likely to explain the symptom

Criteria fulfilled for the previous 3 months with symptom onset \geq 6 months prior to diagnosis

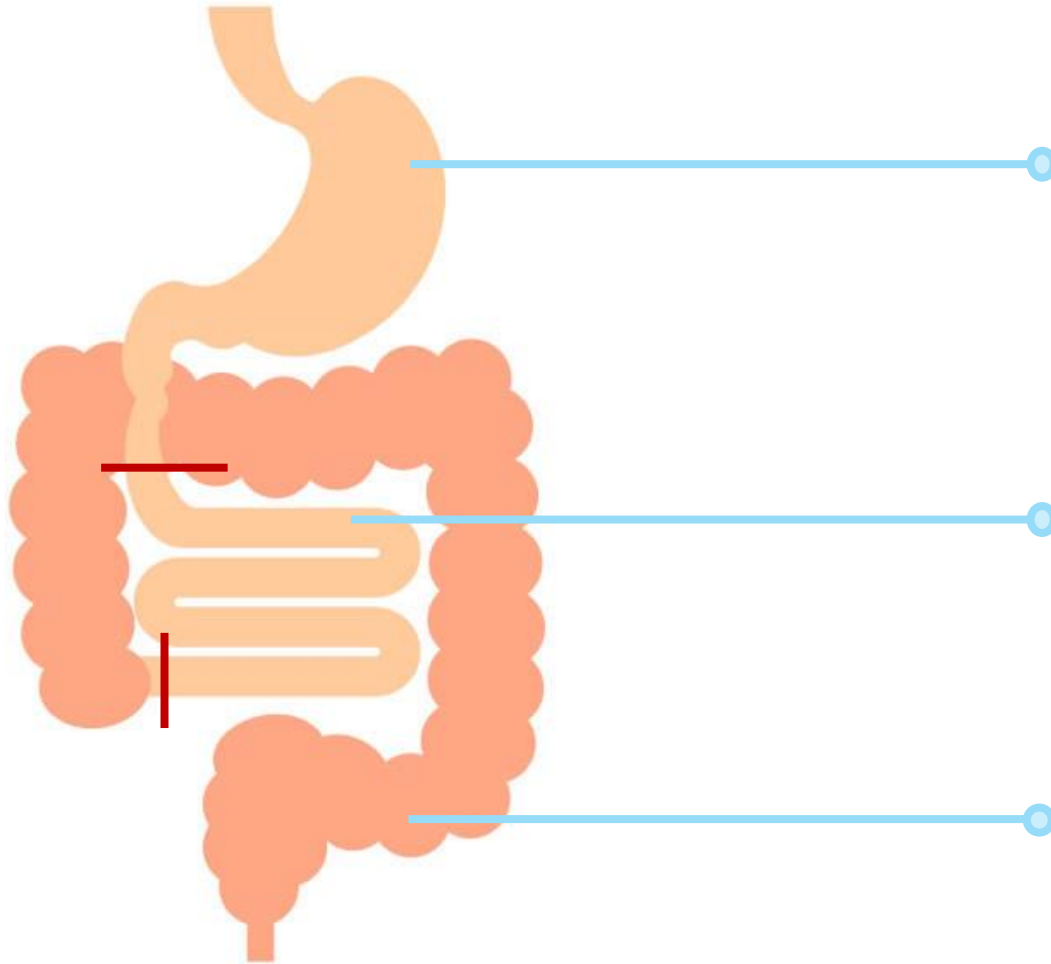
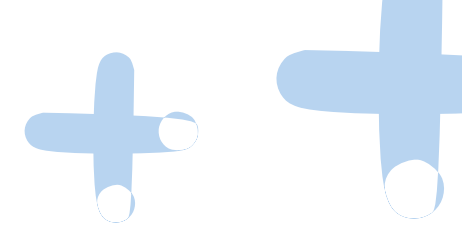
Functional dyspepsia: mechanisms



Dyspepsia: management



GI bleeding



Upper GI bleeding

- Above second part of duodenum (ampulla of Vater)
- Able to reach by *EGD*

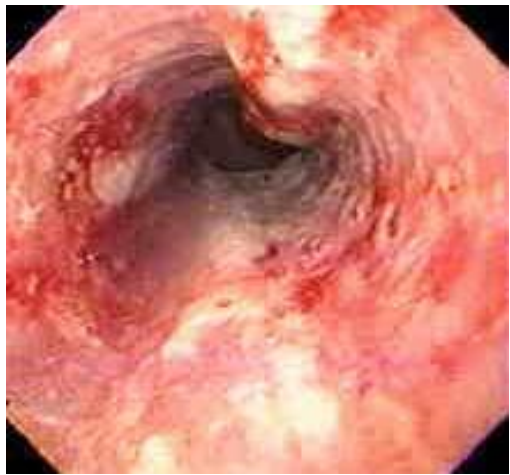
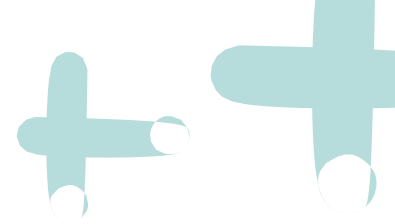
Mid GI bleeding

- Small bowel bleeding
- *Device-assisted enteroscopy*

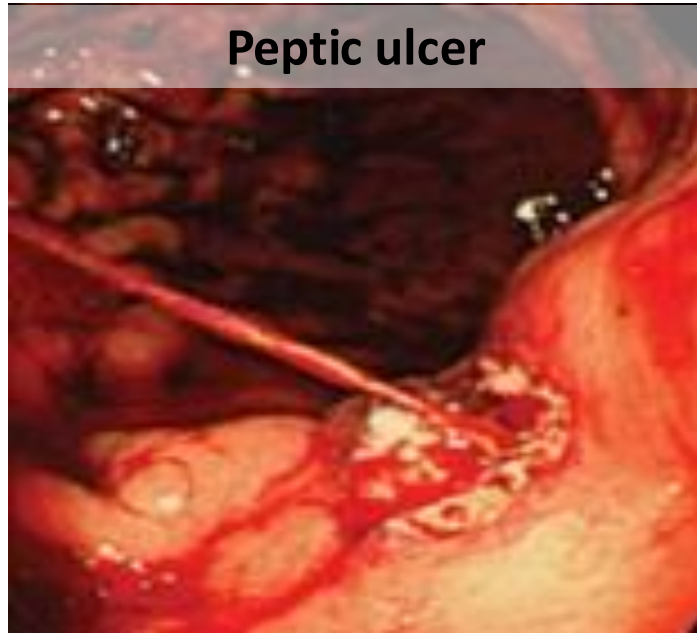
Lower GI bleeding

- Beyond terminal ileum
- Able to reach by *colonoscopy*

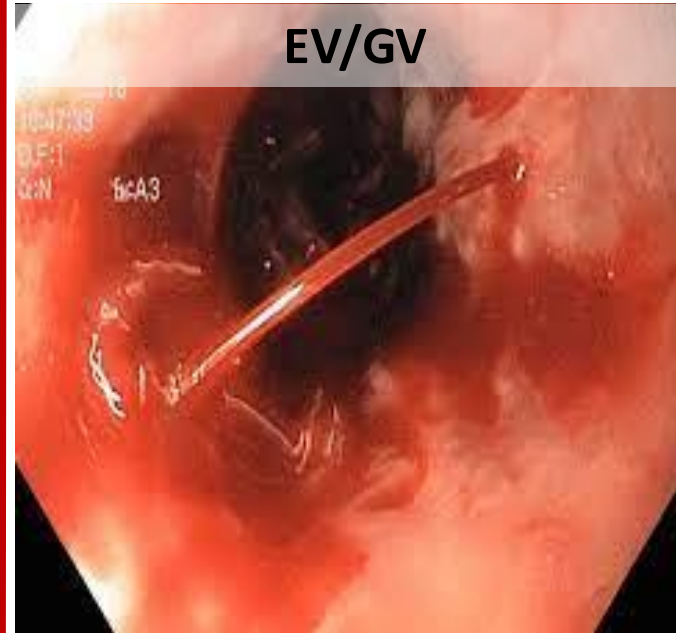
Upper GI bleeding: causes



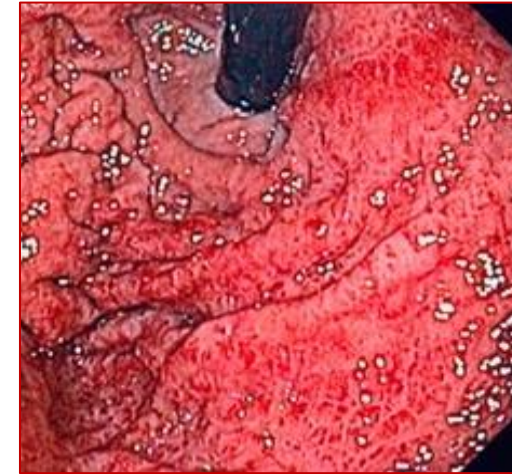
Esophagitis



Peptic ulcer



EV/GV



Portal HT related



Angiodysplasia

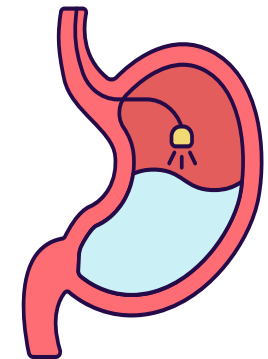


Tear with Adherent Clot

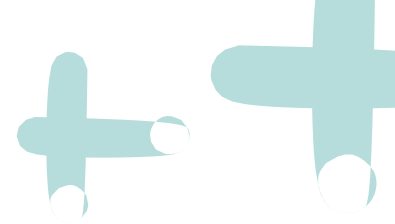
Mallory-weiss tear



Gastic cancer



Non-variceal UGIB: pre-endoscopy



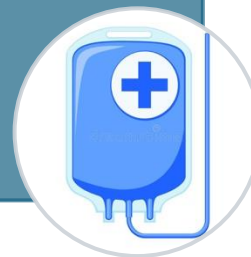
- Suggest using Glasgow Blatchford Score (GBS) ≤ 1 identify very low risk patients, not require hospitalization

Risk stratification



- **Resuscitation:** Crystalloid
- **Restrictive blood transfusion**
 - Hb ≤ 7 g/dL (goal 7-9) (no CAD)
 - Hb ≤ 8 g/dL (goal ≥ 10) (CAD)
- **Platelet transfusion has no benefit** if taking antiplatelet agents

Resuscitation

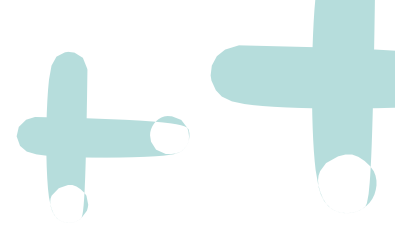


- **Pre-endoscopic PPI** downstage the lesion and decrease the need for endoscopic intervention (should not delay EGD)
- Endoscopy within 24 hours

Medication



Anticoagulants and Antiplatelets during acute GIB



Aspirin

- Primary prophylaxis **Stop** then re-started after careful re-evaluation of its indication
- Secondary prophylaxis Continue, **if stop** → should re-start ASAP (within 3-5 d)

DAPT

Continue ASA
Stop second antiplatelets then re-start ASAP (within 5 d)
Cardiologist consultation

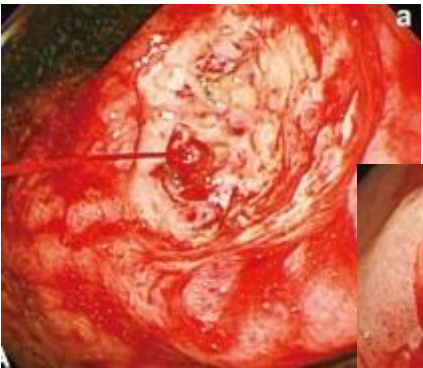
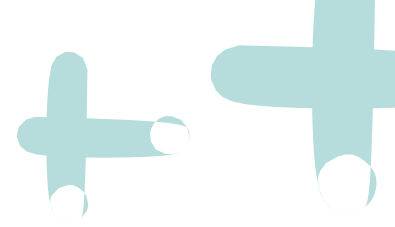
Warfarin

Stop
If hemodynamic unstable → vitamin K low dose with FFP or PCC (should not delay endoscopy)

DOAC

Stop (should not delay endoscopy)
In severe ongoing bleeding → DOAC reversal agents

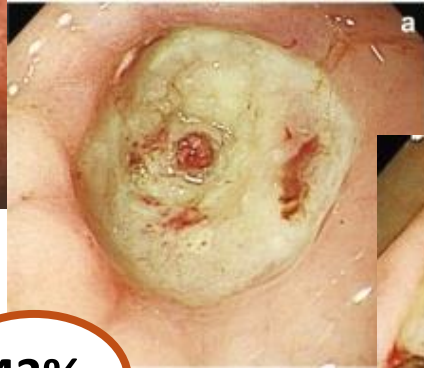
Forrest classification



Ia : Active spurting



Ib : Bleeding oozing



IIa : Non bleeding visible vessel (NBBV)



IIb : Adherent clot



IIc : Flat pigment spot



III : Clean base

Re-bleeding
55-100%

43%

22%

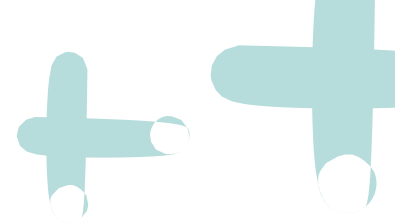
10%

5%

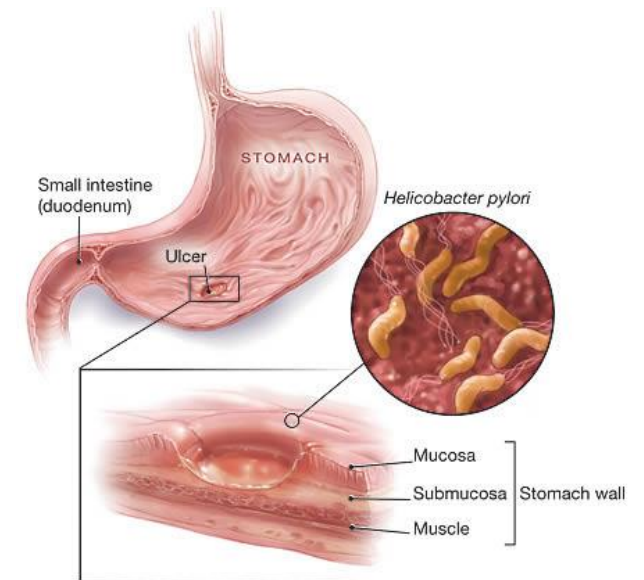


Need endoscopic intervention

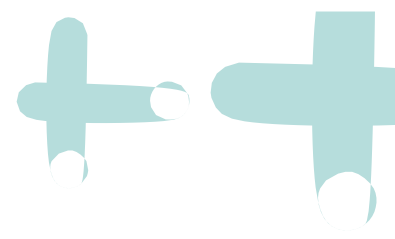
Non-variceal UGIB: post-endoscopy



- **Presence of bleeding ulcers with high-risk stigmata**
 - Recommend using **PPI IV high dose** (drip > IV bolus) **72 hours post endoscopy**
 - Discharge with PPIs oral bid dose x 14 days then OD dose
- ***Helicobacter pylori***
 - Test for *H pylori* and eradicate if presence



Variceal UGIB: pre-endoscopy



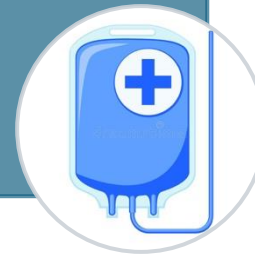
- **Suggest IV crystalloid**
- **Restrictive RBC transfusion:** ≤ 7 g/dL, keep Hb 7-9 g/dL
- **High risk patient:** CTP B with active bleeding, CTP C
- Endoscopy within 12 hours

Resuscitation



- **Terlipressin:** 2 mg IV q 4 hr; reduce to 1 mg every 4 hr after 48 hours if bleeding controlled.
- **Octreotide:** 50 mcg IV, then 50 mcg/hr
- **Somatostatin:** 250 mcg IV, then 250 mcg/hr
- up to 5 days (2-5 days)

Vasoactive Rx

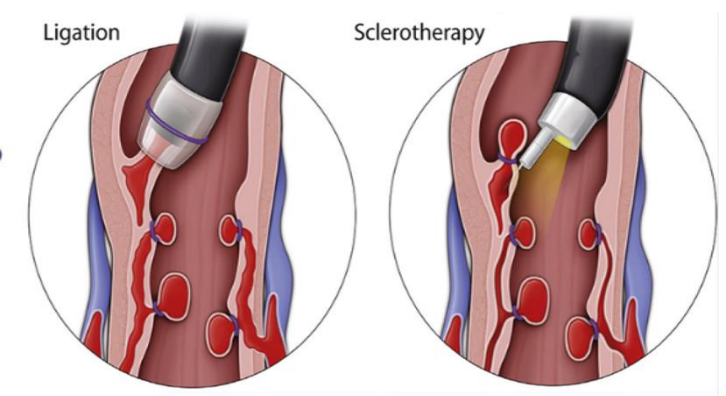


- Reduces mortality rate, rebleeding, length of stay
- **3rd gen cephalosporins**, esp. ceftriaxone 1 g/d \gg quinolones, max duration of 7 days.

Antibiotics



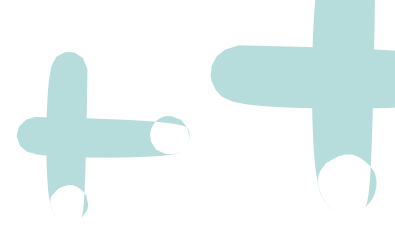
Variceal UGIB: Band ligation > sclerotherapy



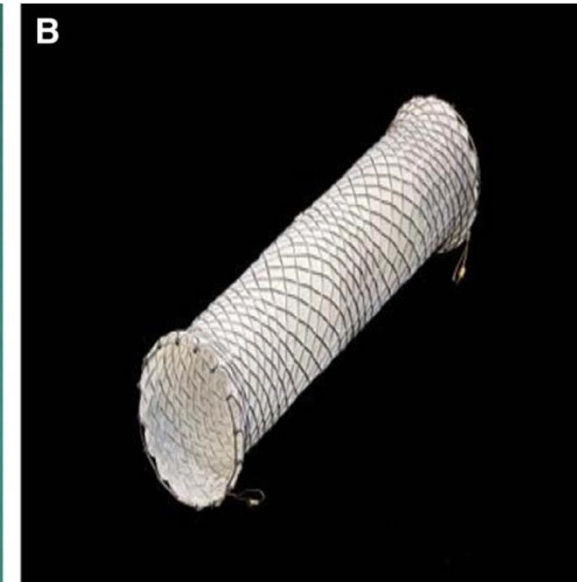
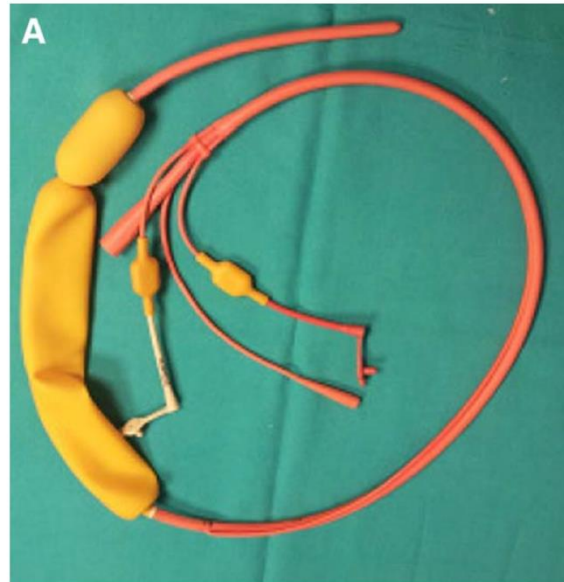
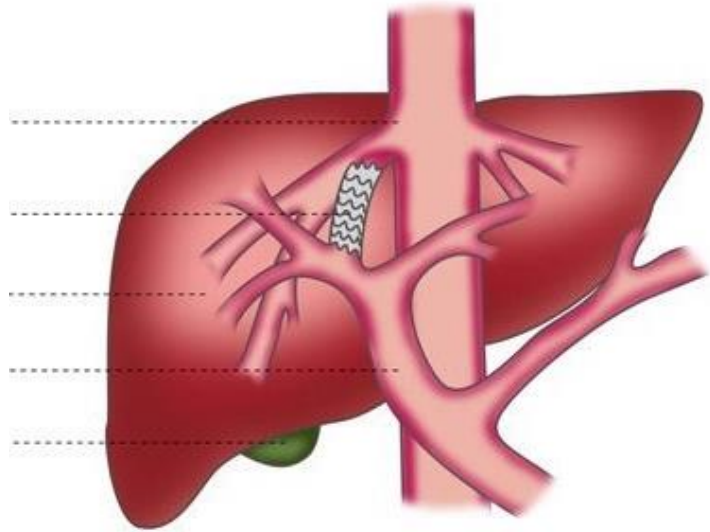
Meta-analysis of 36 RCTs, 3593 patients

Outcome	EBL vs. Sclerotherapy	EBL vs. EBL + Sclerotherapy
Bleeding control	RR 1.08 (95% CI 1.02–1.15) → ↑ Better	NS
Mortality	RR 0.72 (95% CI 0.54–0.97) → ↓ Lower	NS
Rebleeding	RR 1.41 (95% CI 1.03–1.94) → ↑ Worse with sclerotherapy	NS
Adverse events	RR 0.29 (95% CI 0.20–0.44) → ↓ Lower	RR 0.58 (95% CI 0.39–0.88) → ↓ Lower
Summary	EBL is more effective and safer than sclerotherapy	Adding sclerotherapy to EBL increases risk of AEs without clear benefit

Variceal UGIB: failed endoscopy or high risk recurrence

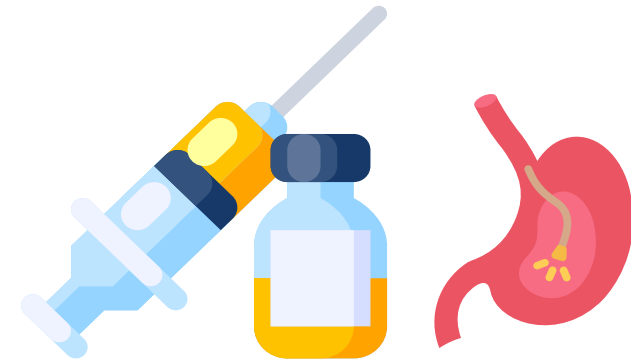


- **Urgent rescue TIPS** (CTP C \leq 13 or CTP B + active bleeding, **TIPS within 72 hours**)
- **Sengstaken-Blakemore tube**
- **Self-expanding metal stents** (where available): preferred over balloon tamponade for bridging to definitive hemostasis therapy.

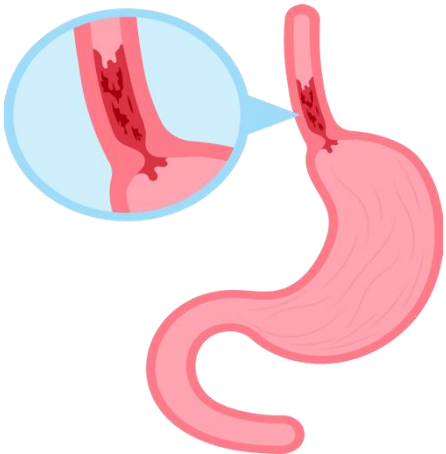


Variceal UGIB: post endoscopy

- **Follow-up EBLs:** 1- to 4-weekly intervals to eradicate esophageal varices

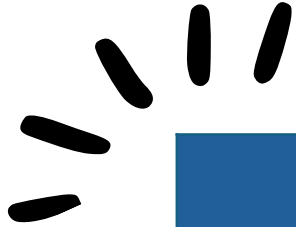
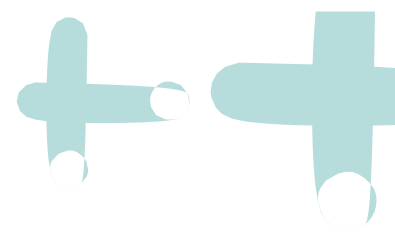


- **NSBBs** (propranolol or carvedilol) + **endoscopic therapy** for patients with ACLD

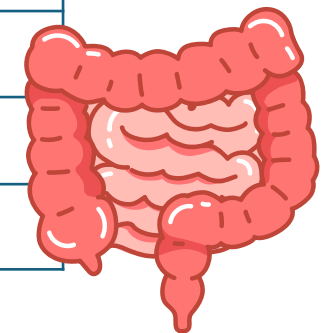


- **Against routine use of PPI** as post-endoscopic management (↑ risk infection)

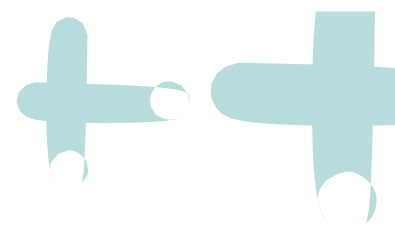
Lower GI bleeding: causes



Categories	Examples
Diverticular disease	
Anorectal conditions	Hemorrhoids , Anal fissure, Solitary rectal ulcer, Rectal prolapse, Radiation proctopathy, Trauma
Vascular lesions	Angioectasias , Hereditary hemorrhagic telangiectasia, Dieulafoy's lesion , Colonic or rectal varices
Colitis	IBD, Ischemic colitis, Infectious colitis
Polyps	Adenomas, hamartomas
Iatrogenic	Post-endoscopic intervention (polypectomy, EMR, ESD), Post-surgical
Chronic anastomotic ulcer	
Malignancy	Colorectal cancer , Anal cancer, Metastatic/invasive lesions



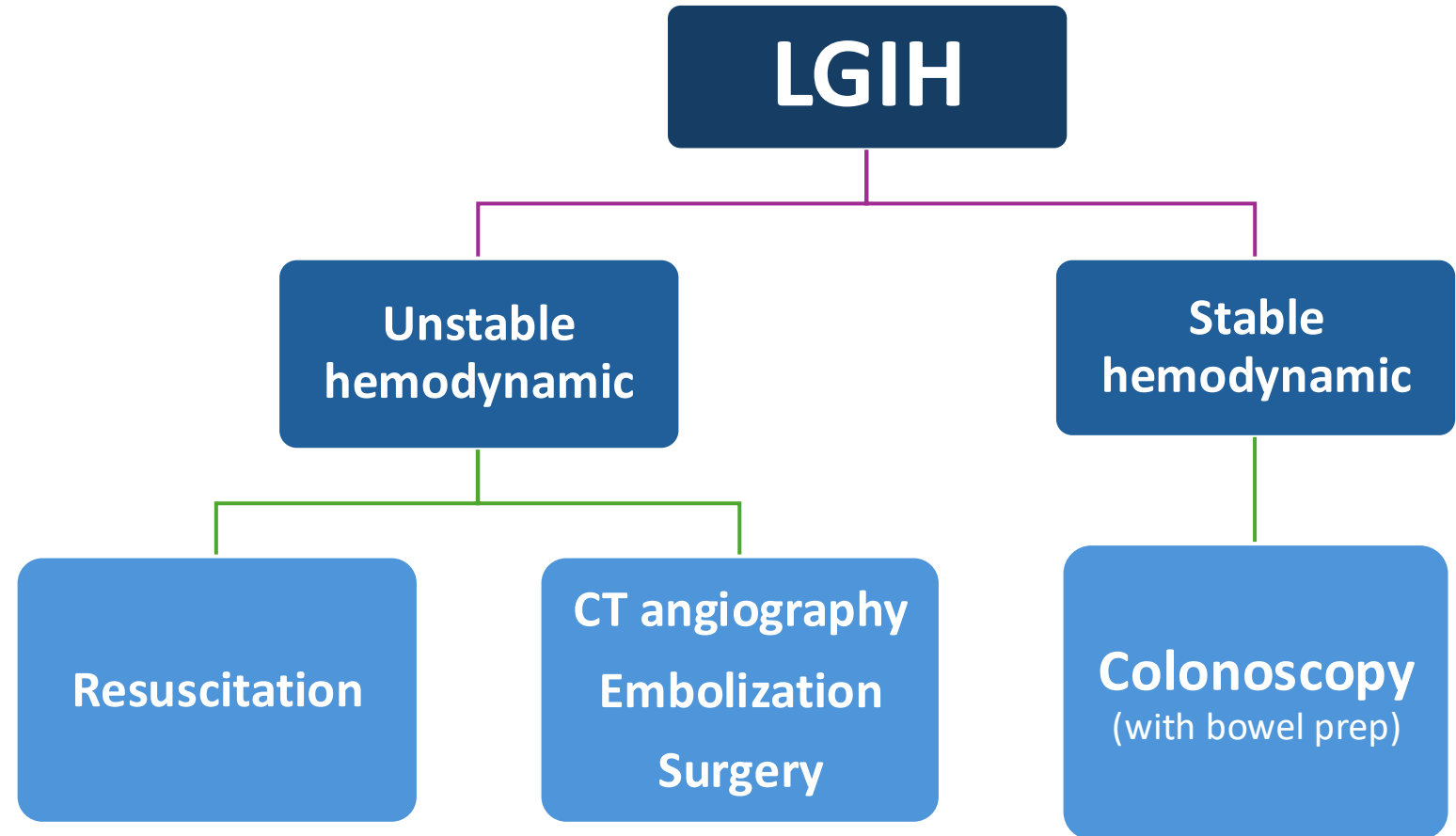
Lower GI bleeding



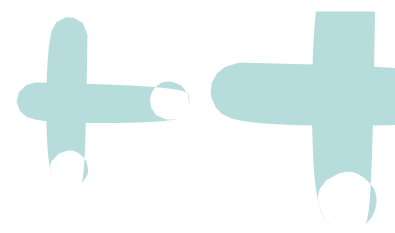
Hematochezia
Maroon stool
melena

Severity assessment

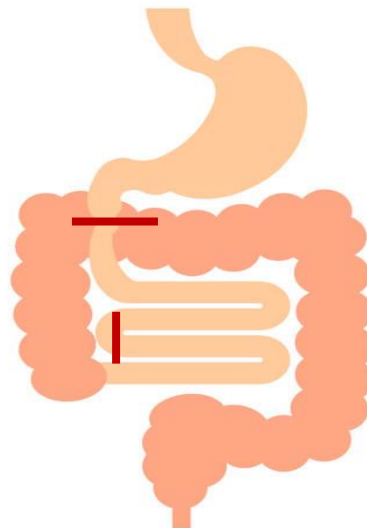
Diagnosis and
treatment

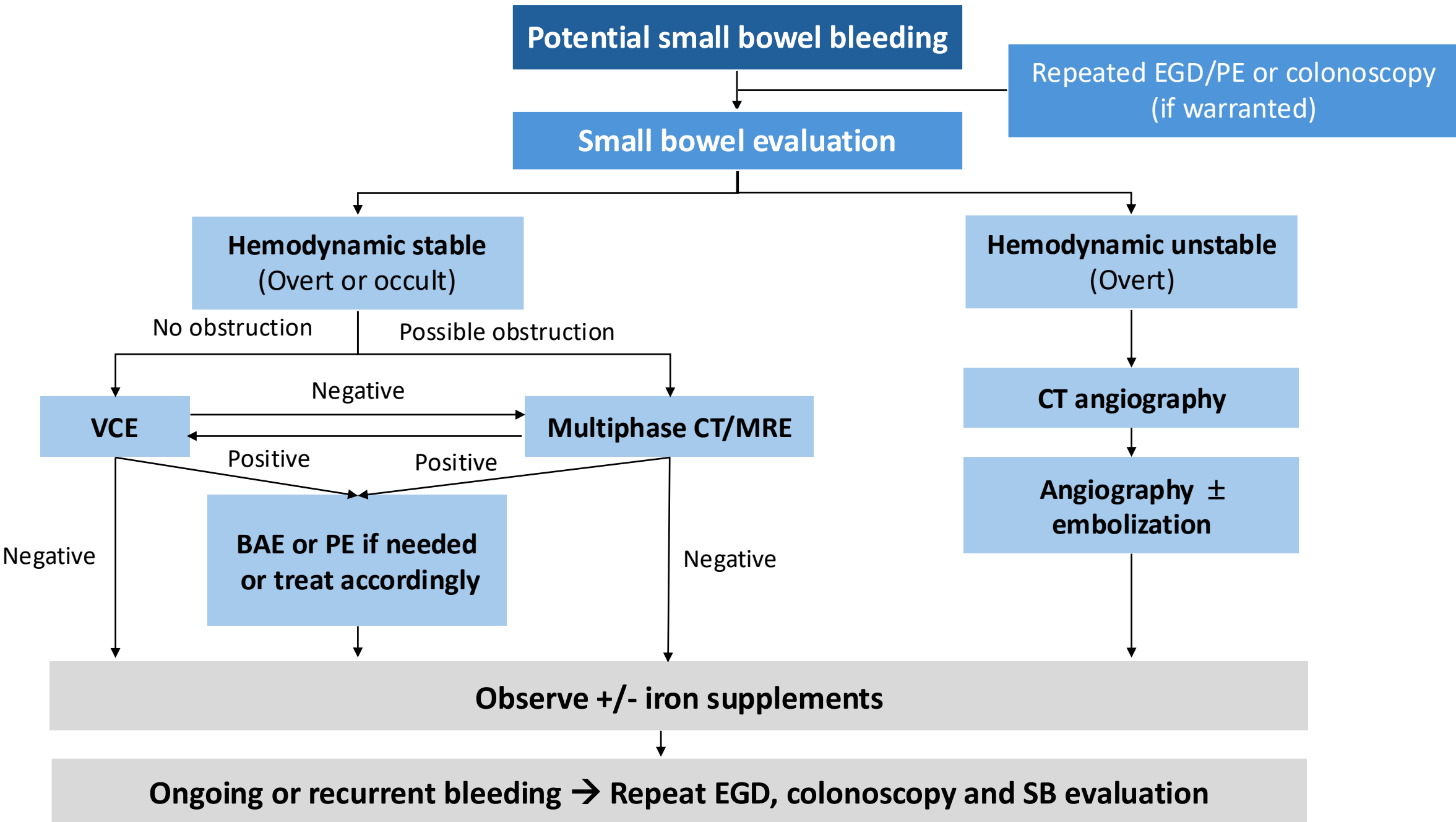


Small bowel bleeding: causes

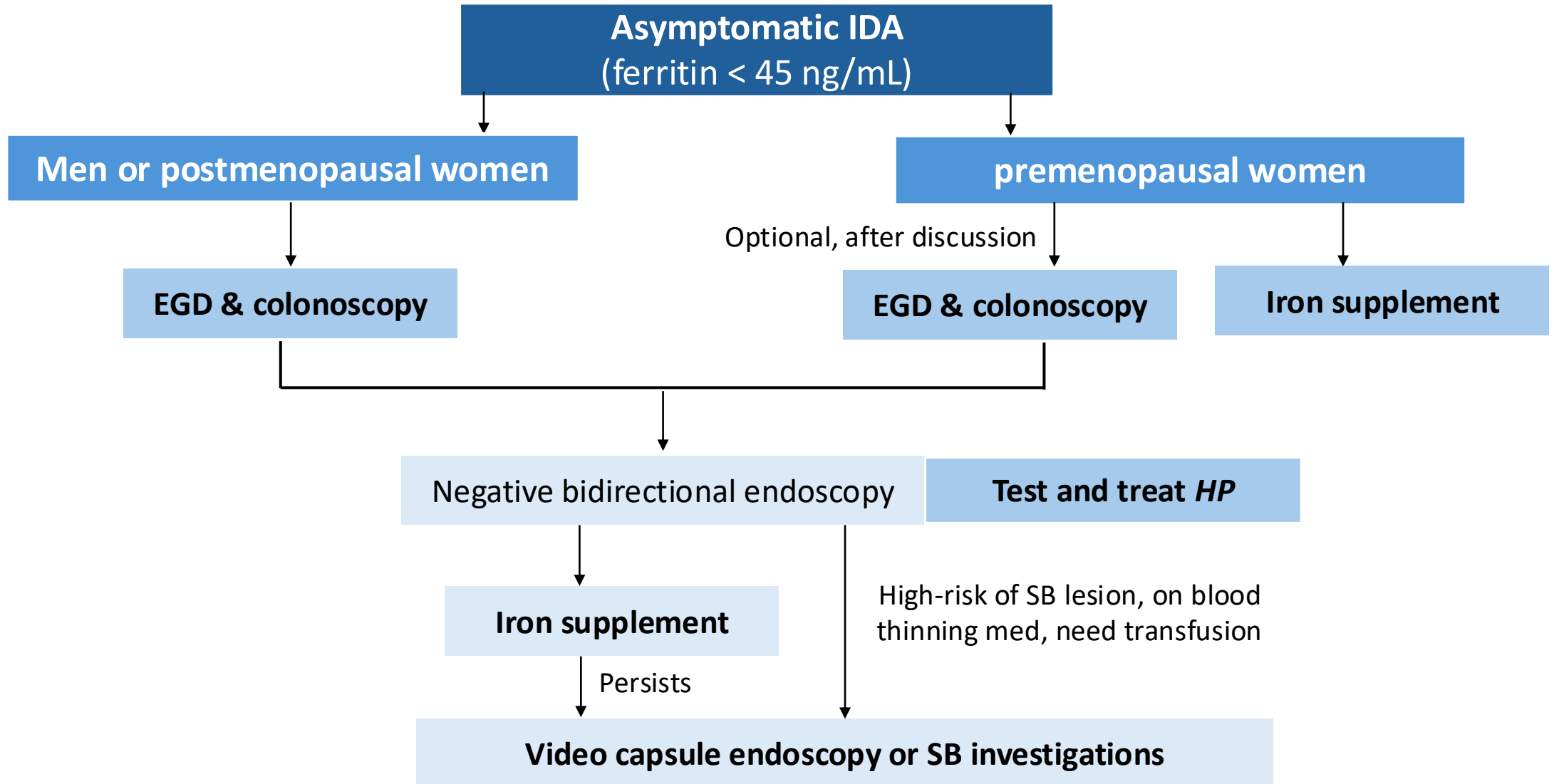
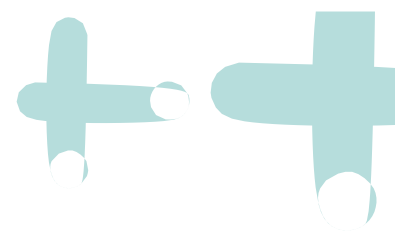


Age < 40 years	Age > 40 years	Rare causes
Inflammatory bowel disease	Angioectasia	Henoch–Schoenlein purpura
Dieulafoy’s lesions	Dieulafoy’s lesions	Small bowel varices and/or portal hypertensive enteropathy
Neoplasia	Neoplasia eg. GIST	Amyloidosis
Meckel’s diverticulum	NSAID ulcers	Blue rubber bleb nevus syndrome
Polyposis syndromes		Pseudoxanthoma elasticum
		Osler–Weber–Rendu syndrome
		Kaposi’s sarcoma with AIDS
		Plummer–Vinson syndrome
		Ehlers–Danlos syndrome
		Inherited polyposis syndromes (FAP, Peutz–Jeghers)
		Malignant atrophic papulosis
		Hemobilia
		Aorto-enteric fistula
		Hemosuccus entericus



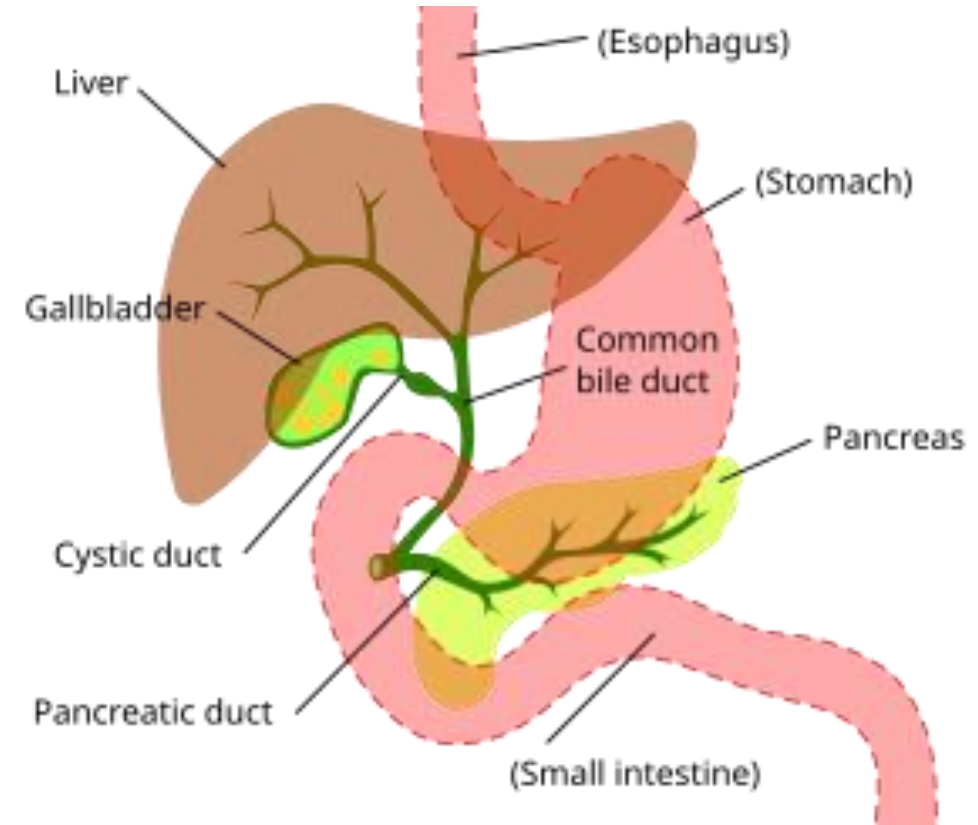
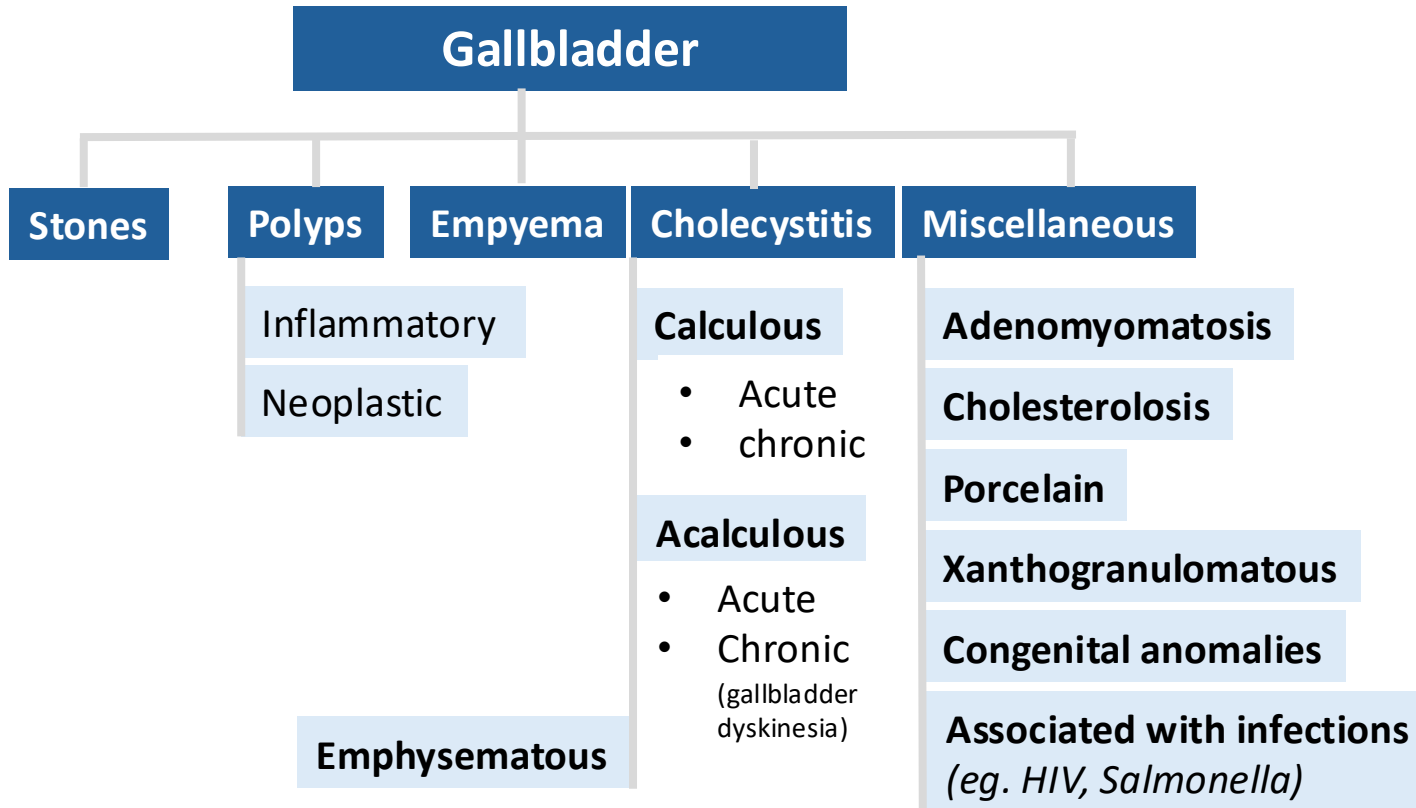
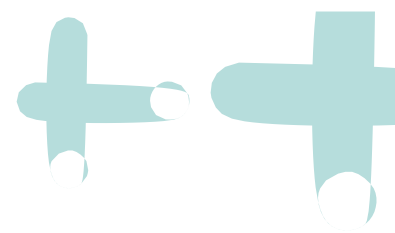


GI evaluation of IDA

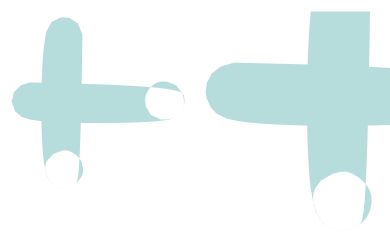


*regardless FOBT result

Gallbladder diseases



Acute cholecystitis



A : Local signs of inflammation

1. Murphy's sign
2. RUQ pain/tenderness/mass

B : Systemic signs of inflammation

1. Fever
2. Elevated CRP
3. Elevated WBC count

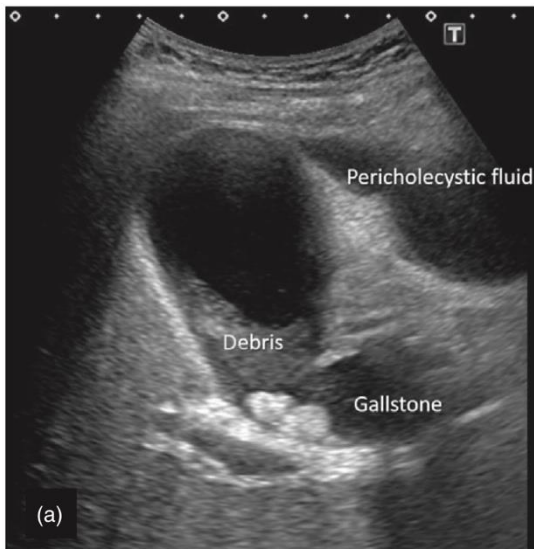
C : Imaging finding

Imaging findings of acute cholecystitis

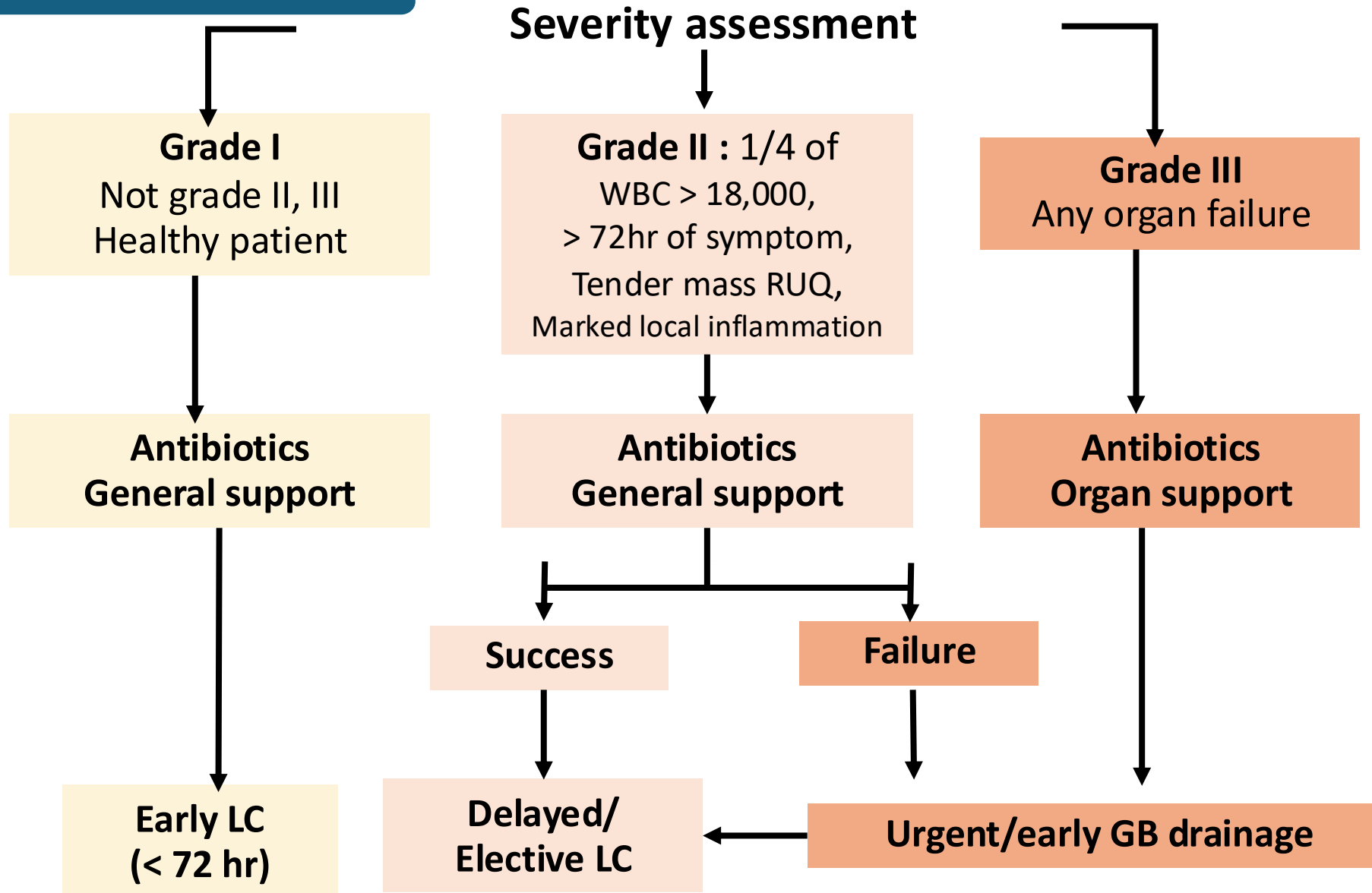
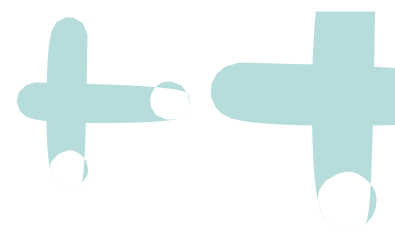


Diagnostic criteria

Suspected : one item in A + one item in B
Definite: one item in A + one item in B + C

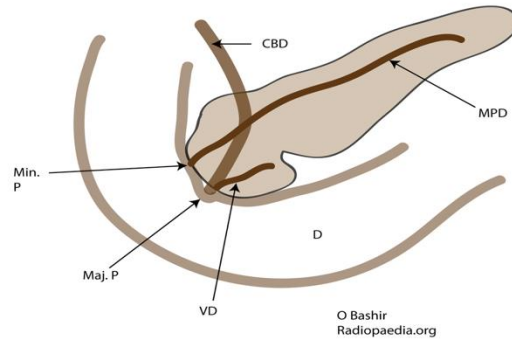
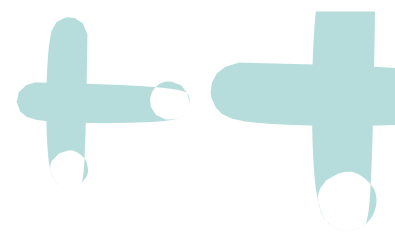


Acute cholecystitis



Asymptomatic GS

Cholecystectomy



Anomalous pancreatic duct drainage



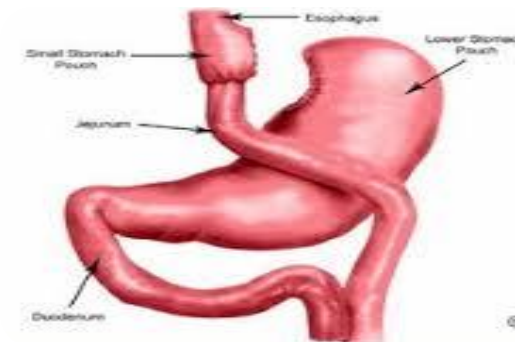
Gallbladder polyp > 1 cm
Gallstones > 3cm



Porcelain gallbladder

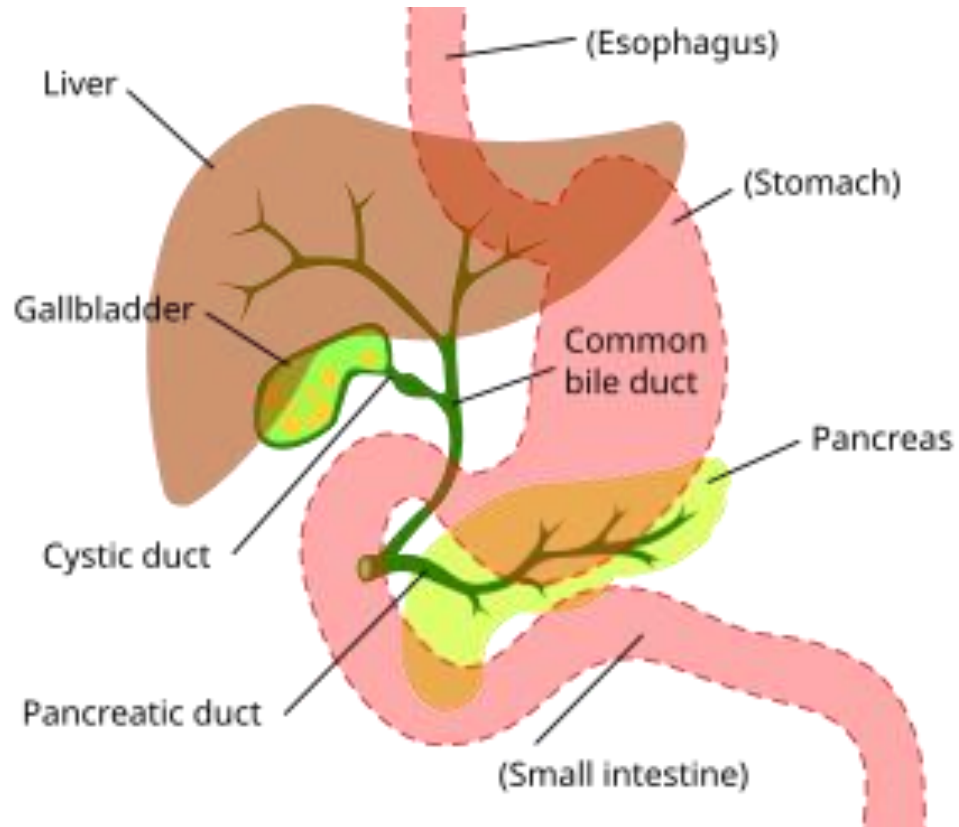
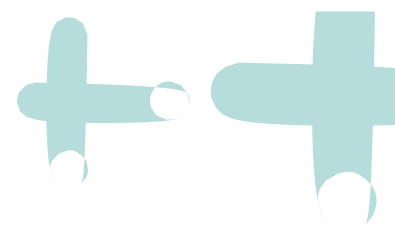


Sickle cell disease, hemolytic anemia –
if plan for abdominal surgery



During gastric bypass surgery
or s/p solid organ transplant

Gallbladder and bile duct



Bile duct diseases

Stone

Common duct

- Asymptomatic
- w/o cholangitis

Intrahepatic

Strictures

Postoperative

- Cholecystectomy
- Transplantation
- anastomotic

PSC

Chronic pancreatitis

Others

SOD

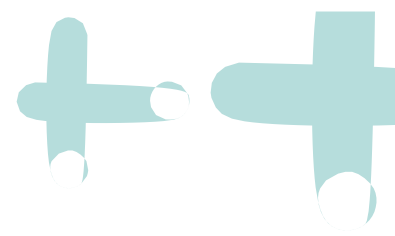
Autoimmune pancreatitis

Hemobilia

Mirrizi syndrome

Parasites

Predictors of CBD stone in patients with GS



High risk

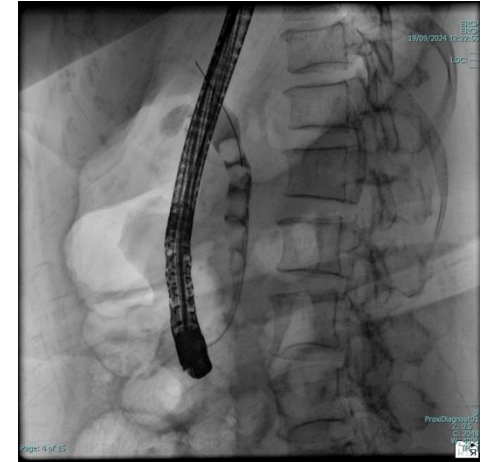
- CBD stone on ultrasound or cross-sectional imaging
- TB > 4 mg/dL AND dilated CBD on imaging (> 6 mm)
- Ascending cholangitis

Intermediate risk

- Abnormal liver biochemical test other than bilirubin
- Age > 55 yr
- Dilated CBD on imaging (> 6 mm)

No risk

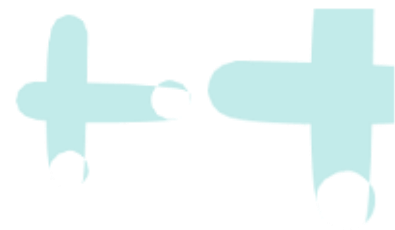
Direct ERCP



EUS, MRCP, laparoscopic IOC, or
laparoscopic intraoperative ultrasound

Cholecystectomy without IOC

Acute cholangitis



A : Systemic inflammation

Fever and/or shaking chills

Lab evidence of inflammation



B. Cholestasis

Jaundice (TB > 2 mg/dl)

ALP, GGT, AST and ALT > 1.5 ULN



C. Imaging

Biliary dilatation

Evidence of the etiology on imaging

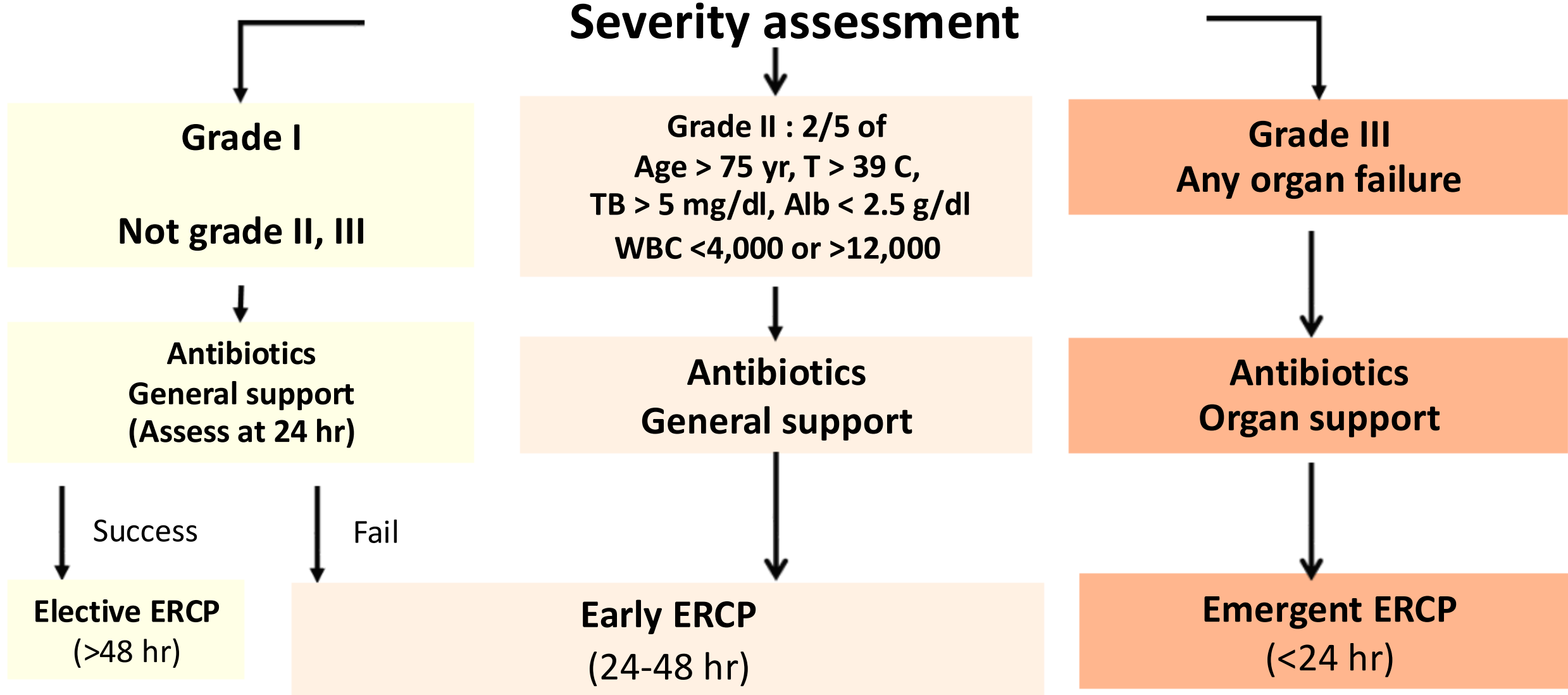
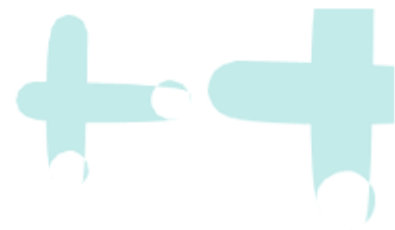


Diagnosis

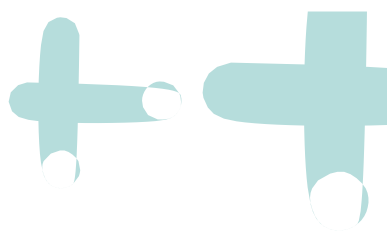
Suspected : A + B or C

Definite : A + B + C

Acute cholangitis

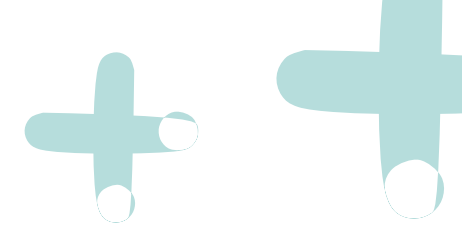


Acute cholangitis



- **Consider PTBD if**
 - Inaccessible ampulla
 - Surgically altered anatomy
 - Hemodynamic instability despite resuscitation
 - Failed ERCP

Ulcerative colitis: clinical evaluation



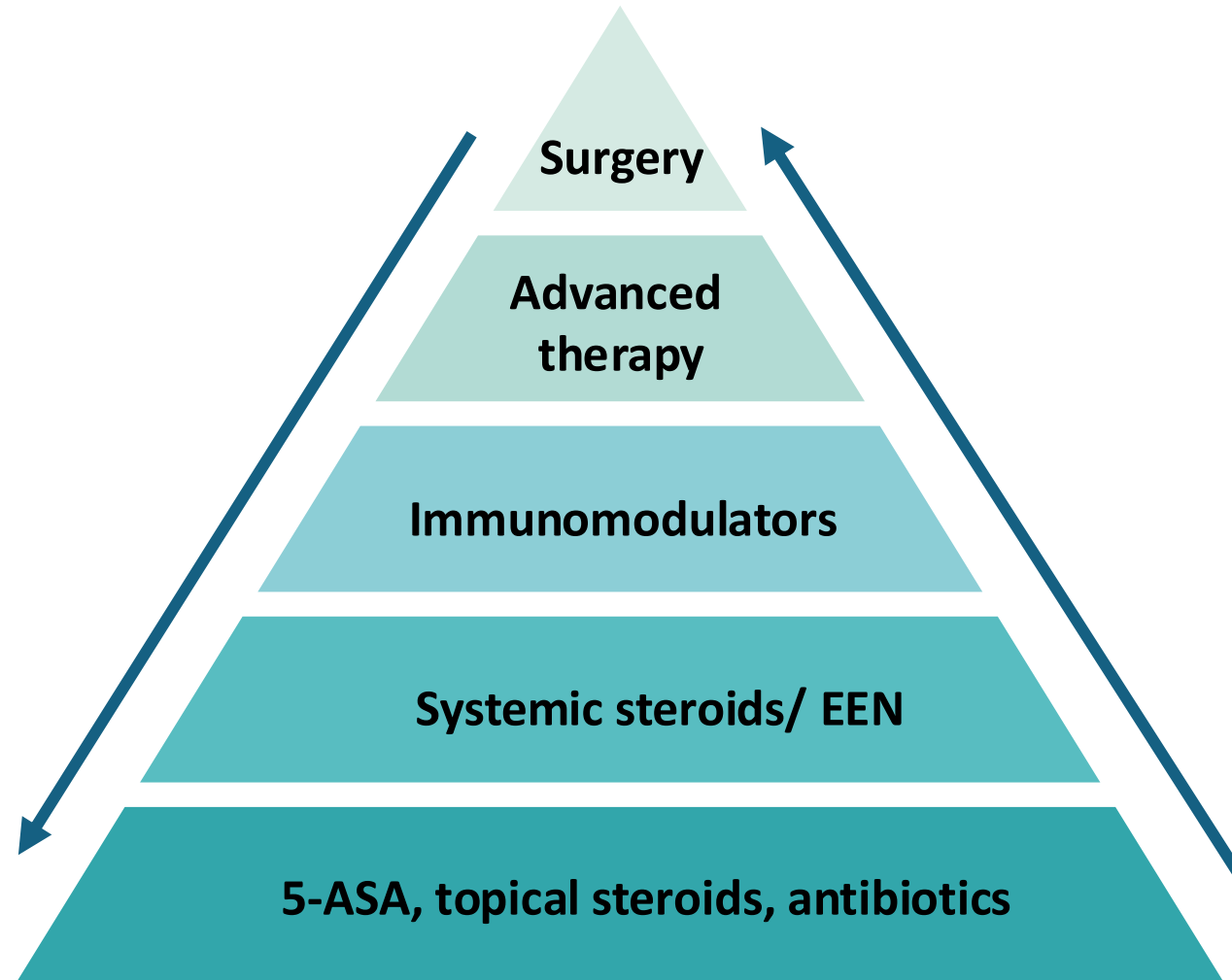
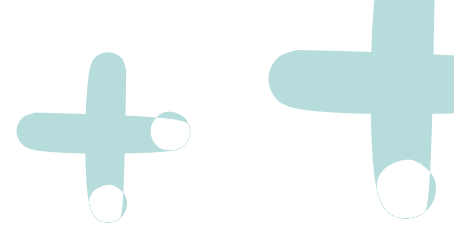
Partial Mayo score

	0	1	2	3
Stool frequency (per day)	Normal	1 to 2 stools more than normal	3 to 4 stools more than normal	5 or more stools more than normal
Rectal bleeding (most severe of the day)	No blood seen	Streaks of blood less than half the time	Obvious blood most of the time	Blood alone passes
Physician's global assessment (PGA)	Normal	Mild disease	Moderate disease	Severe disease

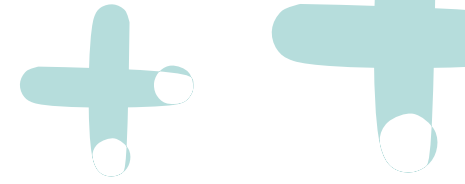
2-4: mild 5-7: moderate 8-9: severe

Clinical remission: <3 and no subscore >1

Ulcerative colitis: **treatment**



Mild-moderate UC



5-Aminosalicylates



Corticosteroids



Immunomodulators

Mesalamine/mesalazine
Sulfasalazine

Oral

Rectal suppository (rectum)

Enema (splenic flexure)

Proctitis/sigmoiditis

Induction: Topical ≥ 1 g/day

Maintenance: ≥ 3 g/week – 1 g/day

Left-side/extensive (Oral + topical)

Induction: ≥ 2 g/day (higher in moderate severity)

Maintenance: ≥ 2 g/day

Prednisolone, hydrocortisone,
budesonide

Oral

Rectal foam/enema

Proctitis/sigmoiditis

Induction: Prefer 5-ASA > topical steroid

Left-side/extensive

Induction: Colonic-released Oral steroid in moderate severity

Thiopurine (Azathioprine, 6-MP)

Oral

AZA: 1.5-2.5 mg/kg

6-MP: 0.75-1.5 mg/kg

Maintenance of remission in patients with steroid dependent* or who are intolerant to 5-ASA

Route

Administration

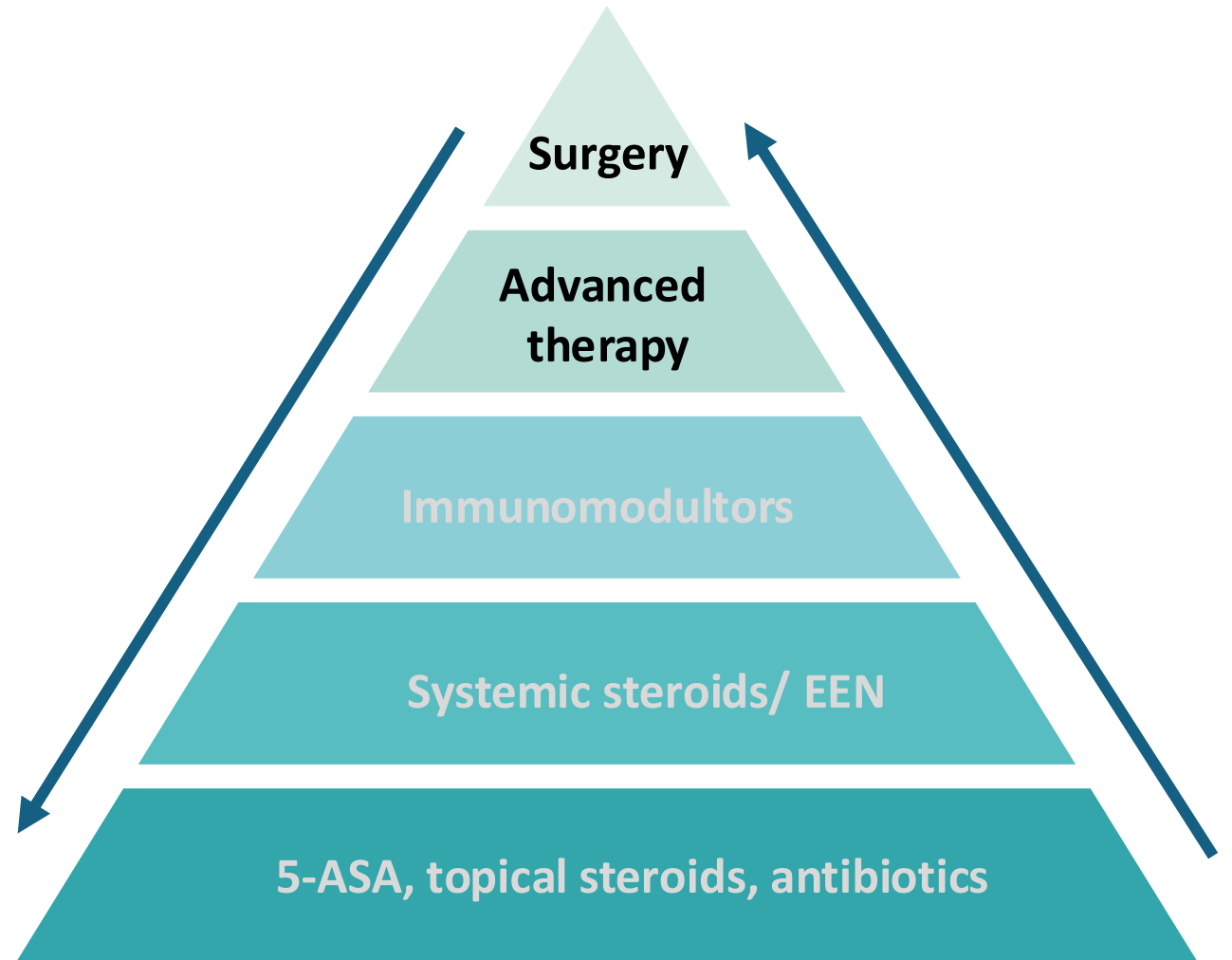
*Need pred > 10 mg/d after 3 months or relapse within 3 months after stop

Moderate-severe UC

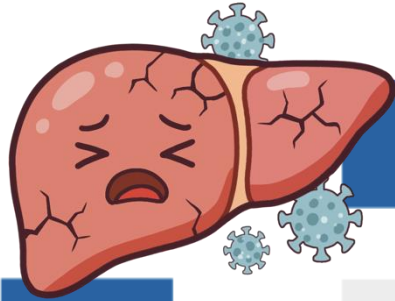
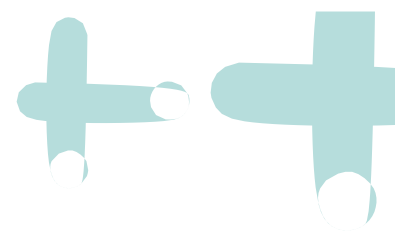
- Moderate to severe symptoms with MES 2-3
- Mild symptoms, with high burden of inflammation or poor prognostic features
- Patients with corticosteroid-dependence, or refractory to oral corticosteroids



Induction with **thiopurine**
Induction and maintenance with **MTX**



Chronic hepatitis B



HBsAg positive

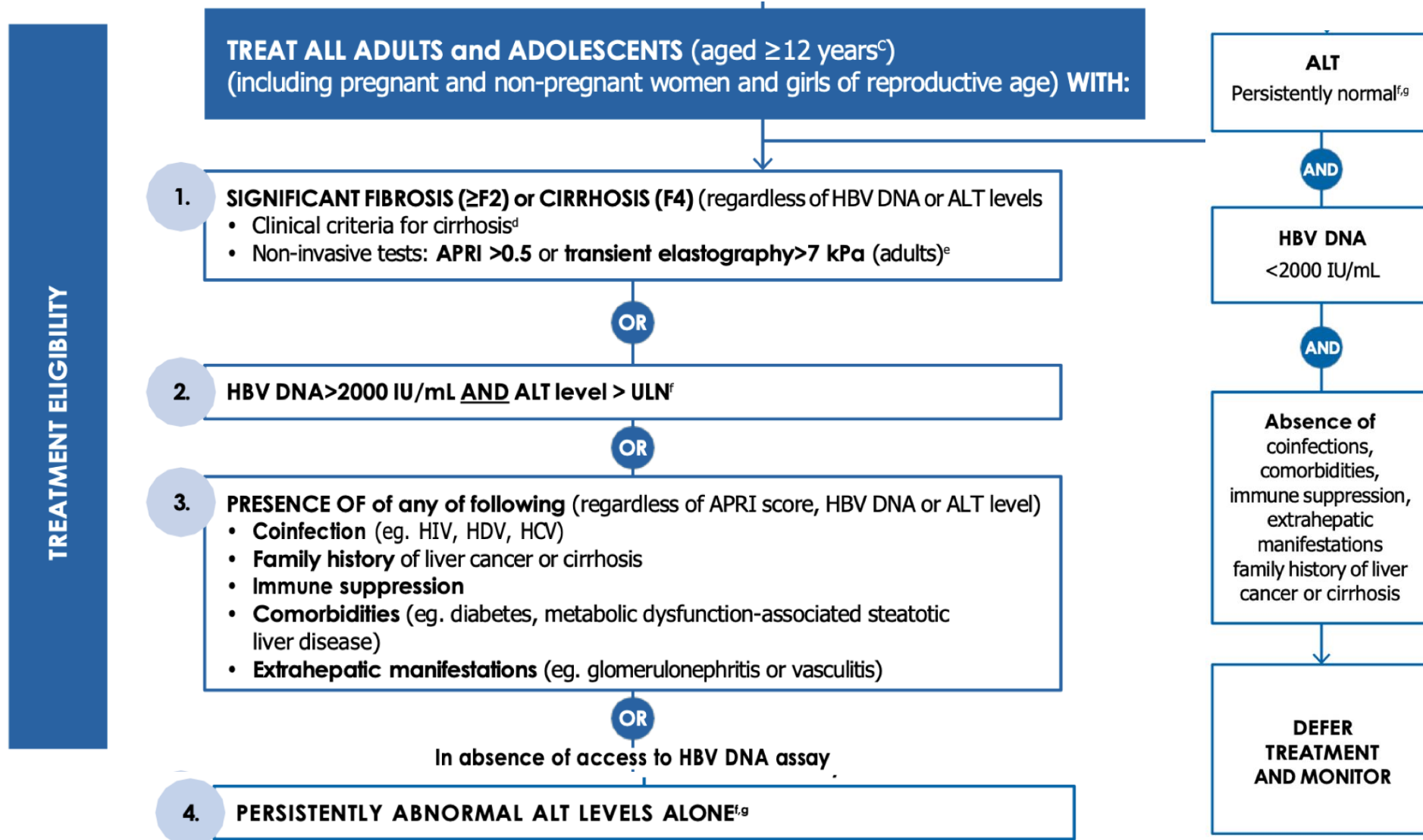
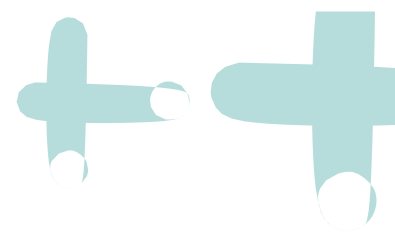


ASSESSMENT FOR TREATMENT ELIGIBILITY

1. **Severity of liver disease** using non-invasive tests (APRI or transient elastography)
2. **ALT and HBV DNA level**
3. **Medical history:** Screening for presence of coinfections (eg. HIV, HDV or HCV), comorbidities (eg. diabetes, steatotic liver disease) immune suppression (eg. long term steroids, transplant), extrahepatic manifestations (eg. glomerulonephritis, vasculitis), or family history of liver cancer or cirrhosis

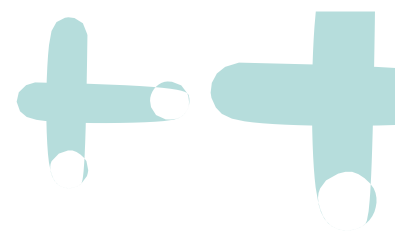
INITIAL ASSESSMENT

Chronic hepatitis B



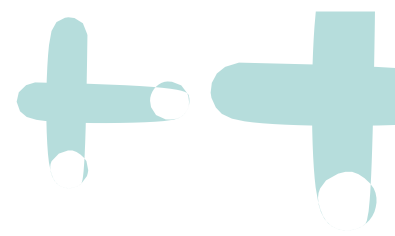
Chronic hepatitis B

'Expanding treatment criteria'



HBV DNA levels	WHO 2024	Thailand 2024
HBV DNA \geq 2,000 IU	ALT > ULN	ALT > 1.5 ULN Significant fibrosis (APRI > 0.5) Age > 35 (regardless of ALT) extrahepatic manifestation
Detectable		HBV cirrhosis
Regardless of HBV DNA, ALT	Significant fibrosis F \geq 2 Co-infection (HIV, HDV, HCV) Family history of HCC, cirrhosis Immunosuppression Co-morbidity (DM, MASLD) Extra-hepatic HBV	Immunosuppression
HBV DNA not accessible	Persistently abnormal ALT	N/A

Chronic hepatitis B



ANTIVIRAL TREATMENT REGIMEN

INITIATE ANTIVIRAL THERAPY AND MONITOR^h

- TDF or ETV
- TDF + 3TC or TDF + FTC (if no access to TDF monotherapy)
- ETV or TAF in persons with osteoporosis or impaired kidney function or in children and adolescents

'Thai guideline'

ยาที่ใช้รักษาไวรัสตับอักเสบบี

- Tenofovir Alafenamide (25) 1 เม็ดวันละครั้ง -- เป็นยาหลัก
- Entecavir (0.5) 1 เม็ดวันละครั้ง -- สงวนไว้ใช้ในกรณี ดังต่อไปนี้
 - eGFR < 15 ml/min/1.73 m² และไม่ได้รับการบำบัดทดแทนไต **หรือ**
 - สงสัยว่าไตมีภาวะ Proximal tubular dysfunction **หรือ**
 - โรคกระดูกพรุนระดับรุนแรง

MONITORING^h

Every 6 months

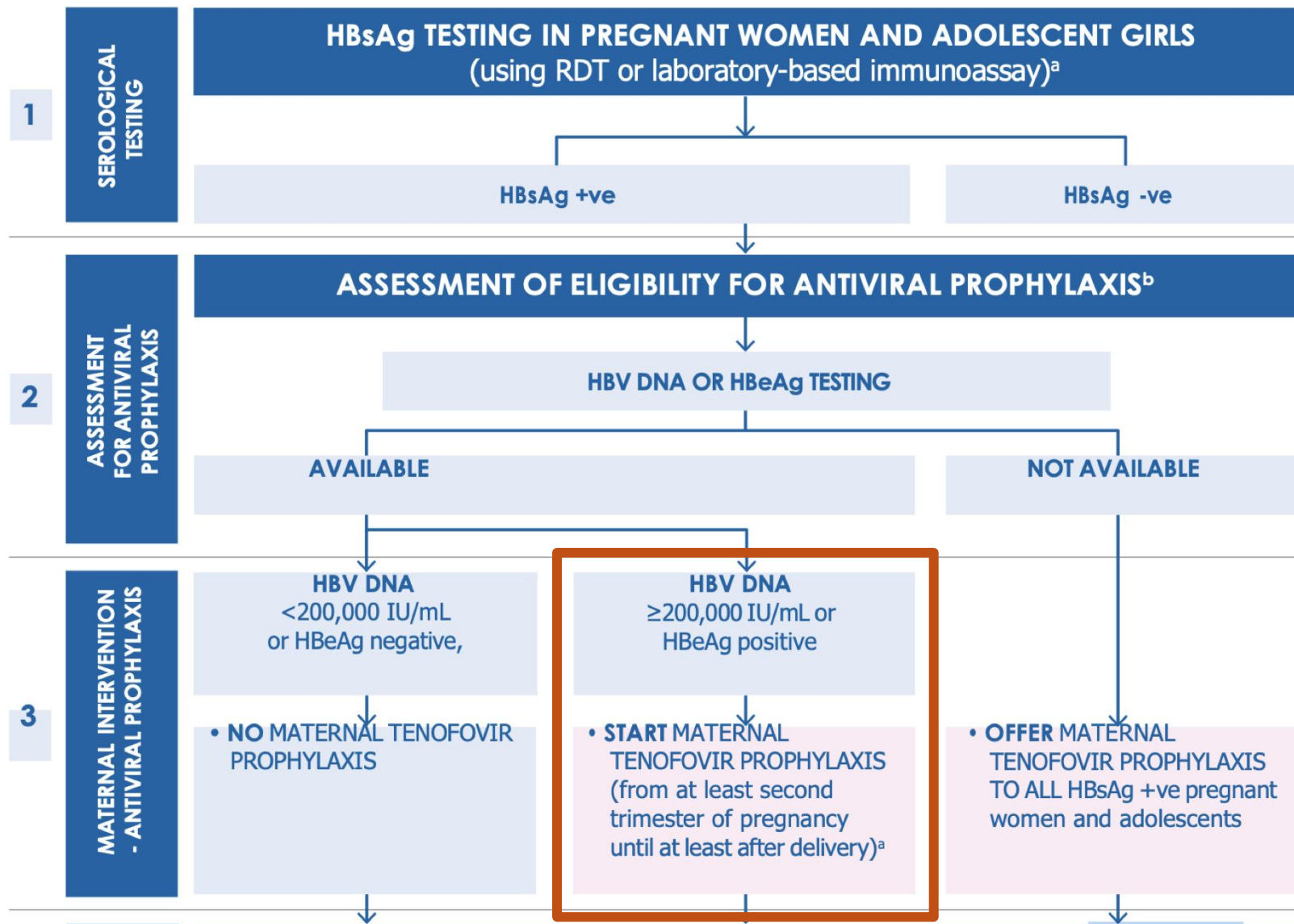
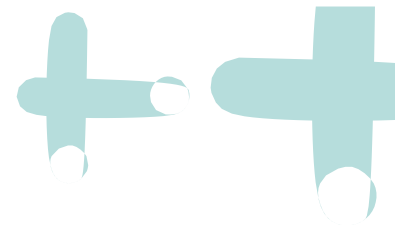
SURVEILLANCE FOR (AFP and ultrasound)^h
(persons with cirrhosis or family history of liver cancer or cirrhosis)

Every 12 months

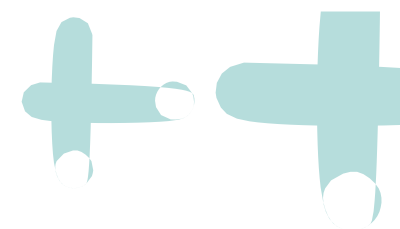
TREATMENT RESPONSE AND/OR DISEASE PROGRESSION^h

- Adherence at each visit, if on treatment
- Non-invasive tests (APRI or transient elastography)
- ALT and HBV DNA level
- Monitoring of renal function (creatinine), as indicated

Chronic hepatitis B in pregnancy



Chronic hepatitis B in pregnancy



4

MATERNAL INTERVENTION
LONG TERM ANTIVIRAL TREATMENT

ASSESSMENT OF ELIGIBILITY FOR LONG-TERM TREATMENT IN PREGNANT WOMEN AND ADOLESCENT GIRLS FOR THEIR OWN HEALTH

1. **SIGNIFICANT FIBROSIS (\geq F2) or CIRRHOSIS (F4)** (regardless of HBV DNA or ALT levels)
 - Clinical criteria for cirrhosis
 - Non-invasive tests: **APRI >0.5** or **transient elastography >7 kPa** (adults)

OR
2. **HBV DNA > 2000 IU/mL AND ALT level > ULN**

OR
3. **PRESENCE OF any of following**
Coinfection (eg. HIV, HDV, HCV); **Family history** of liver cancer or cirrhosis; **Immune suppression**;
Comorbidities (eg. diabetes, metabolic dysfunction-associated steatotic liver disease);
Extrahepatic manifestations (eg. glomerulonephritis or vasculitis);

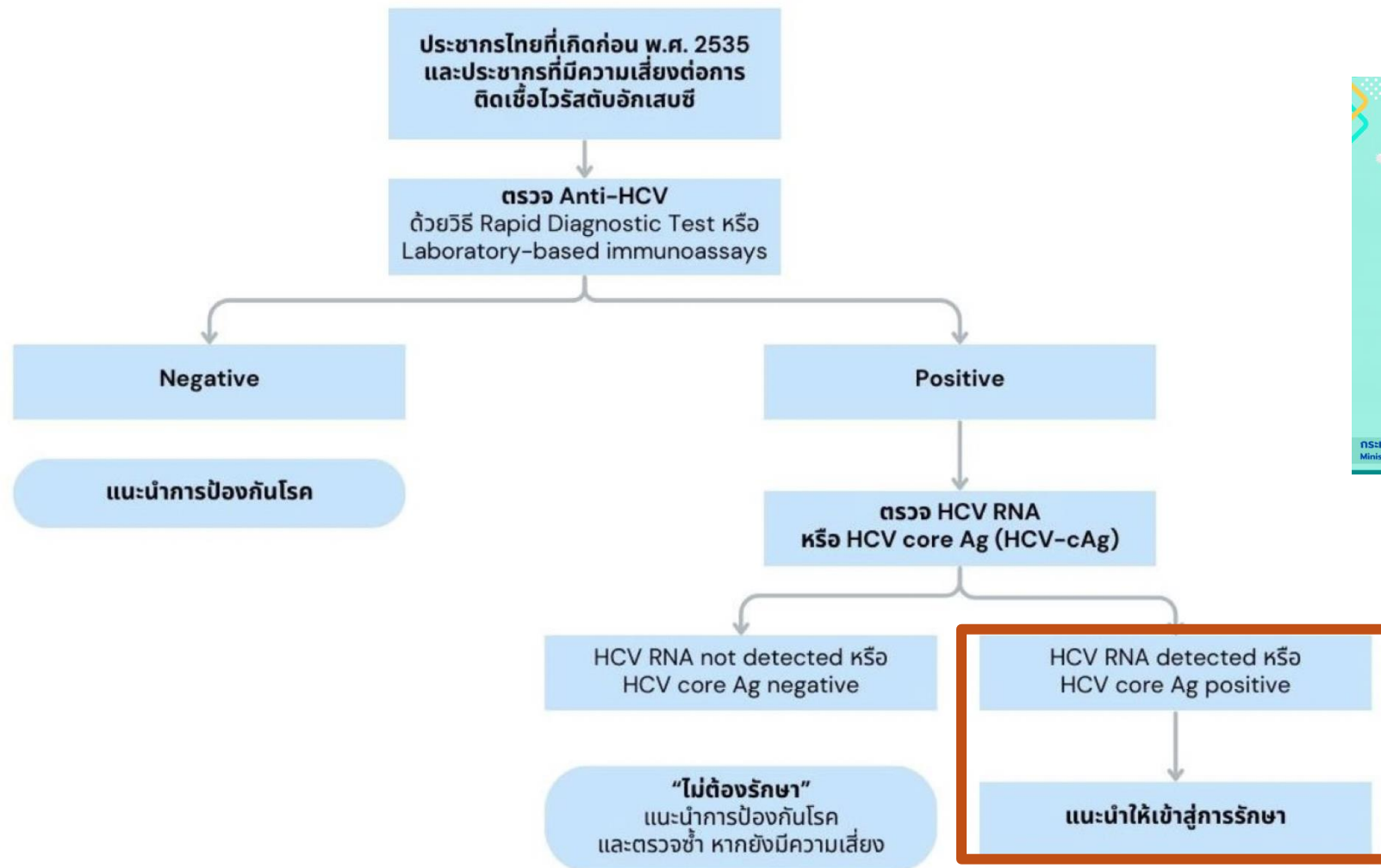
OR
4. **PERSISTENTLY ABNORMAL ALT LEVELS ALONE** (in absence of access to HBV DNA assay)

5

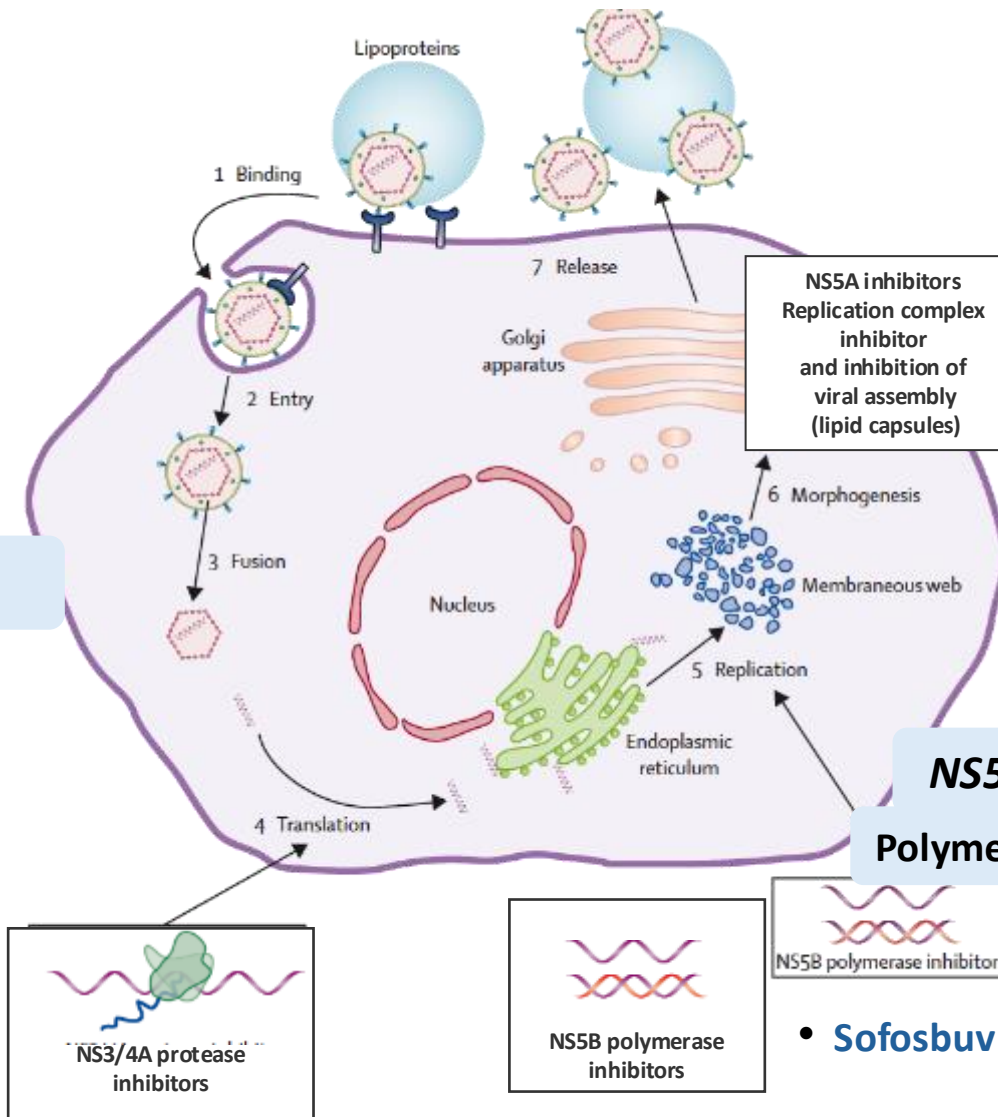
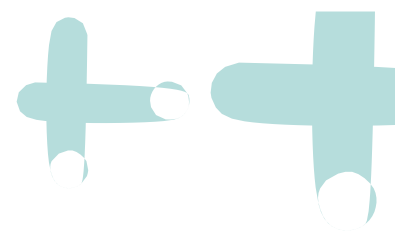
INFANT
INTERVENTIONS

**HEPATITIS B BIRTH DOSE VACCINATION OF THE
INFANT FOLLOWED BY 2 OR 3 DOSES OF VACCINE^c**

Chronic hepatitis C



Chronic hepatitis C



'...previrs'

Protease inhibitors

- Grazoprevir
- Voxilaprevir
- Glecaprevir

'...asvirs'

NS5A inhibitors

- Daclatasvir
- Ledipasvir
- Ombitasvir
- Elbasvir
- **Velpatasvir**
- Pibrentasvir

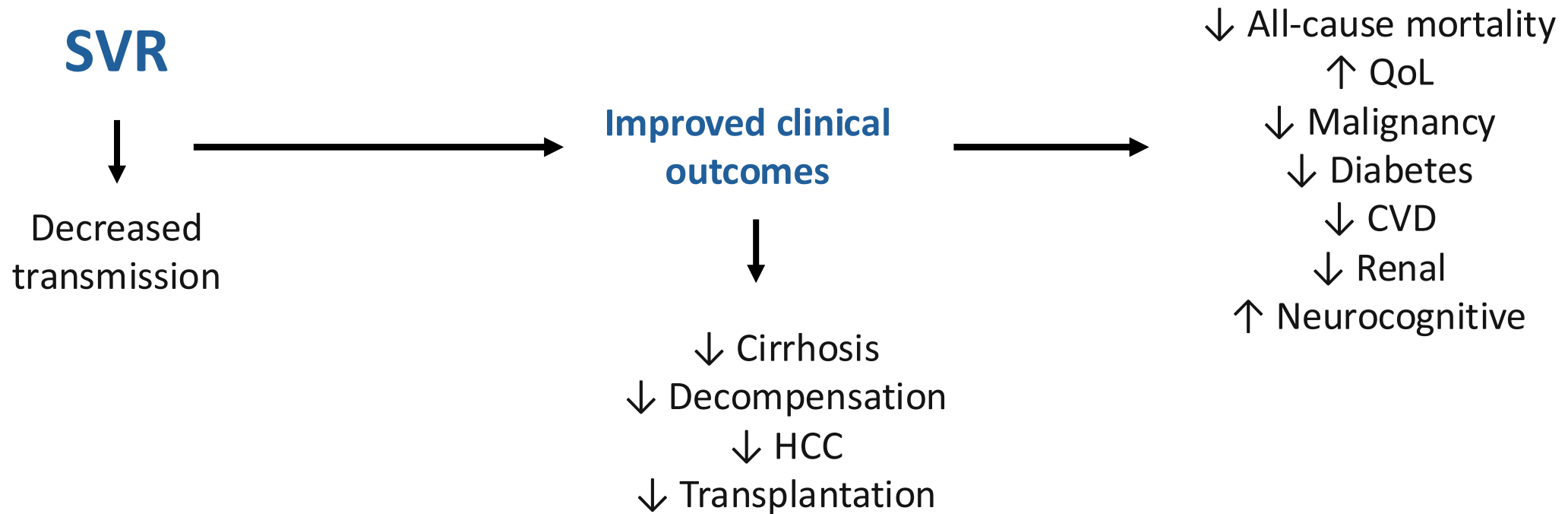
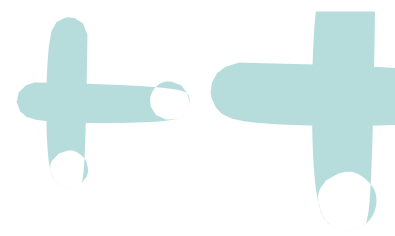
'...buvirs'

NS5B Polymerase inhibitors

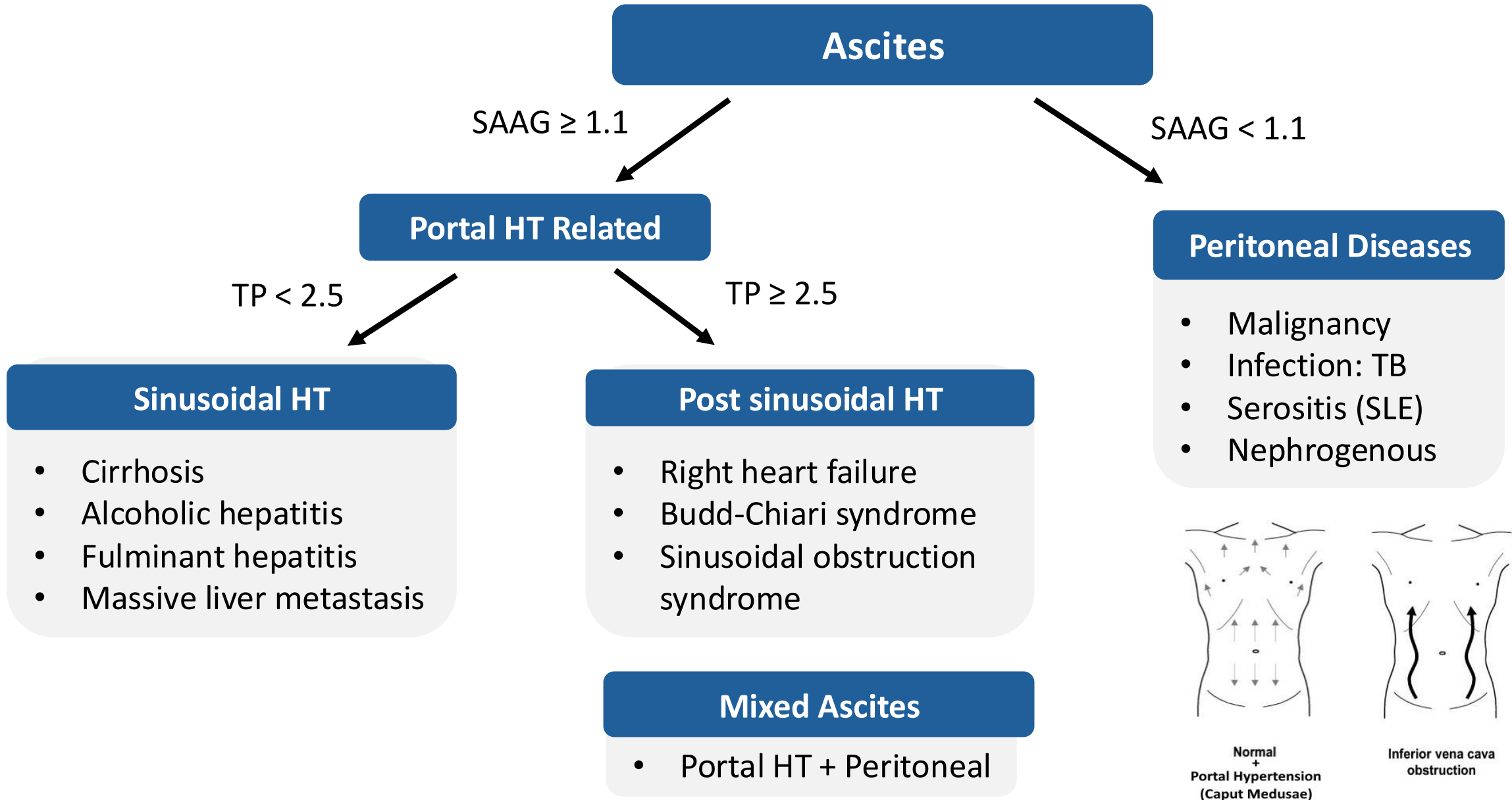
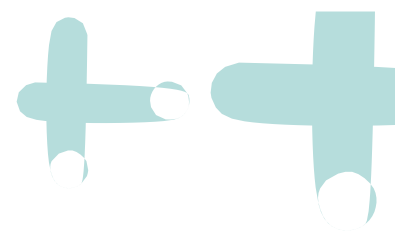
- Non-nucleosides
- Sofosbuvir
 - Dasabuvir

Chronic hepatitis C

Benefit of SVR

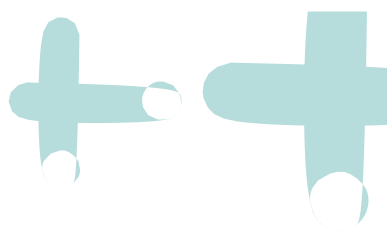


Ascites



Ascites

Ascitic analysis



Routine

- Cell count
- Cell differential
- Total protein
- Albumin

Optional

- ADA, PCR for mycobacteria
- Cytology
- ANA, LE cell
- Amylase (>1000)
- Bilirubin (>6 mg/dl)
- Triglyceride (>200 mg/dl)
- LDH

Limitations: SAAG

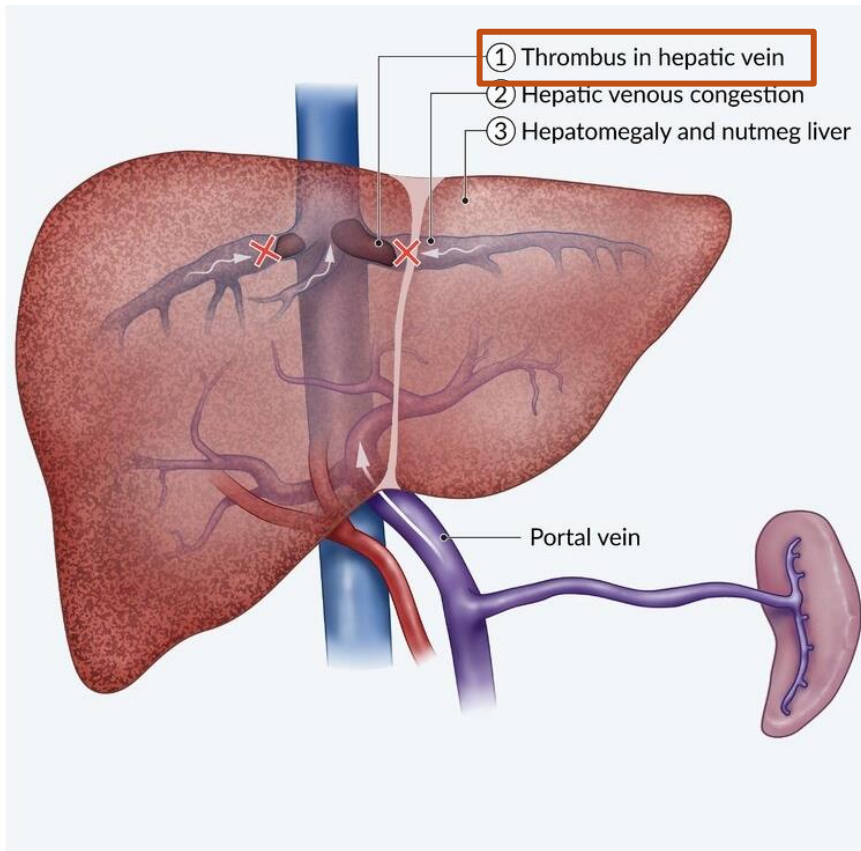
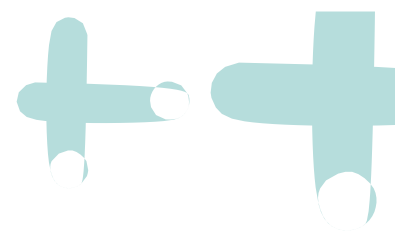
- **Very low serum albumin** ↓
- Different time points
- Borderline value
- Globulin >5 g/dL ↓
- Hypotension ↓
- Chylous ascites ↑

Limitations: protein

- High TP in cirrhosis
- Diuretic effect: ↑
- Mixed ascites: ↓(30- 50%)

Budd-Chiari syndrome

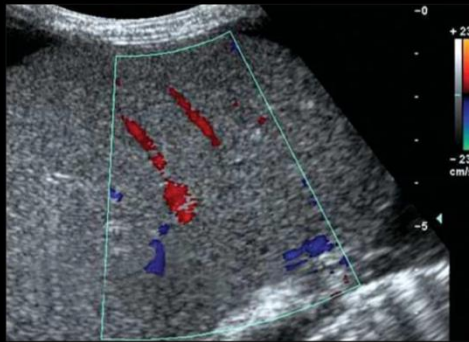
- Jaundice
- Tender hepatomegaly
- Ascites: wide SAAG, high protein



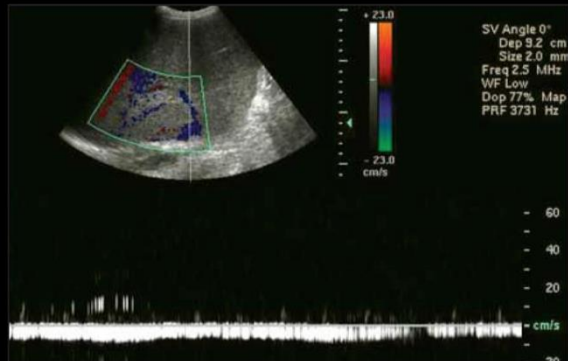
	Key causes
Local obstruction	IVC web Tumor invasion: HCC, RCC, adrenal carcinoma
Prothrombotic disorders	Myeloproliferative disease (most common) APS Factor V Leiden / Prothrombin mutation
Others	Protein C/S, AT III deficiency Pregnancy / OCP PNH, Behcet disease Hyperhomocysteinemia

Budd-Chiari syndrome

Doppler ultrasound



Reverse flow in hepatic veins



Monophasic low velocity flow

Heterogeneous enhancement***
Caudate lobe hypertrophy **CT scan**



Thrombus
Splenomegaly, ascites



Flip flop phenomenon

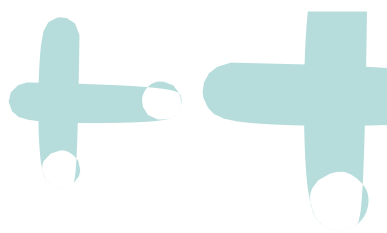
Early central enhancement

Delayed peripheral enhancement



Budd-Chiari syndrome

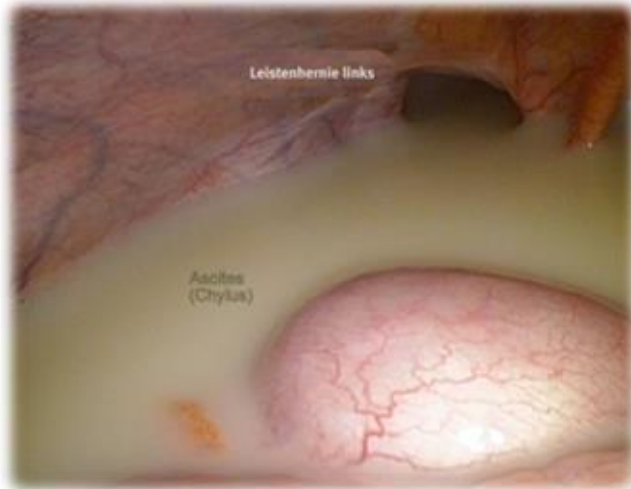
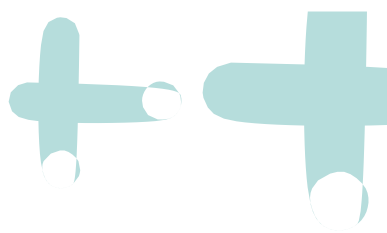
Treatment



	Acute BCS	Chronic BCS
Initial	Anticoagulants (LMWH → DOAC/VKA)	Long-term anticoagulants
Cause-specific	Treat underlying (MPN, APS,...)	Treat underlying cause Cirrhosis care
Intervention	Early thrombolysis ± angioplasty/stent	TIPS if portal HTN/ refractory ascites

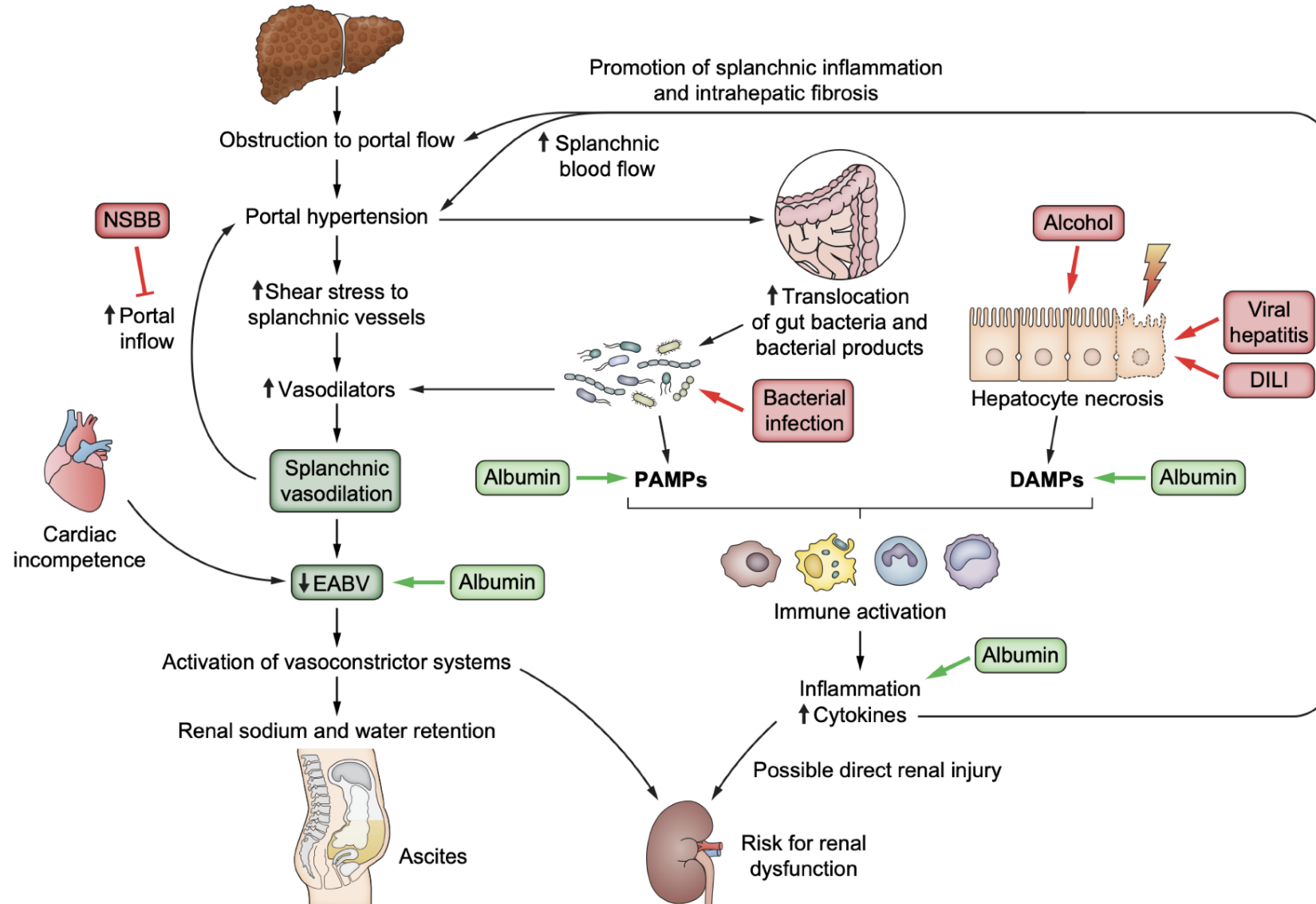
Chylous ascites

- Milky and creamy ascitic fluid
- TG > **200 mg/dL**

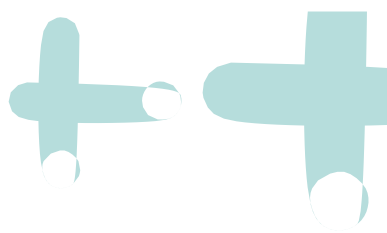


Diseases	
Neoplasm	Lymphoma Ovarian, breast, pancreas, colon, carcinoid Lymphangiomyomatosis
Cirrhosis	
Congenital (pediatric)	Primary lymphatic hypoplasia Intestinal lymphangiectasia
Infection	Filariasis, TB, MAC
Inflammation	Radiation Pancreatitis Retroperitoneal fibrosis
Trauma	Post operation, abdominal injury

Cirrhotic ascites

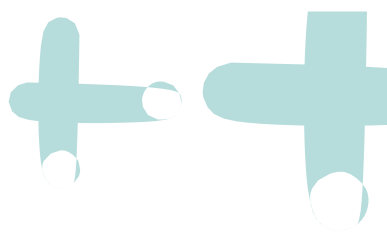


Cirrhotic ascites



- **Moderate dietary Na restriction** (2-2.5 g/day)
 - Strict restriction: \uparrow hypoNa, \uparrow HRS
- **Aldosterone antagonist +/- loop diuretics**
 - 500 mg/d weight loss (without edema) , 1 kg/d (with edema)
 - Tapered to lower dose if ascites normalization
- **Monitoring:** if uncontrolled ascites despite treatment
 - 24h $U_{Na} < 78$ mmol or spot $U_{Na/K} \leq 1 \rightarrow \uparrow$ diuretic dose
 - 24h $U_{Na} \geq 78$ mmol or spot $U_{Na/K} > 1 \rightarrow$ dietary Na restriction

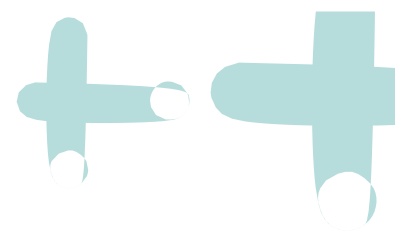
Refractory ascites



Consider

1. Salt restriction
2. Is it PHT related?
Mixed ascites?
3. Nutritional status (Alb ↓)

Refractory cirrhotic ascites



- **Moderate dietary Na restriction** (2-2.5 g/day)
 - Strict restriction: \uparrow hypoNa, \uparrow HRS
- **Aldosterone antagonist +/- loop diuretics**
 - 500 mg/d weight loss (without edema) , 1 kg/d (with edema)
 - Tapered to lower dose if ascites normalization
- **Monitoring:** if uncontrolled ascites despite treatment
 - 24h $U_{Na} < 78$ mmol or spot $U_{Na/K} \leq 1 \rightarrow \uparrow$ diuretic dose
 - 24h $U_{Na} \geq 78$ mmol or spot $U_{Na/K} > 1 \rightarrow$ dietary Na restriction
- **Large volume paracentesis > 5L**
 - IV albumin (6-8 g/L of fluid removed) >> prevent PPCD
- **Consider**
 - TIPS >> LVP in well-selected patient
 - Liver transplantation
 - Long-term albumin – insufficient data

Good luck on your exam !



SIRIRAJ GASTROENTEROLOGY