

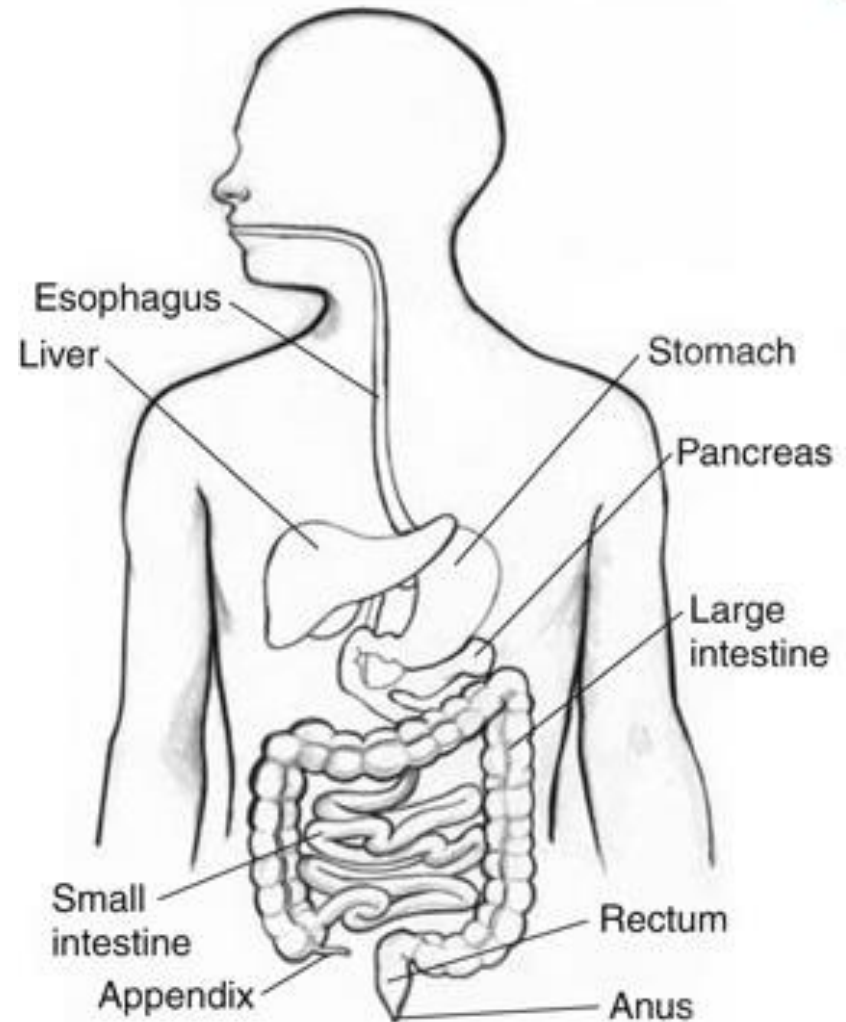
# GASTROINTESTINAL TRACT AND ITS FUNCTIONS PATHOPHYSIOLOGY OF LIVER AND PANCREAS

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# Gastrointestinal Tract (GIT)

- Oral cavity and associated structures
- Pharynx
- Esophagus
- Stomach
- Small intestine
- Large intestine
  
- Liver
- Gallbladder
- Pancreas



# GIT Functions

**Mouth**  
Tasting,  
chewing,  
forming food bolus

**Saliva**  
Lubrication,  
rinsing,  
digesting

**Esophagus**  
Transport

**Liver**  
Bile (excretion,  
fat digestion),  
metabolism,  
detoxication

**Proximal stomach**  
Storage

**Gallbladder**  
Storage of bile

**Distal stomach**  
Preparation,  
digestion,  
apportioning

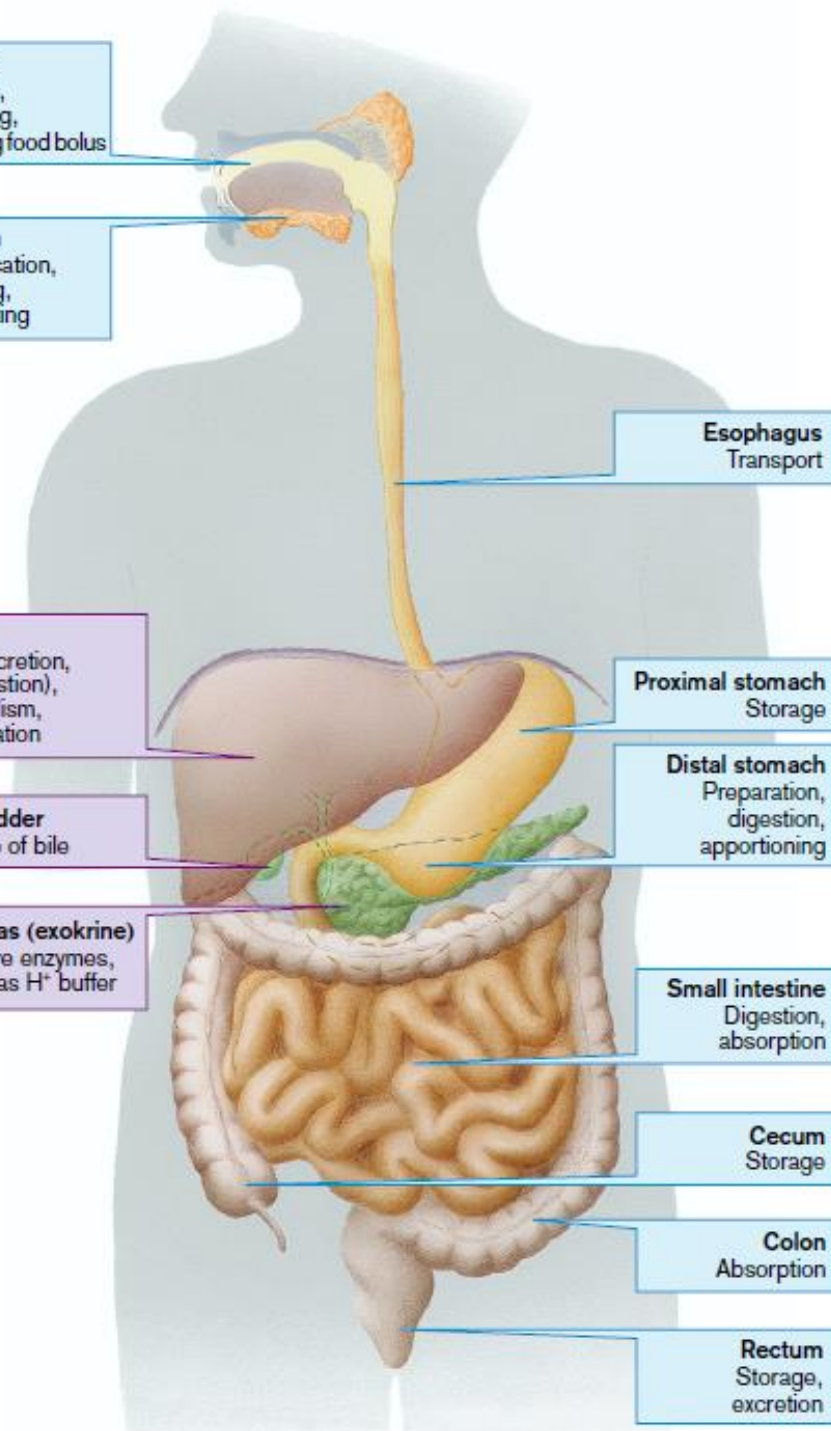
**Pancreas (exocrine)**  
Digestive enzymes,  
 $\text{HCO}_3^-$  as  $\text{H}^+$  buffer

**Small intestine**  
Digestion,  
absorption

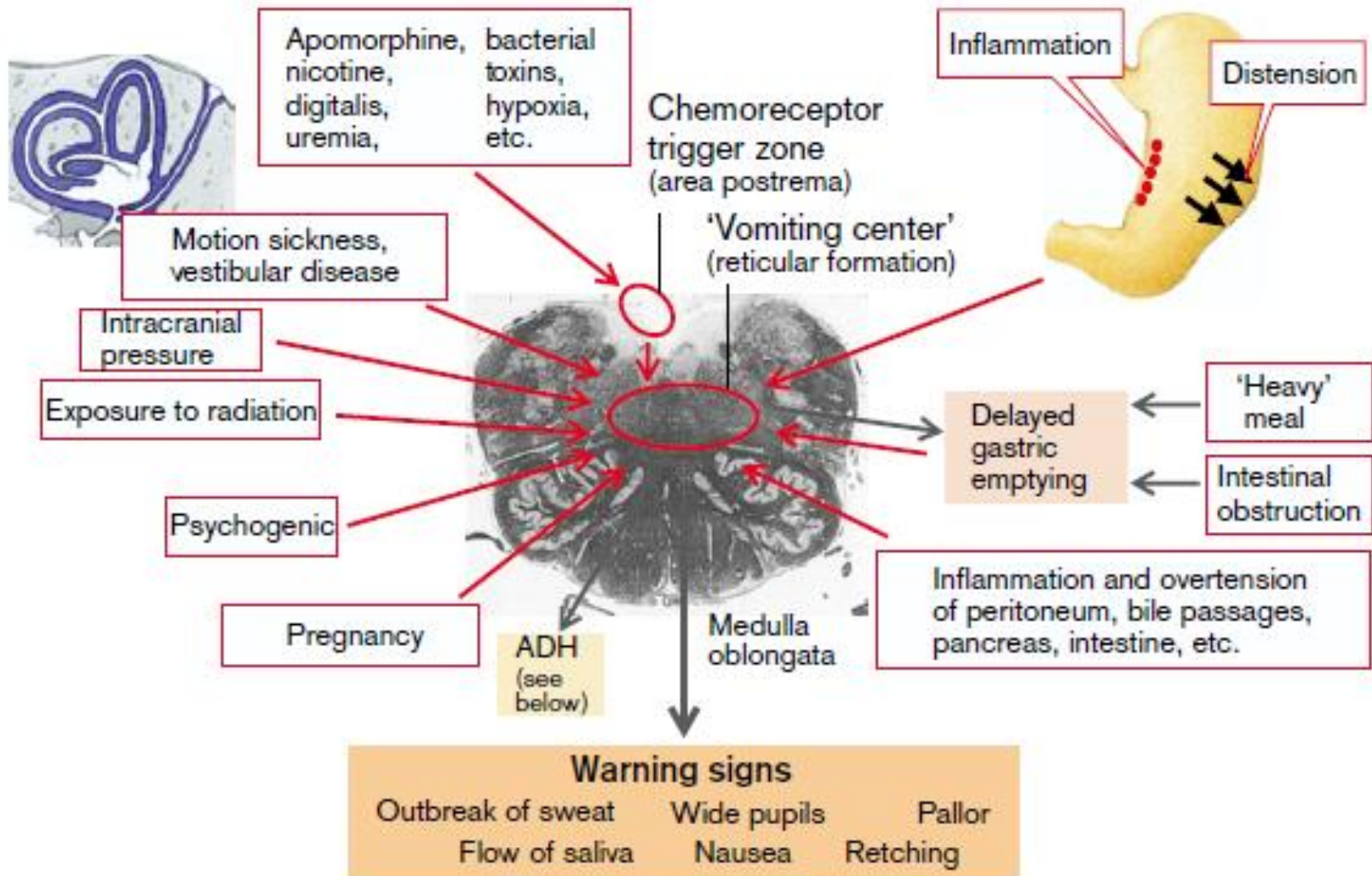
**Cecum**  
Storage

**Colon**  
Absorption

**Rectum**  
Storage,  
excretion



# GIT Symptoms Nausea and Vomiting

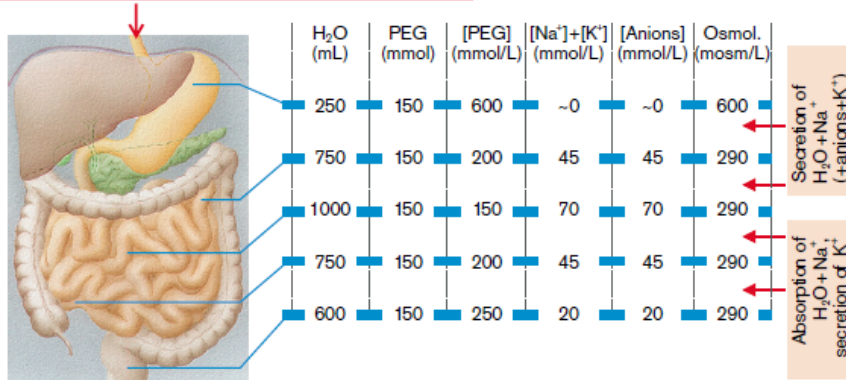




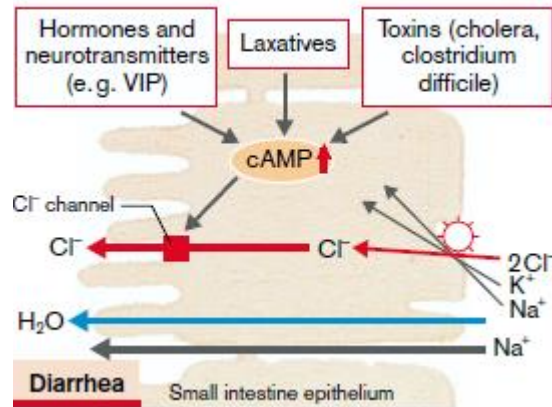
# GIT Symptoms Diarrhea

## Osmotic Diarrhea

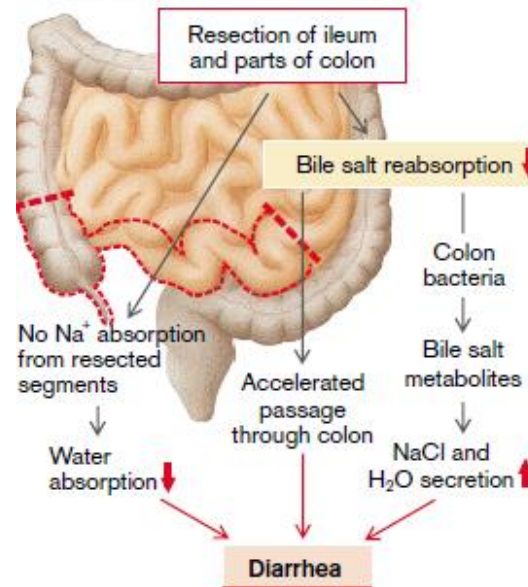
Uptake of 150 mmol of a nonabsorbable, osmotically active substance (PEG) in 250 mL H<sub>2</sub>O



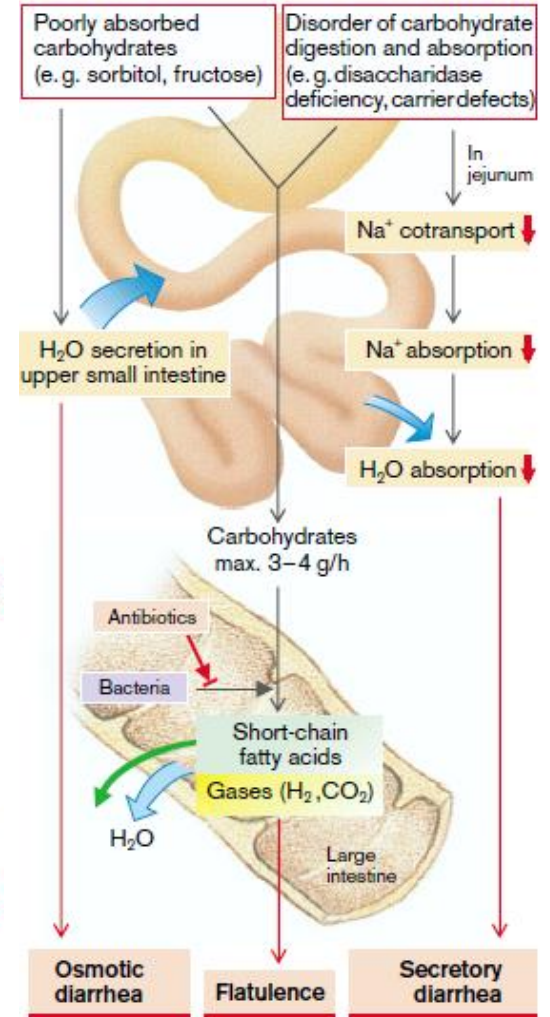
## Raised Cl<sup>-</sup> Secretion



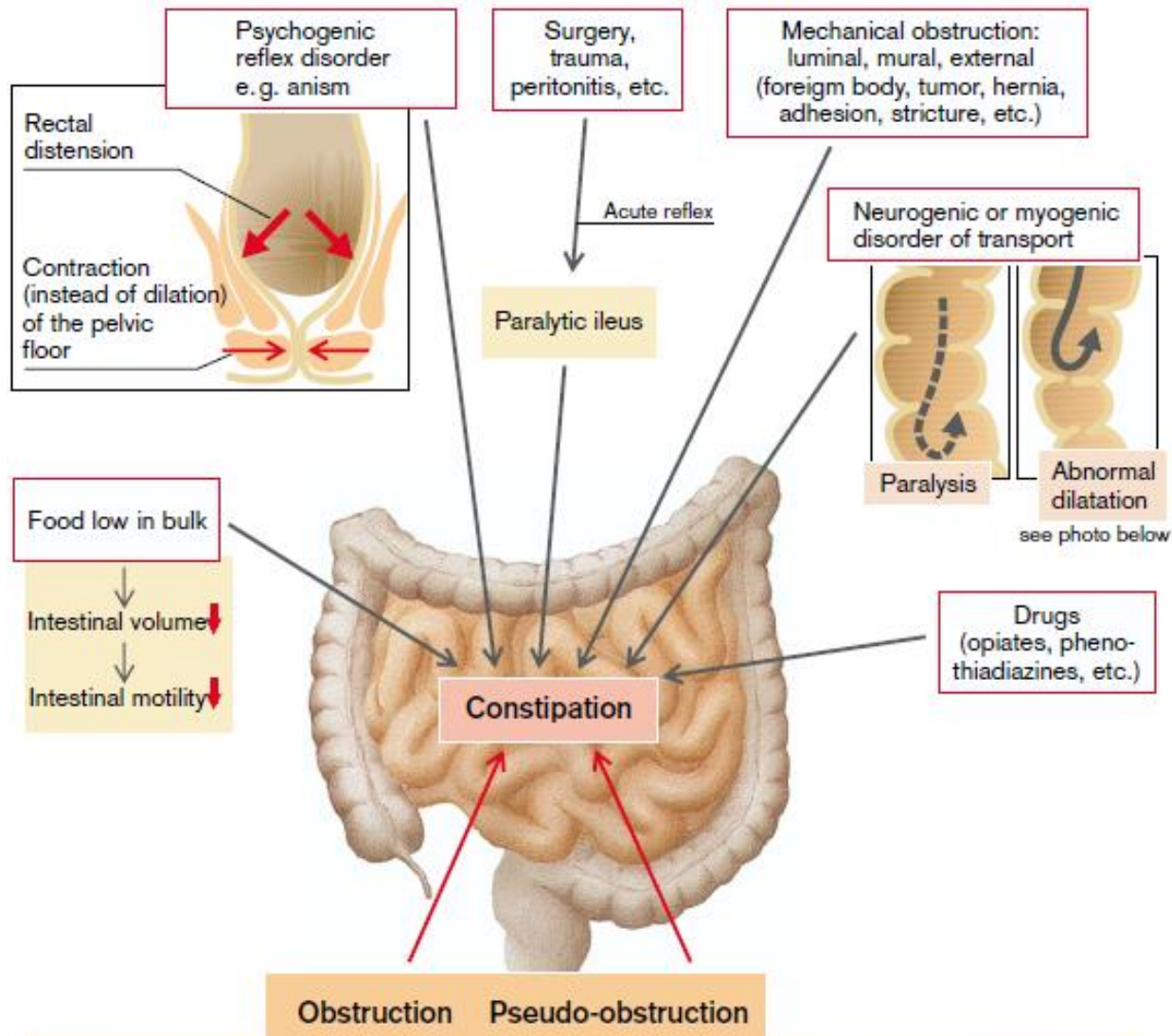
## Partial Intestinal Resection



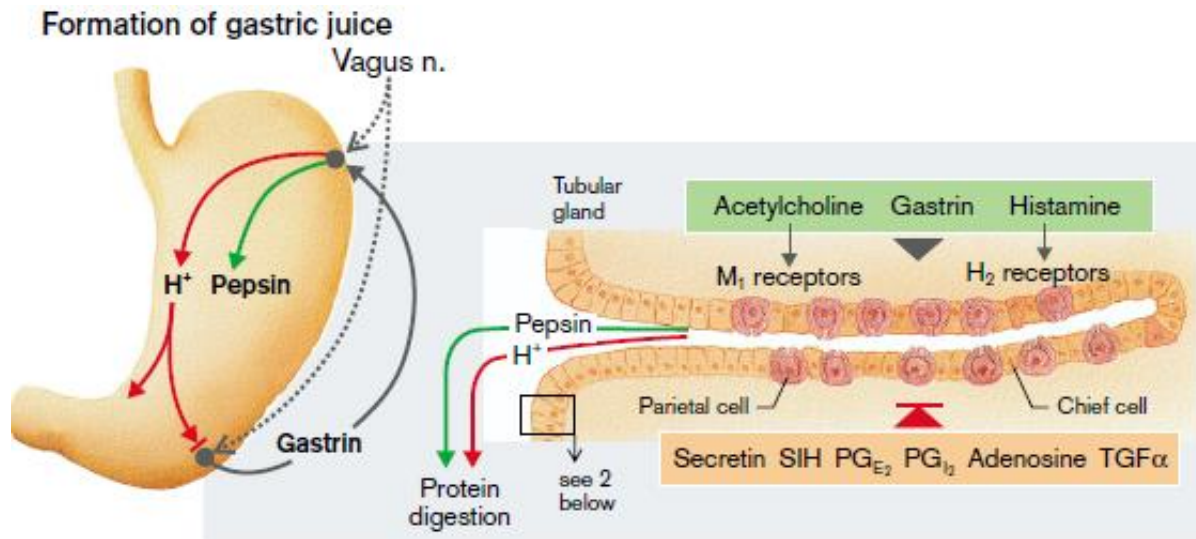
## Malabsorption of Carbohydrates



# GIT Symptoms Obstipation

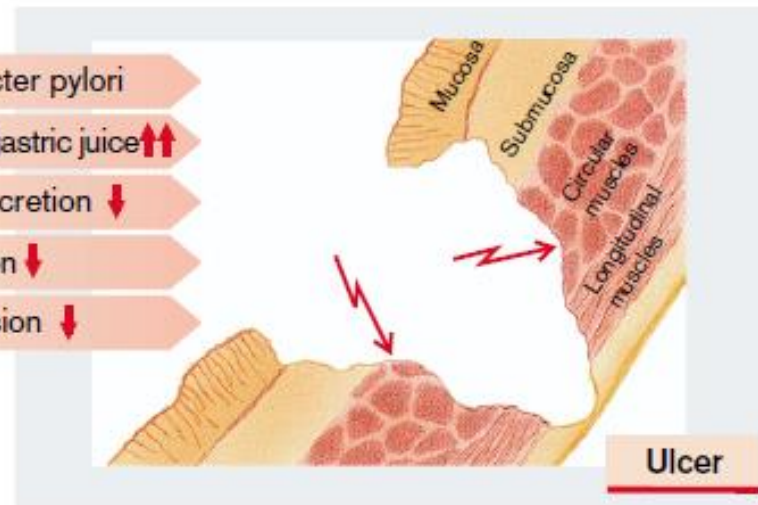


# Gastric and Duodenal Ulcers



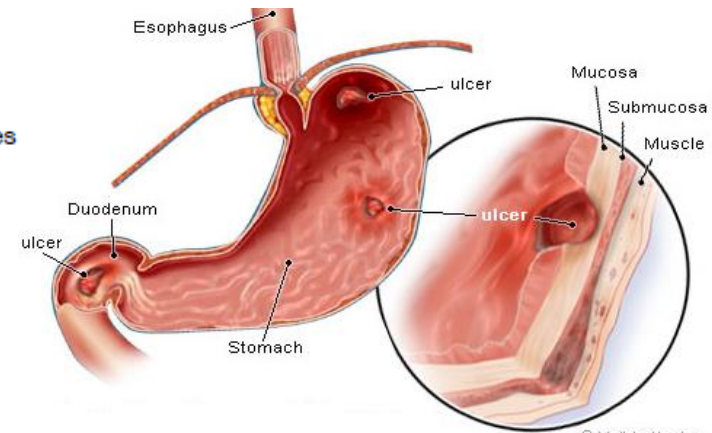
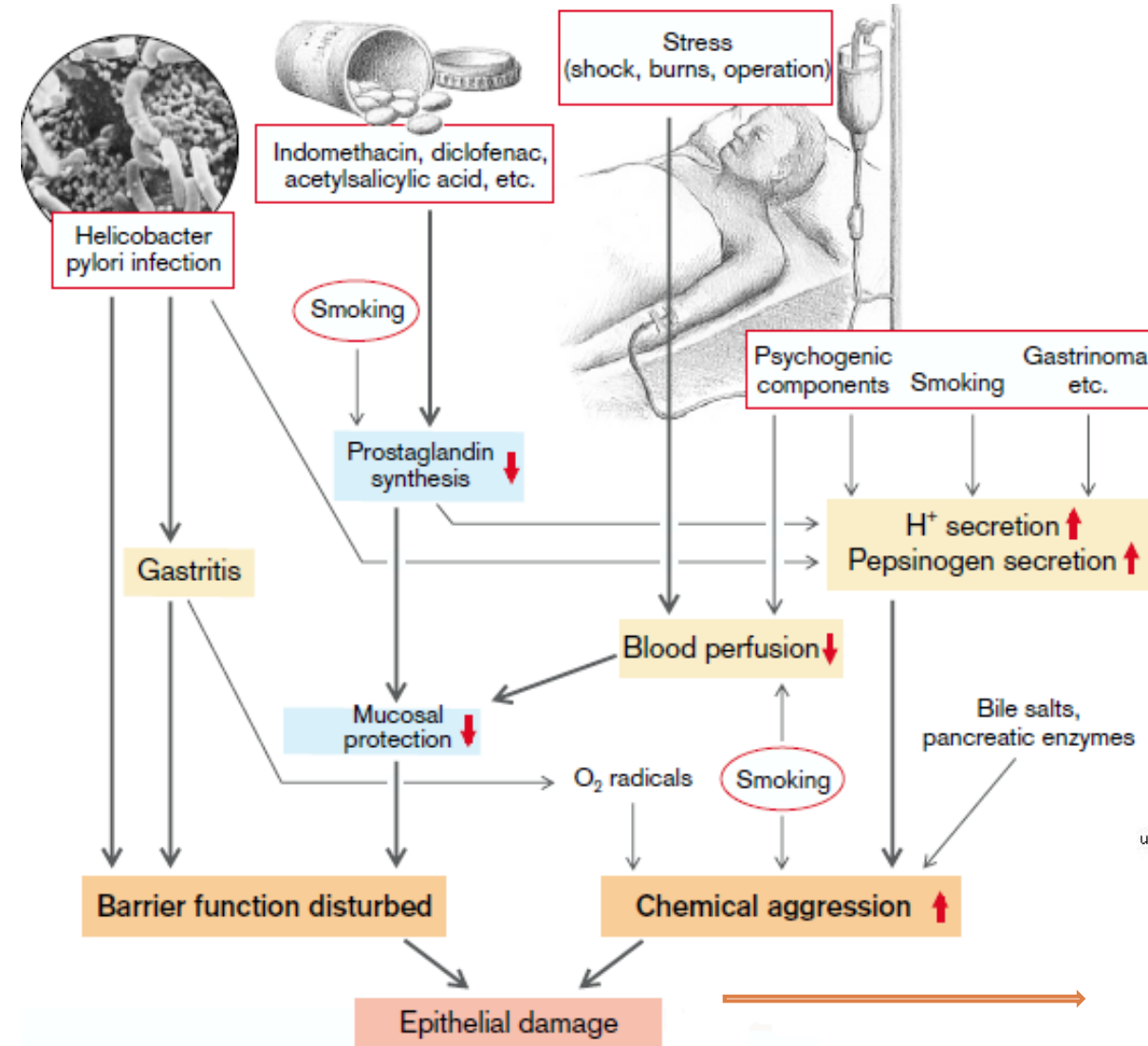
## Danger of ulcer

- Helicobacter pylori
- Secretion of gastric juice  $\uparrow\uparrow$
- HCO<sub>3</sub><sup>-</sup> secretion  $\downarrow$
- Cell formation  $\downarrow$
- Blood perfusion  $\downarrow$



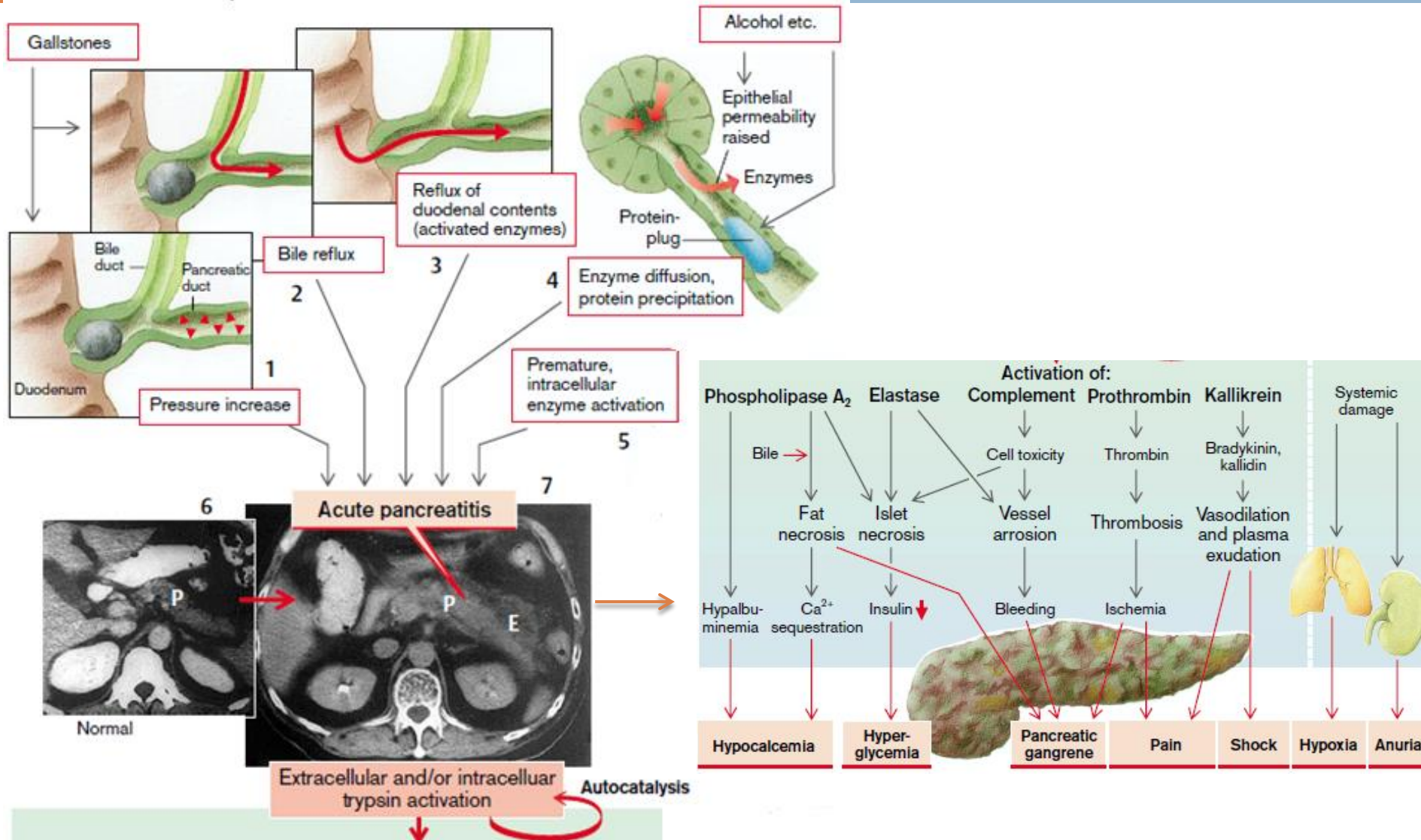


# Gastric and Duodenal Ulcers

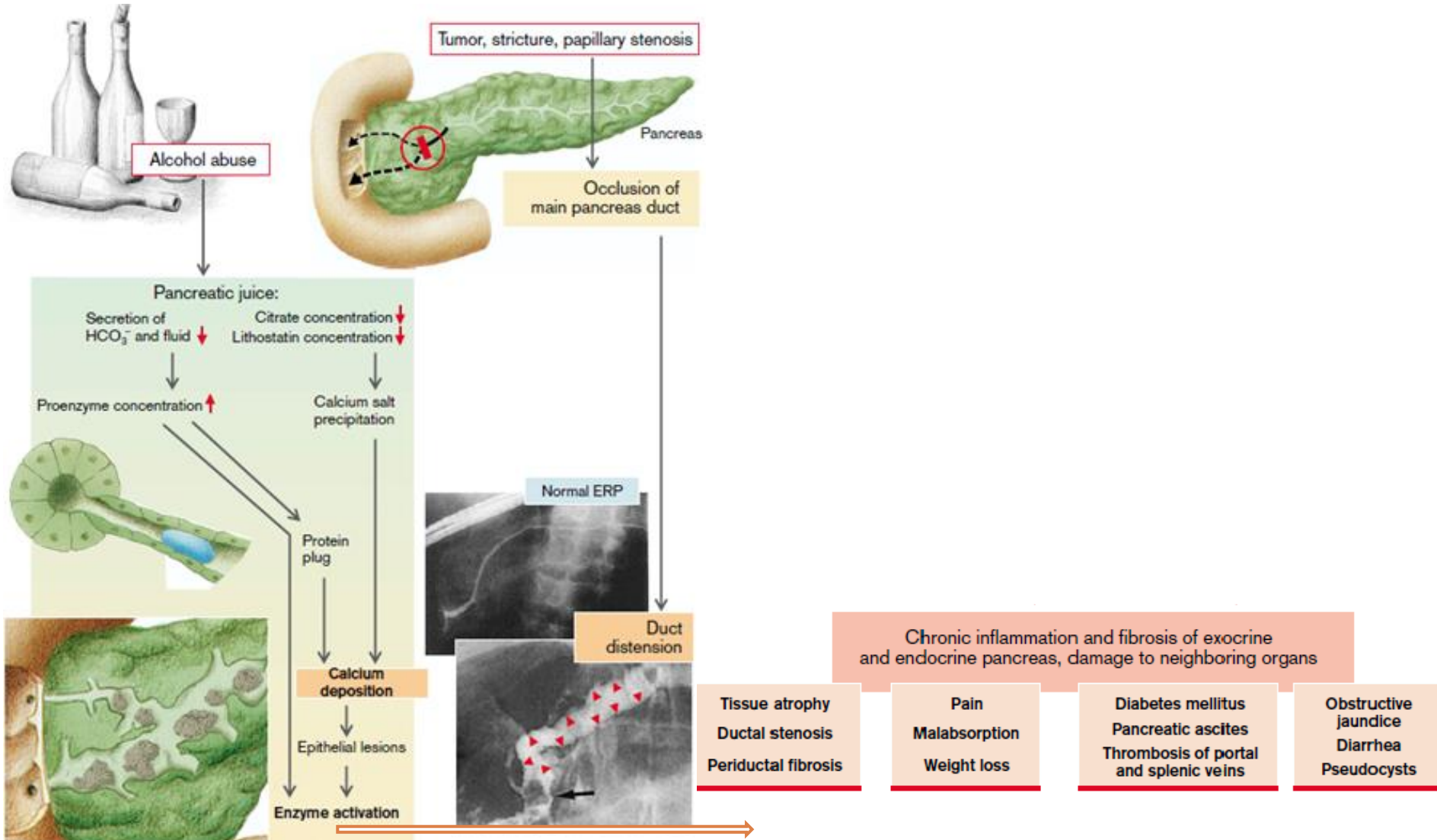




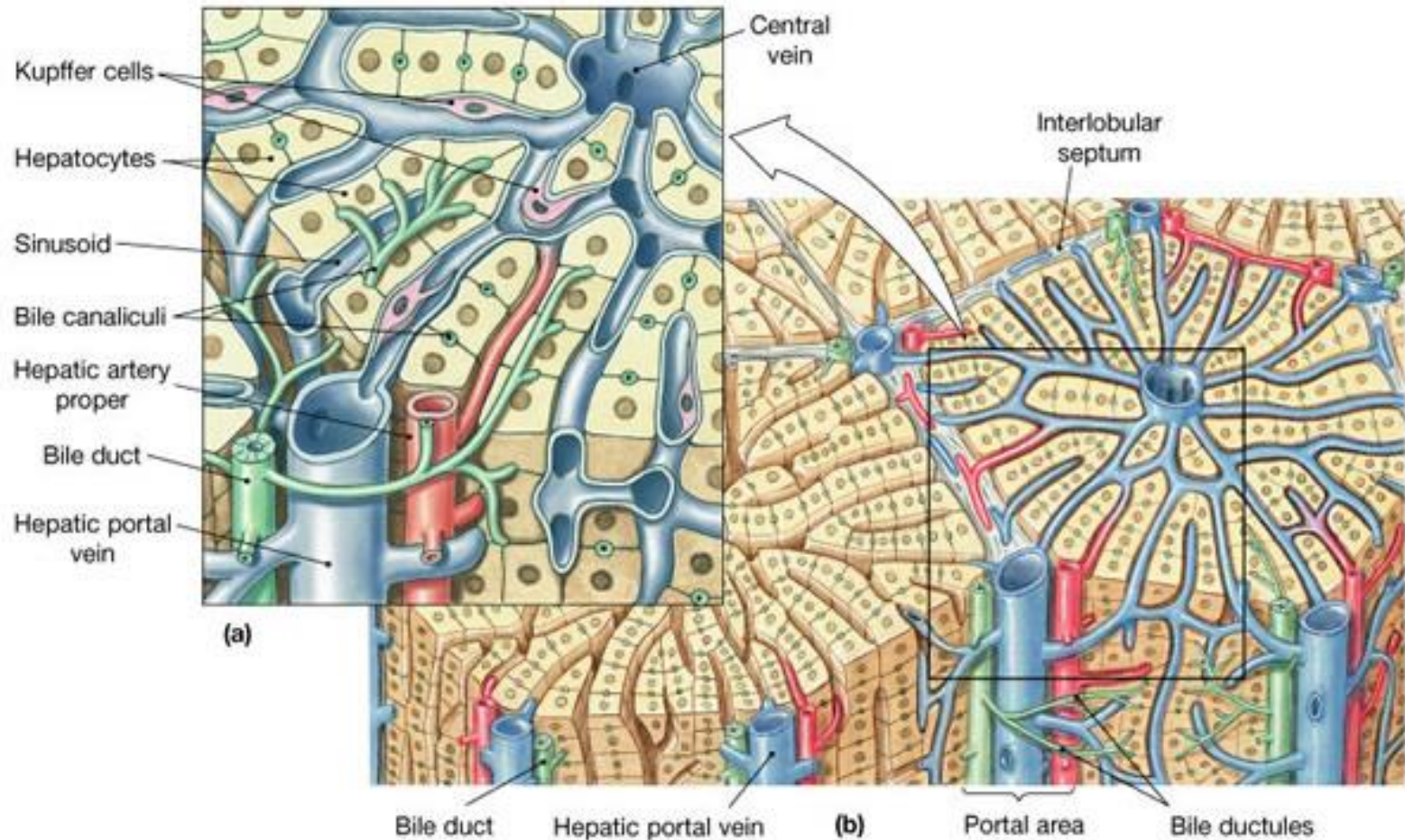
# Acute Pancreatitis



# Chronic Pancreatitis



# Liver Histology





# Jaundice (Icterus)

- yellowish discoloration of the skin and mucous membranes caused by hyperbilirubinemia
- becomes visible when the bilirubin level is about 34 to 51  $\mu\text{mol/L}$

## Unconjugated hyperbilirubinemia

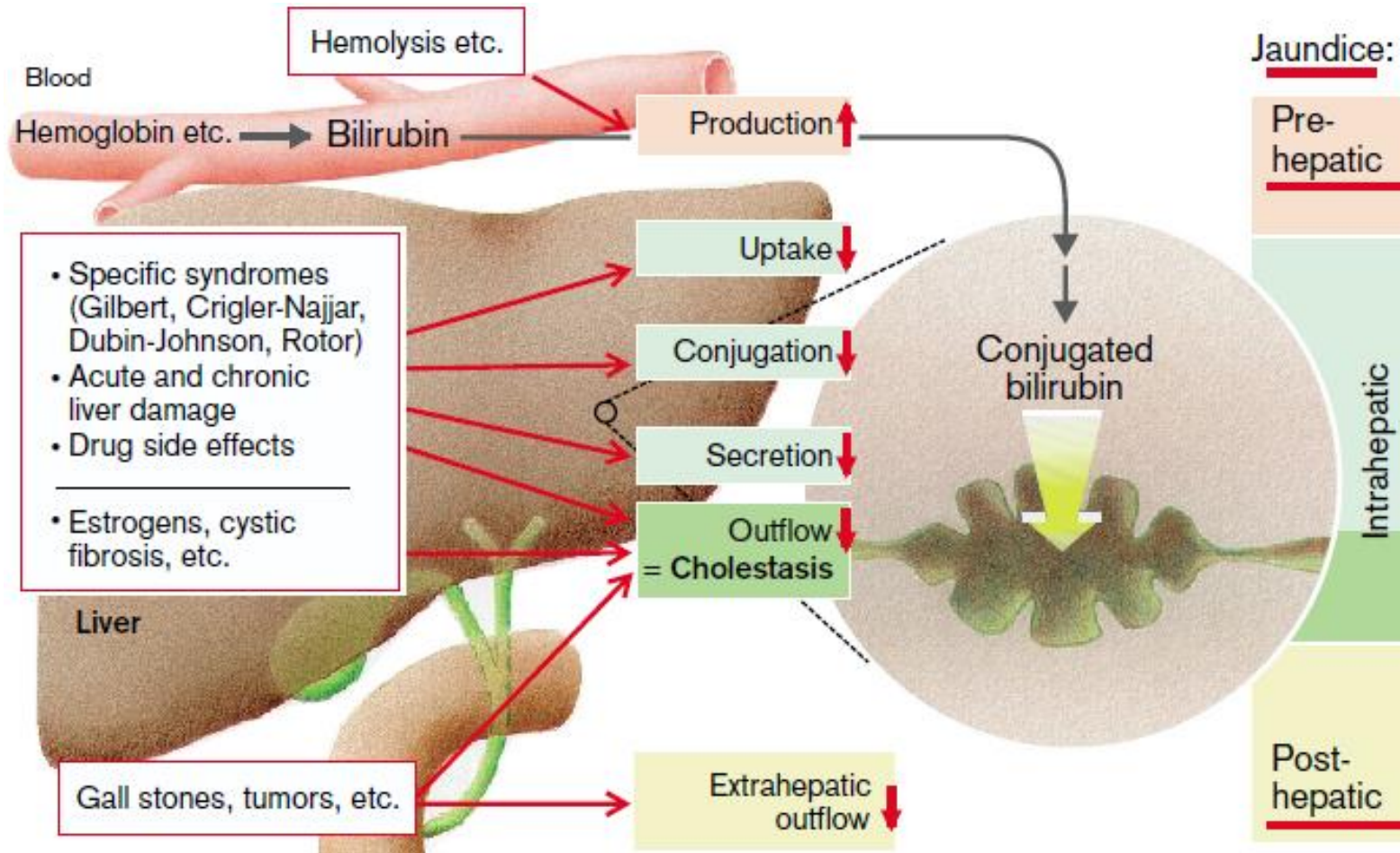
- increased production (hemolysis)
- decreased hepatic uptake (heart failure, drugs)
- decreased conjugation (Gilbert syndrome)

## Conjugated hyperbilirubinemia

- hepatocellular dysfunction (drugs, toxins, viral hepatitis)
- intrahepatic cholestasis (alcoholic liver disease, drugs, toxins, hepatitis)
- extrahepatic cholestasis – obstruction of extrahepatic bile flow (common bile duct stone, pancreatic cancer)

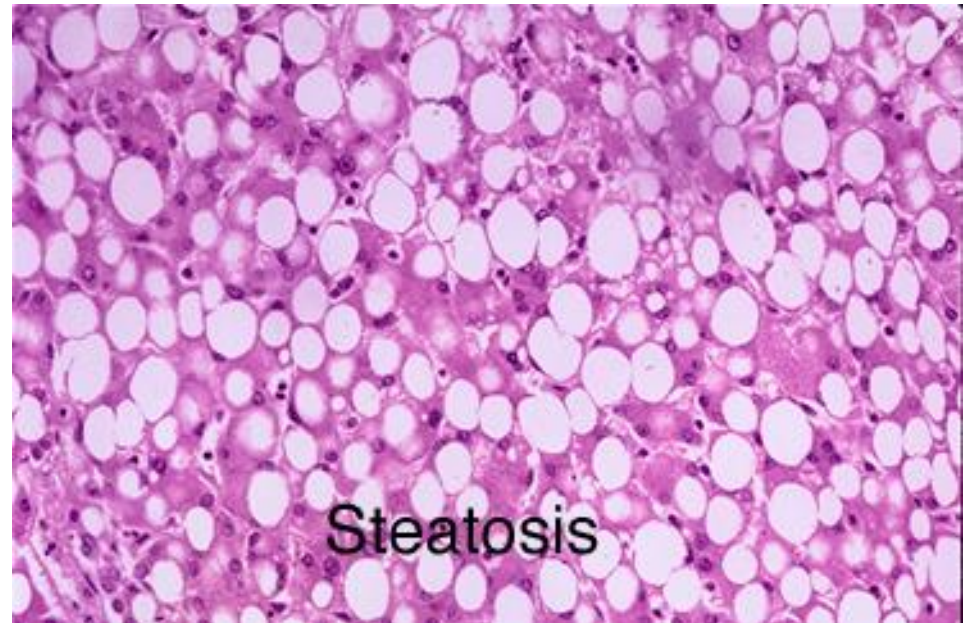


# Jaundice (Icterus)

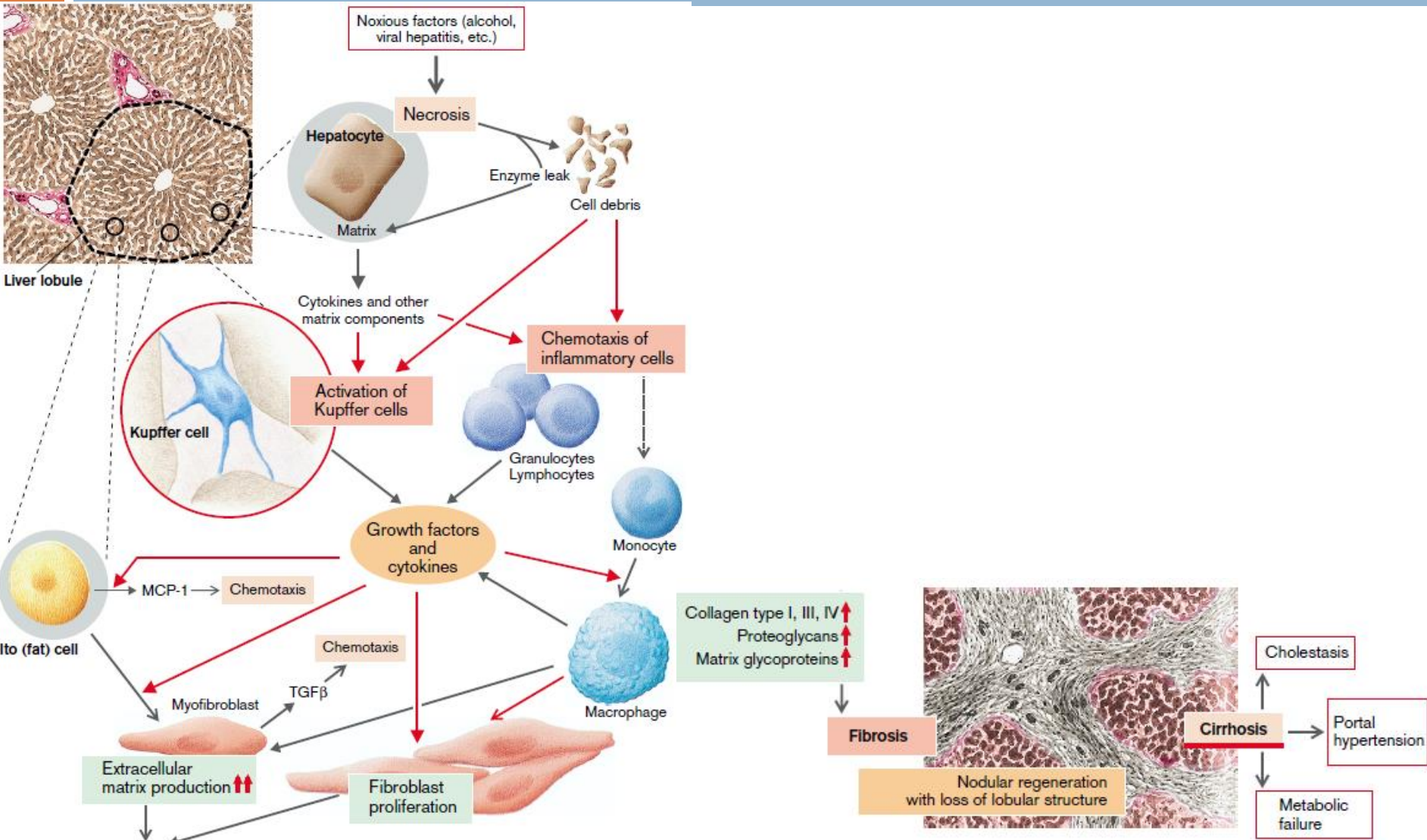


# Liver Steatosis (fatty liver)

- excessive accumulation of lipid in hepatocytes, the most common liver response to injury
- nonalcoholic
- alcoholic

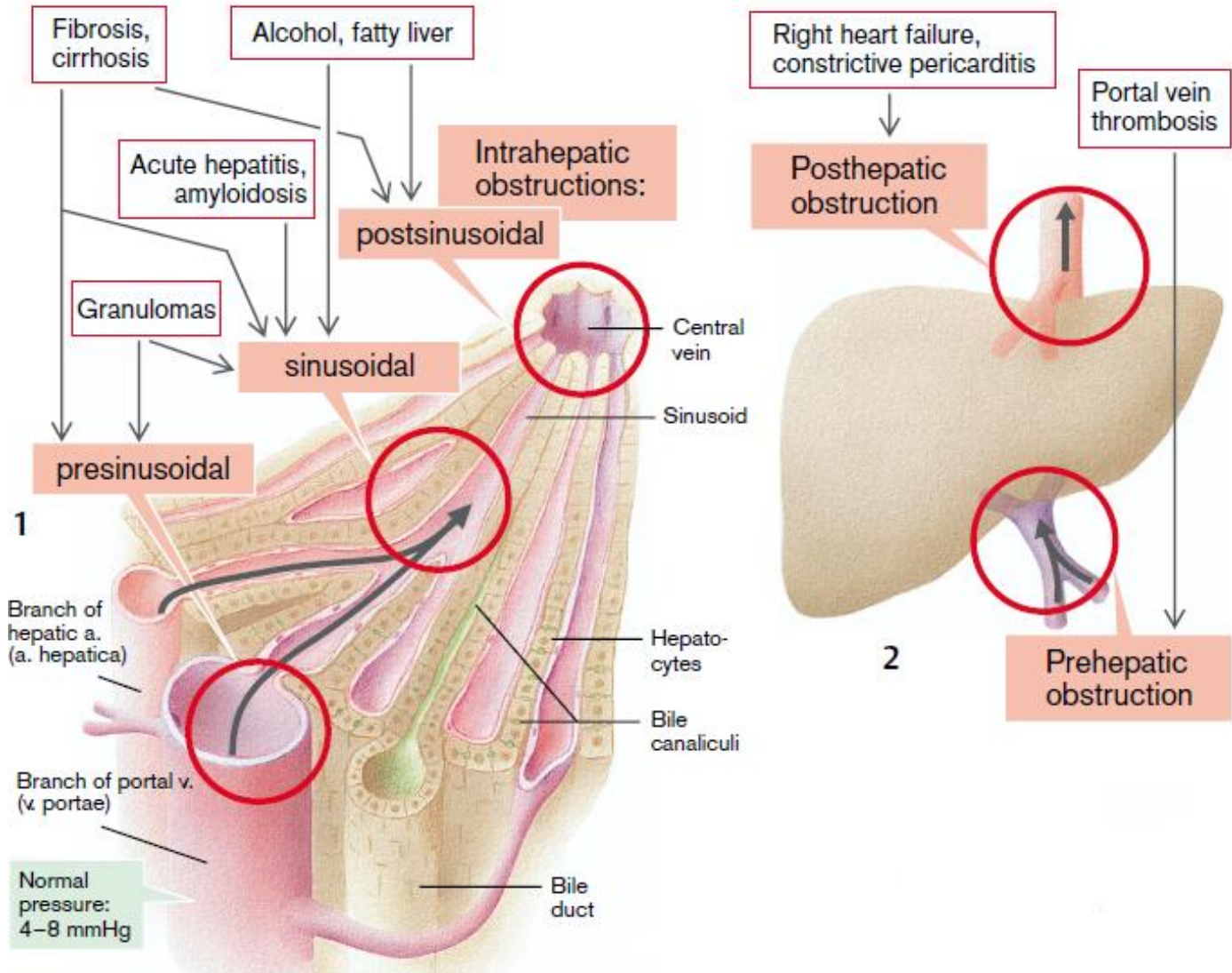


# Liver Fibrosis and Cirrhosis



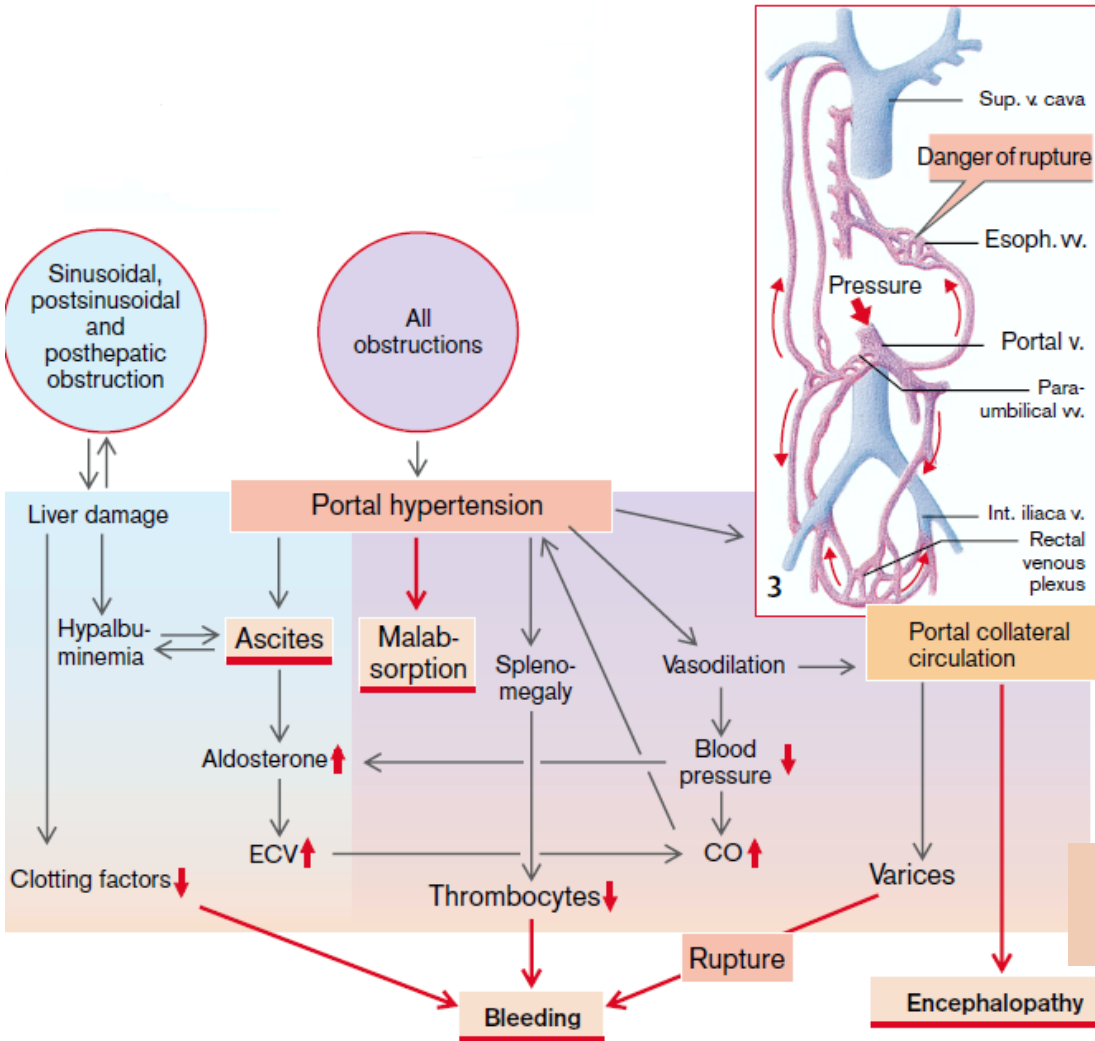


# Portal Hypertension

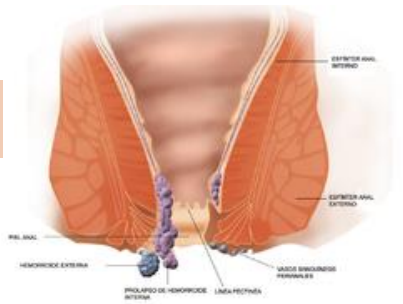




# Portal Hypertension



hemorrhoids



esophageal varices



caput Medusae (head of Medusa)



# Liver Failure

- loss of liver function

