

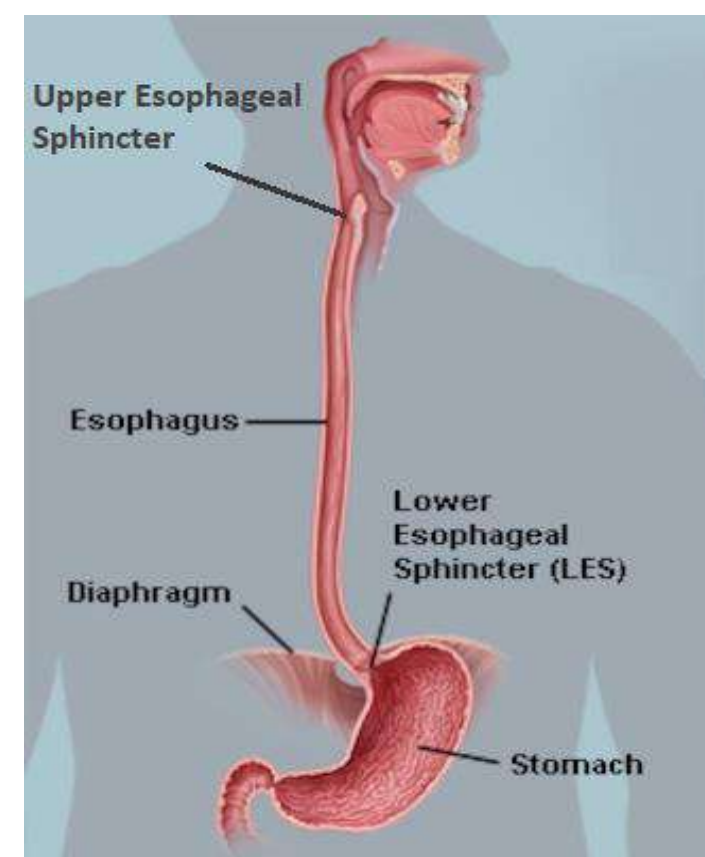
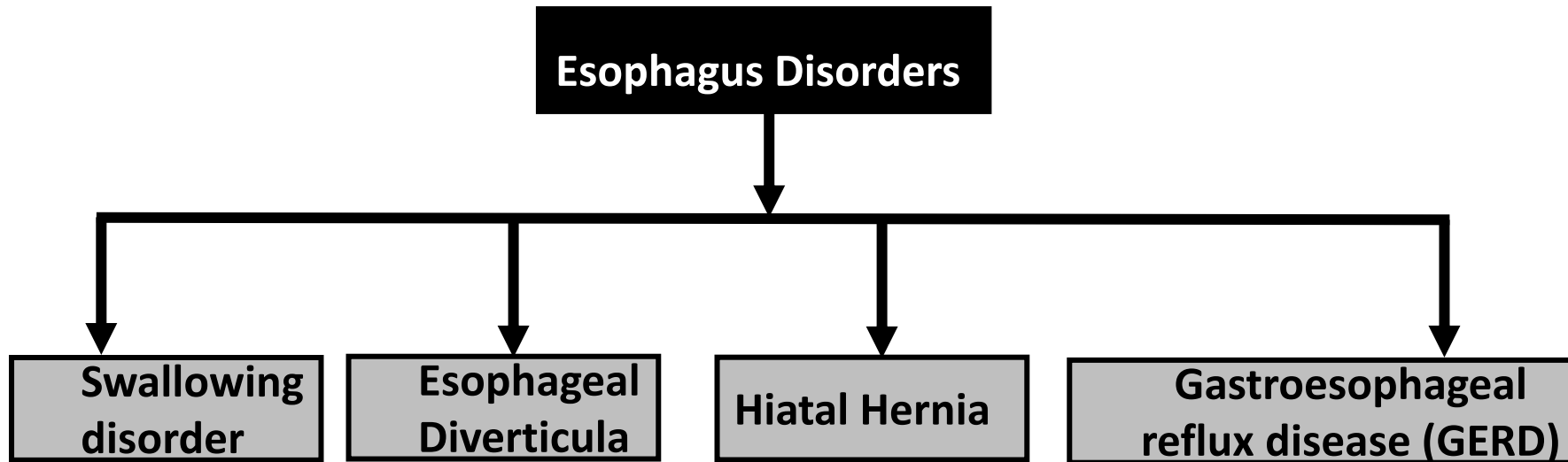
# Pathophysiology I

## Chapter (5): Gastrointestinal disorders

- Disorders of the esophagus
- Disorders of the stomach
- Disorders of the small and large intestines

# Gastrointestinal disorders

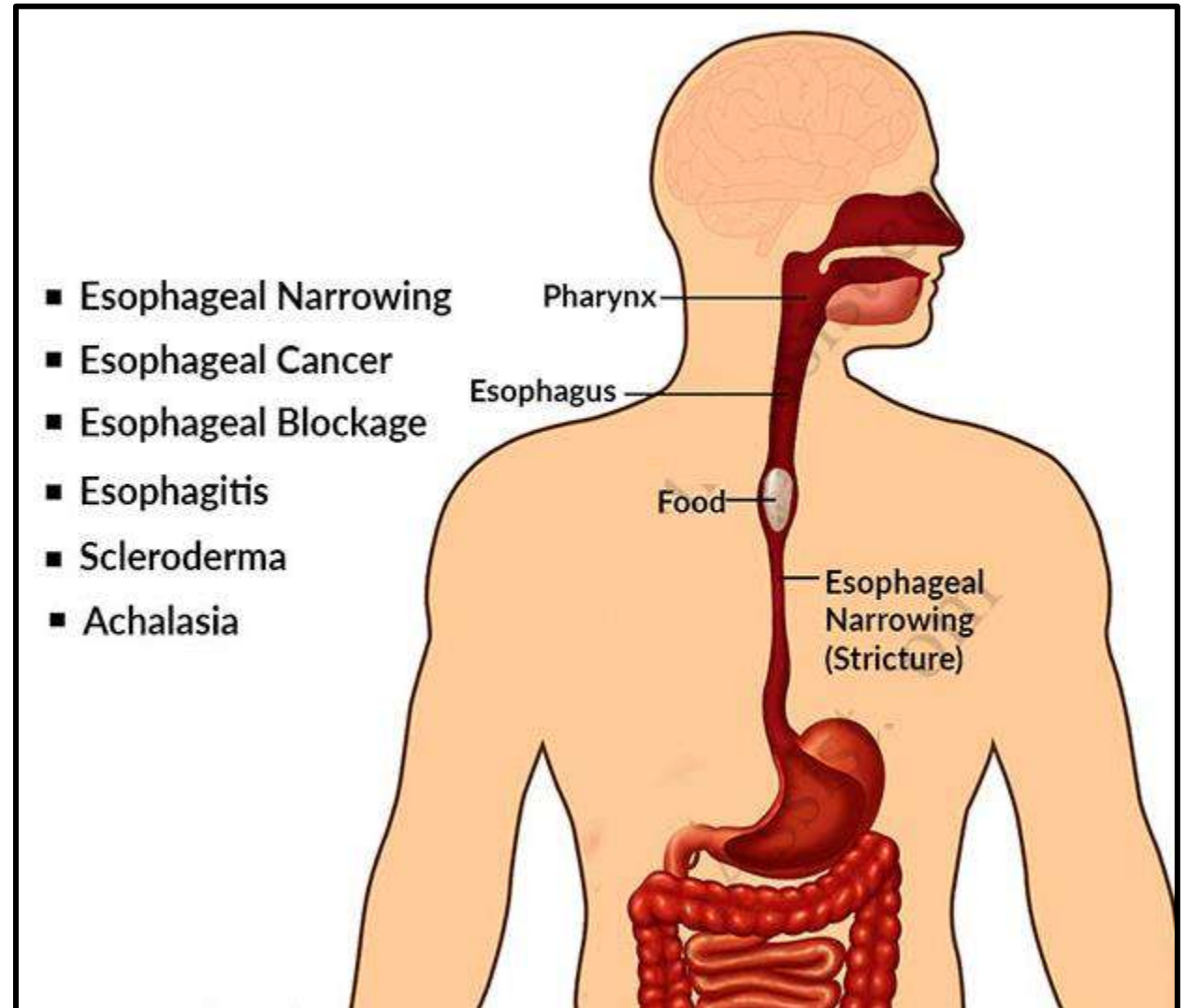
- Disorders of the esophagus



# Gastrointestinal disorders

## Disorders of the esophagus: **Swallowing disorder**

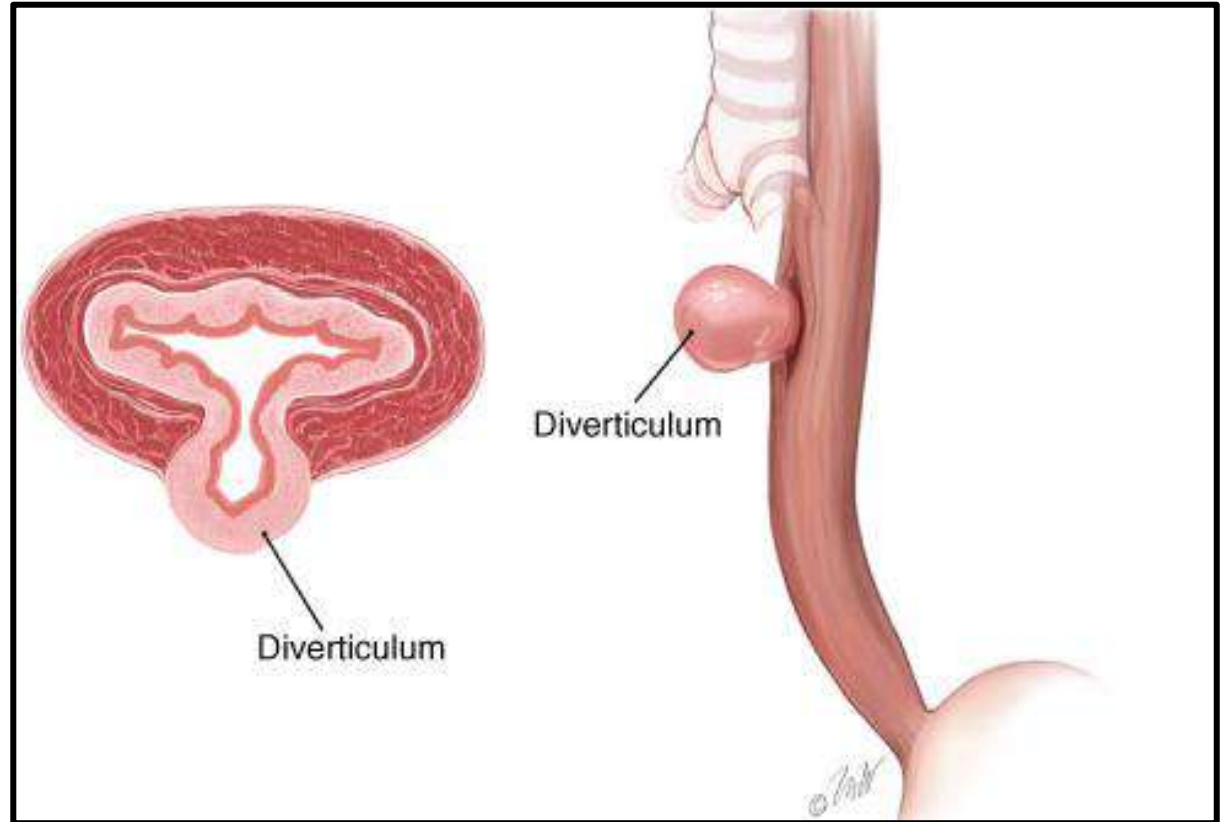
- Difficulty of swallowing is called dysphagia.
- Causes
- Treatment
- **Main complication is pulmonary aspiration causing pulmonary pneumonia**



# Gastrointestinal disorders

## Disorders of the esophagus: **Esophageal Diverticula**

- It is an outpouching of the esophageal wall.
- Causes
- **Diagnosis: barium dye, GI endoscopy**
- Treatment



# Gastrointestinal disorders

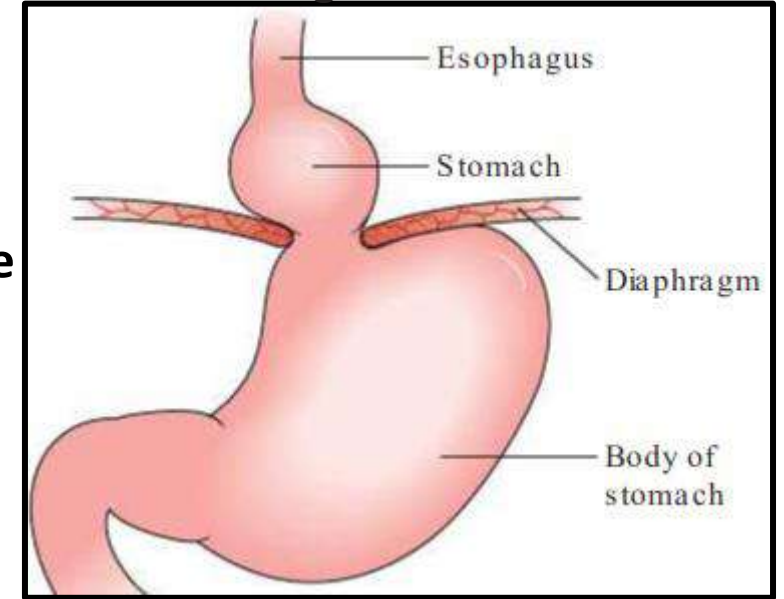
## Disorders of the esophagus: **Hiatal Hernia**

- It is projection of the stomach through the esophageal hiatus of the diaphragm.

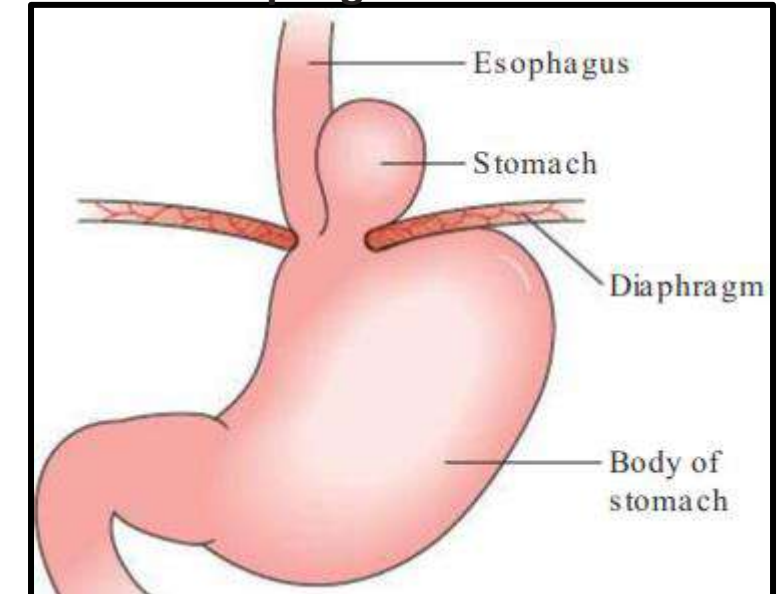
### Symptoms

- Chest pain
  - Severe heartburn
  - Abdominal pain
  - Frequent burping
  - Difficulty in swallowing
- 
- **Causes: severe cough, repeated vomiting, lifting heavy things**
  - **Treatment**

Sliding hiatal hernia



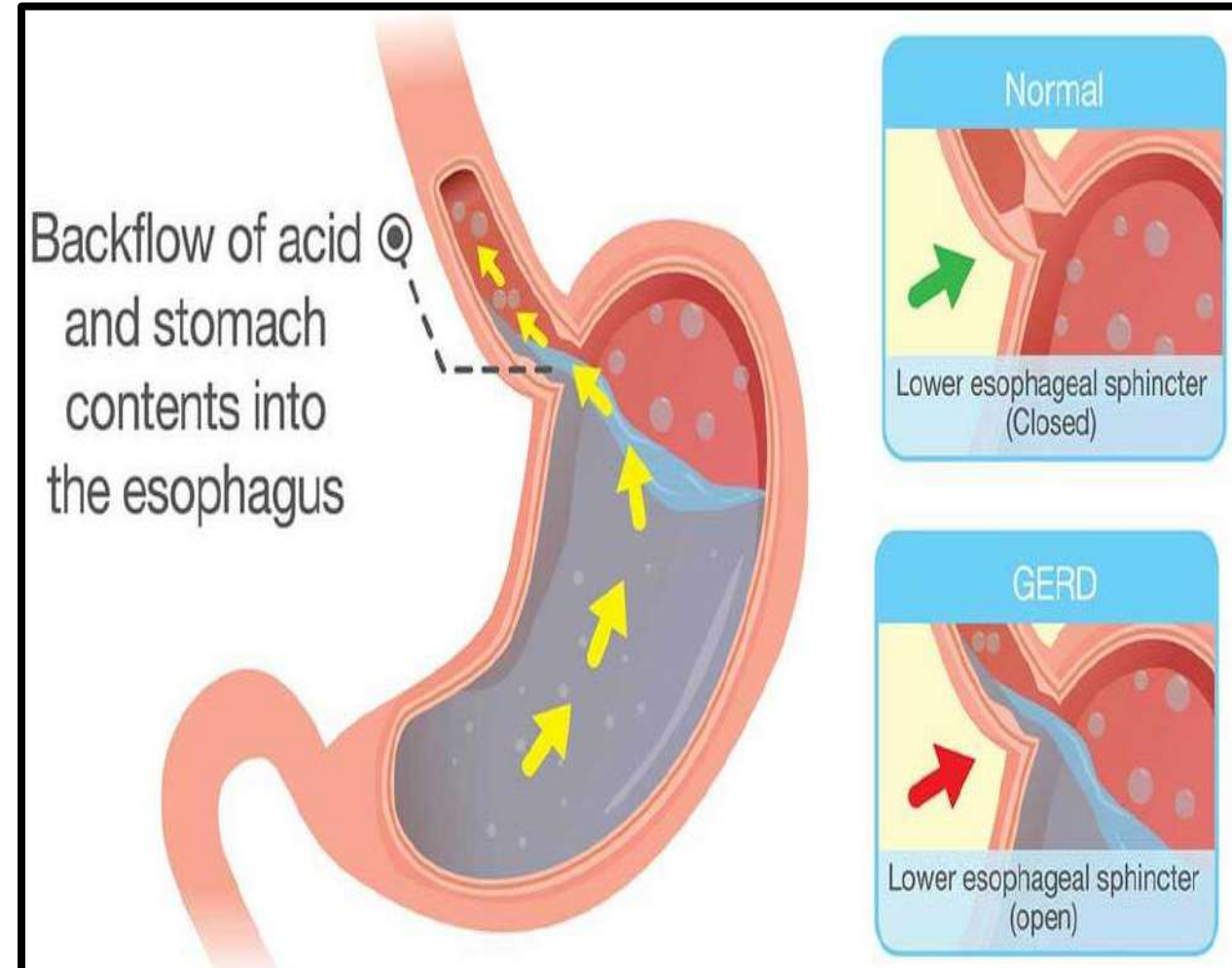
Paraesophageal hiatal hernia



# Gastrointestinal disorders

## Disorders of the esophagus: **Gastroesophageal reflux disease (GERD)**

- It refers to the **backward movement of gastric contents into the esophagus.**
- **Causes**
- **Symptoms**
  - Heartburn
  - Burping
  - Chest pain
  - Cough and hoarseness
- **Diagnosis**
  - Radiography using a contrast barium
  - Esophagoscopy
  - Esophageal pH monitoring





# Gastrointestinal disorders

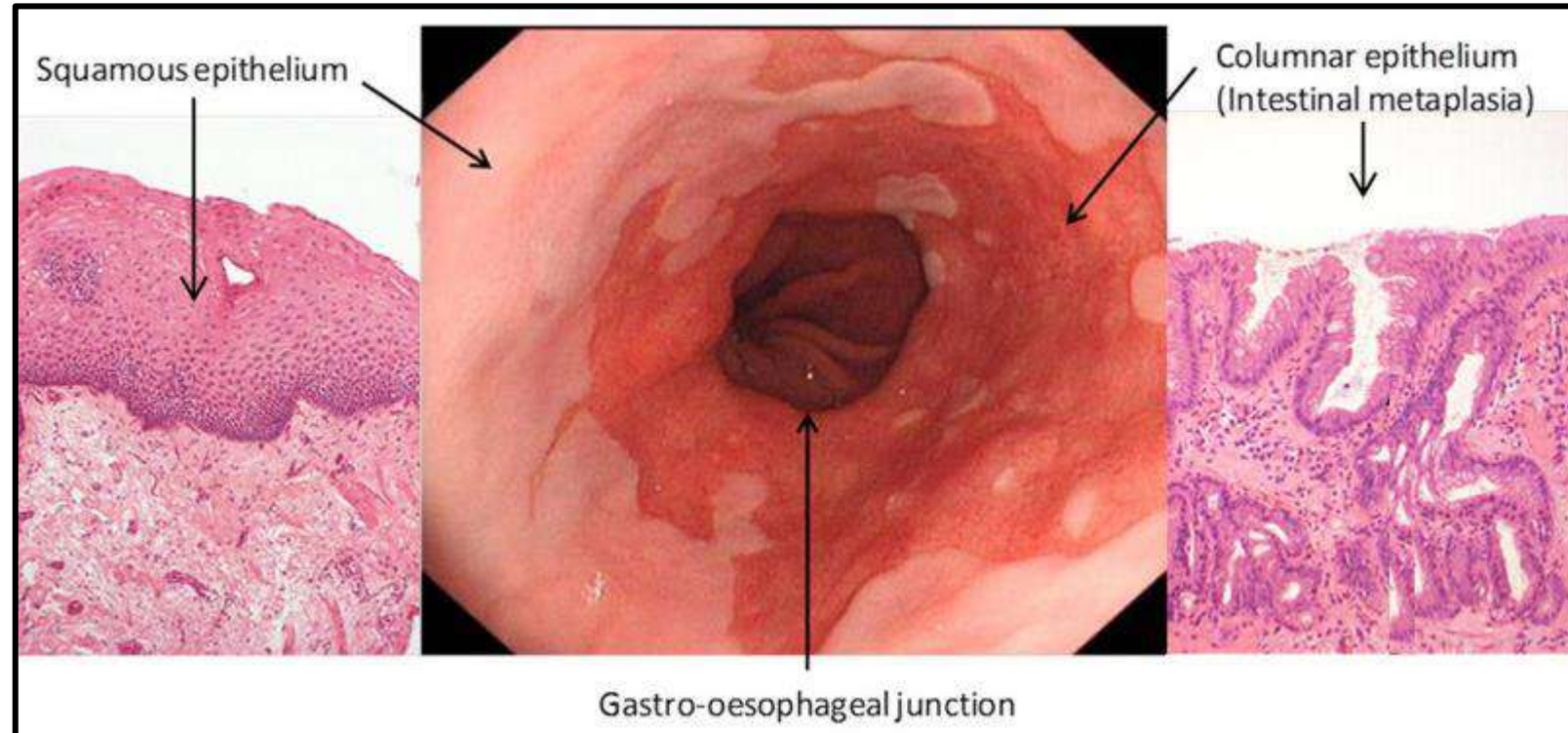
Disorders of the esophagus: **Gastroesophageal reflux disease (GERD)**

## Treatment

- Life style changes
- Pharmacologic treatment: antacids, and inhibitors of gastric acid secretion.
- Surgery

## Complications of GERD

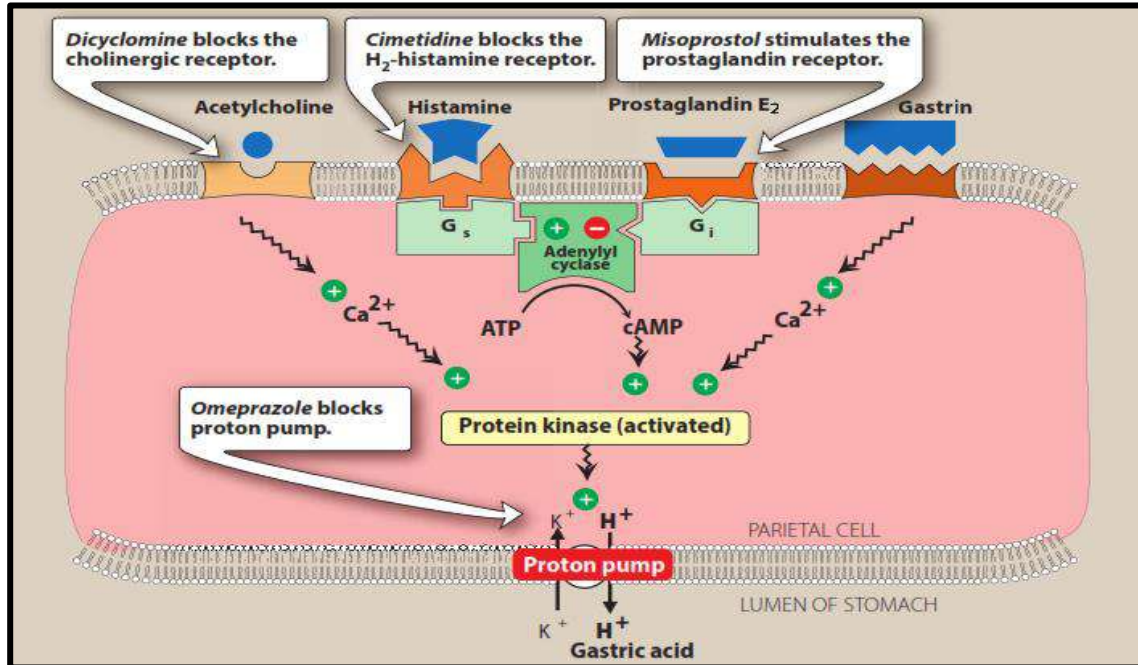
- Esophageal ulcer
- Barrett esophagus



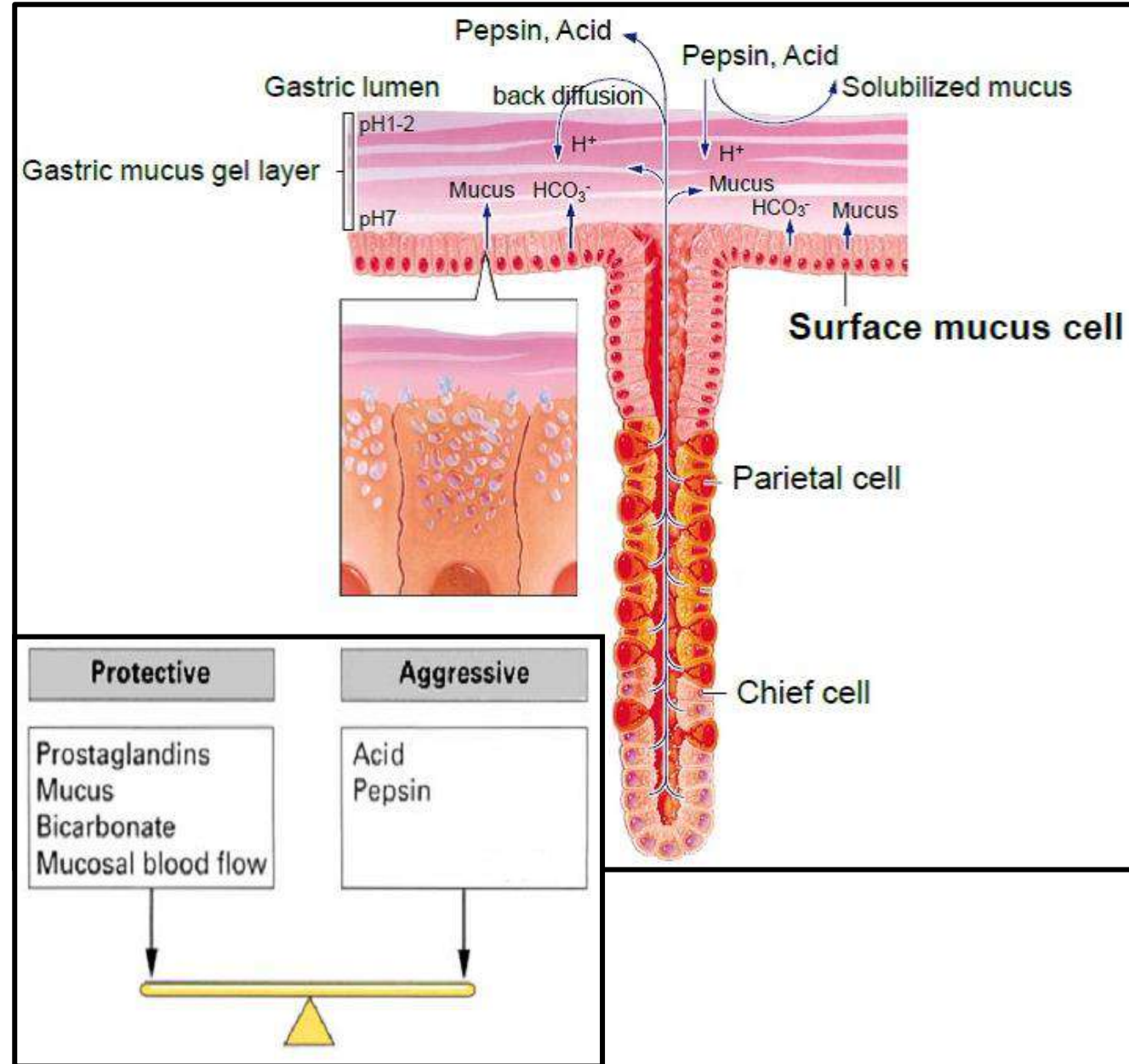
# Gastrointestinal disorders

## Disorders of the stomach: **Gastritis**

### ■ Gastric mucosal barrier



HCl secretion from parietal cell





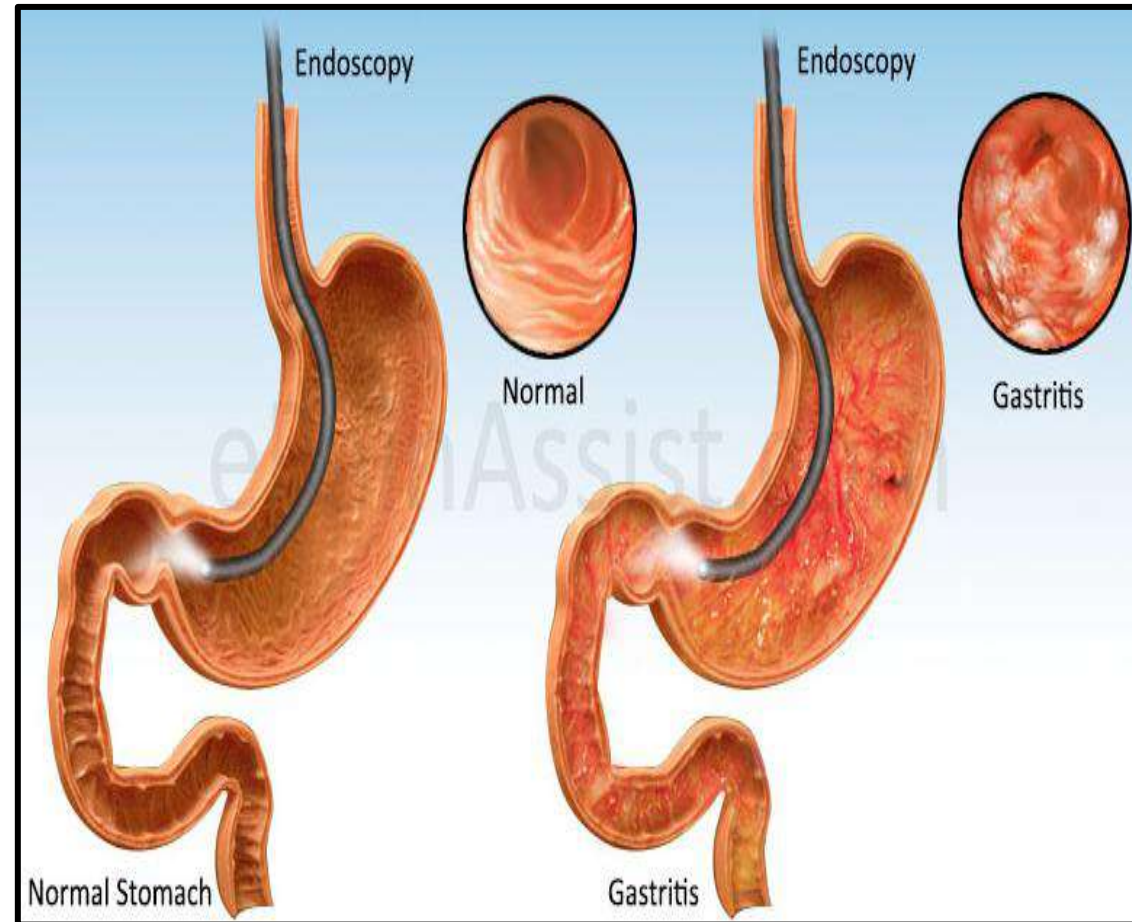
# Gastrointestinal disorders

## Disorders of the stomach: **Gastritis**

- Gastritis refers to inflammation of the gastric mucosa.
  - Acute gastritis
  - Chronic gastritis

### Acute gastritis

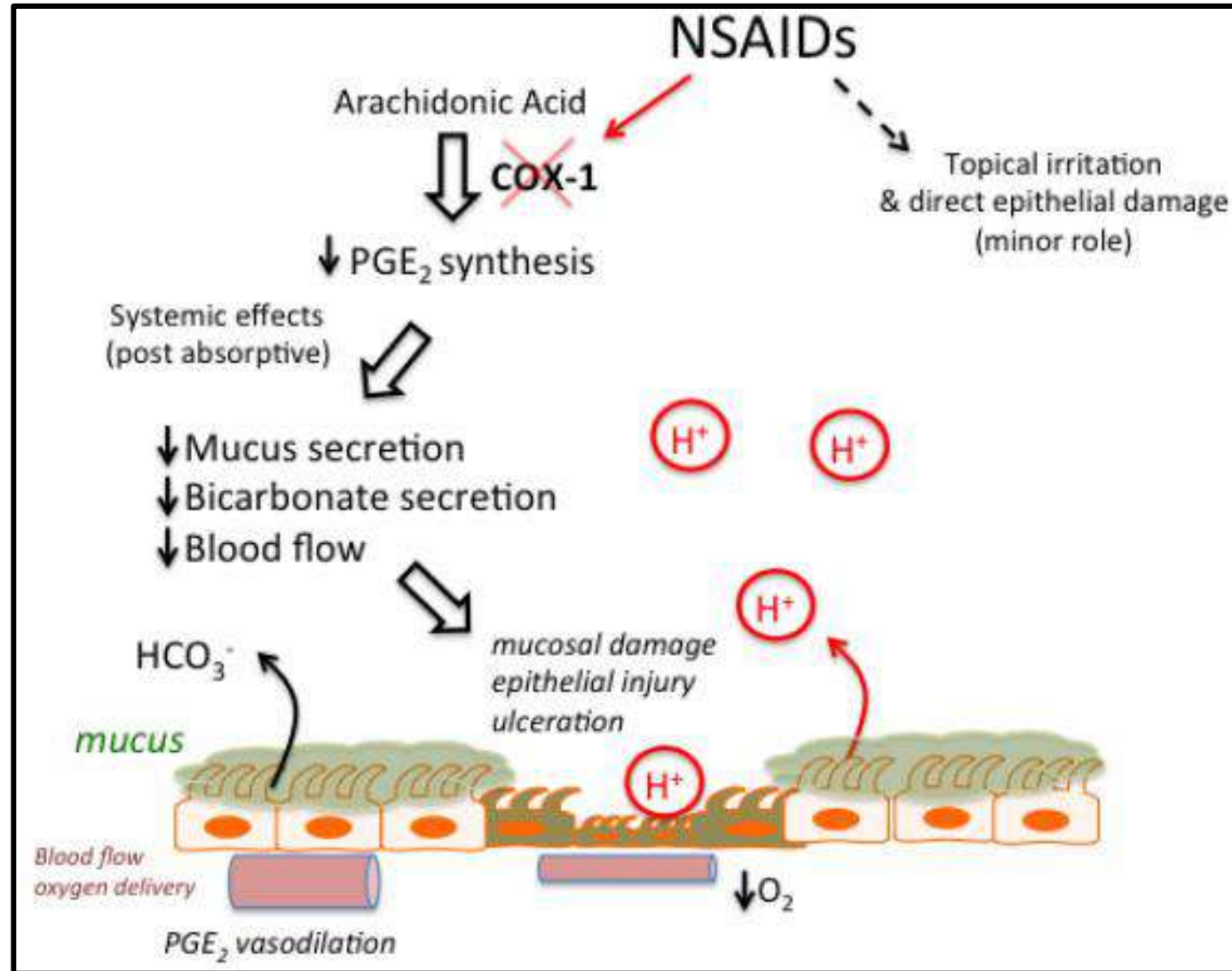
- Causes: The condition is commonly associated with local irritants as:
  - Aspirin or other NSAIDs
  - Oral corticosteroid drugs
  - Alcohol
  - Chemotherapy drugs
  - Gastric radiation
  - Spicy food



# Gastrointestinal disorders

## Disorders of the stomach: **Gastritis**

- Gastric mucosal barrier
- Prostaglandins: PGE<sub>2</sub>
- Gastritis refers to inflammation of the gastric mucosa.
  - Acute gastritis
  - Chronic gastritis



# Gastrointestinal disorders

## Disorders of the stomach: **Gastritis**

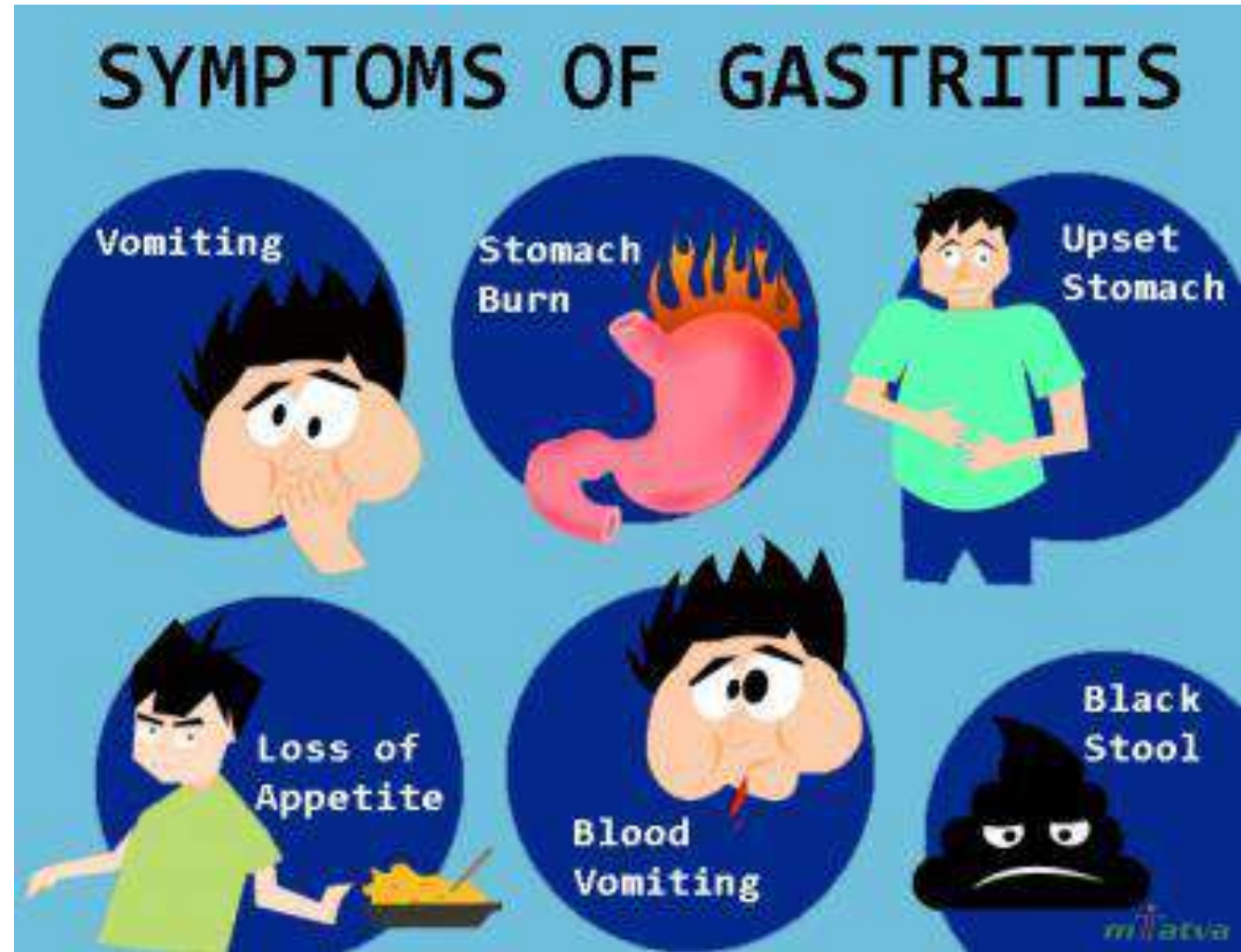
### Acute gastritis

#### ■ Symptoms

- Heart burning
- Abdominal pain and bloating
- Vomiting
- Loss of appetite
- Fullness feeling
- Bloody vomiting (**Hematemesis**)
- Black stool (**Melena**)

#### ■ Treatment

- Self-limiting disorder
- H2-blockers
- Proton pump inhibitors



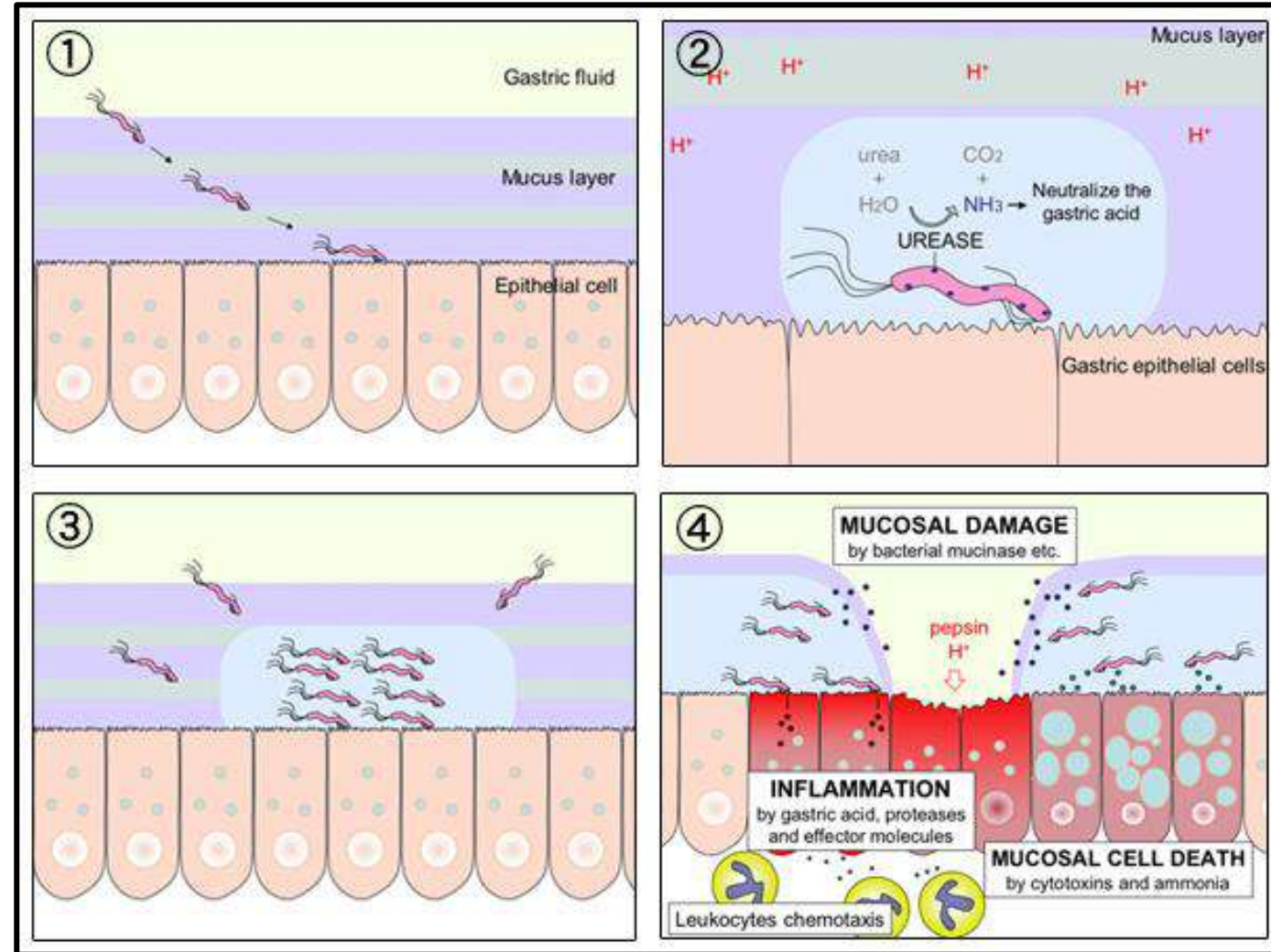


# Gastrointestinal disorders

## Disorders of the stomach: **Gastritis**

- Chronic gastritis
- There are three major types of chronic gastritis:
  - [Helicobacter pylori gastritis](#)
  - Autoimmune gastritis
  - Chemical gastropathy

- Diagnosis

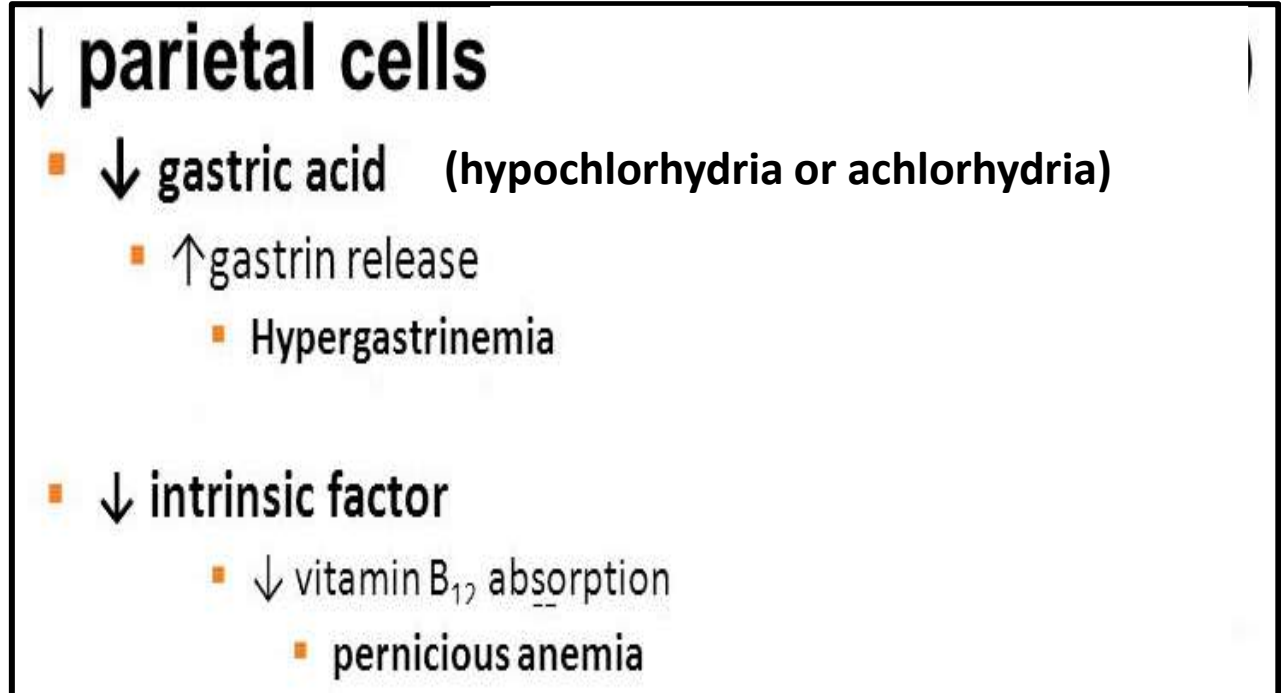




# Gastrointestinal disorders

## Disorders of the stomach: **Gastritis**

- Chronic gastritis
- There are three major types of chronic gastritis:
  - Helicobacter pylori gastritis
  - Autoimmune gastritis
  - Chemical gastropathy
- Autoimmune gastritis is associated with other autoimmune disorders such as type 1 diabetes mellitus, Hashimoto thyroid disease, and Addison disease.



# Gastrointestinal disorders

## Disorders of the stomach: **Gastritis**

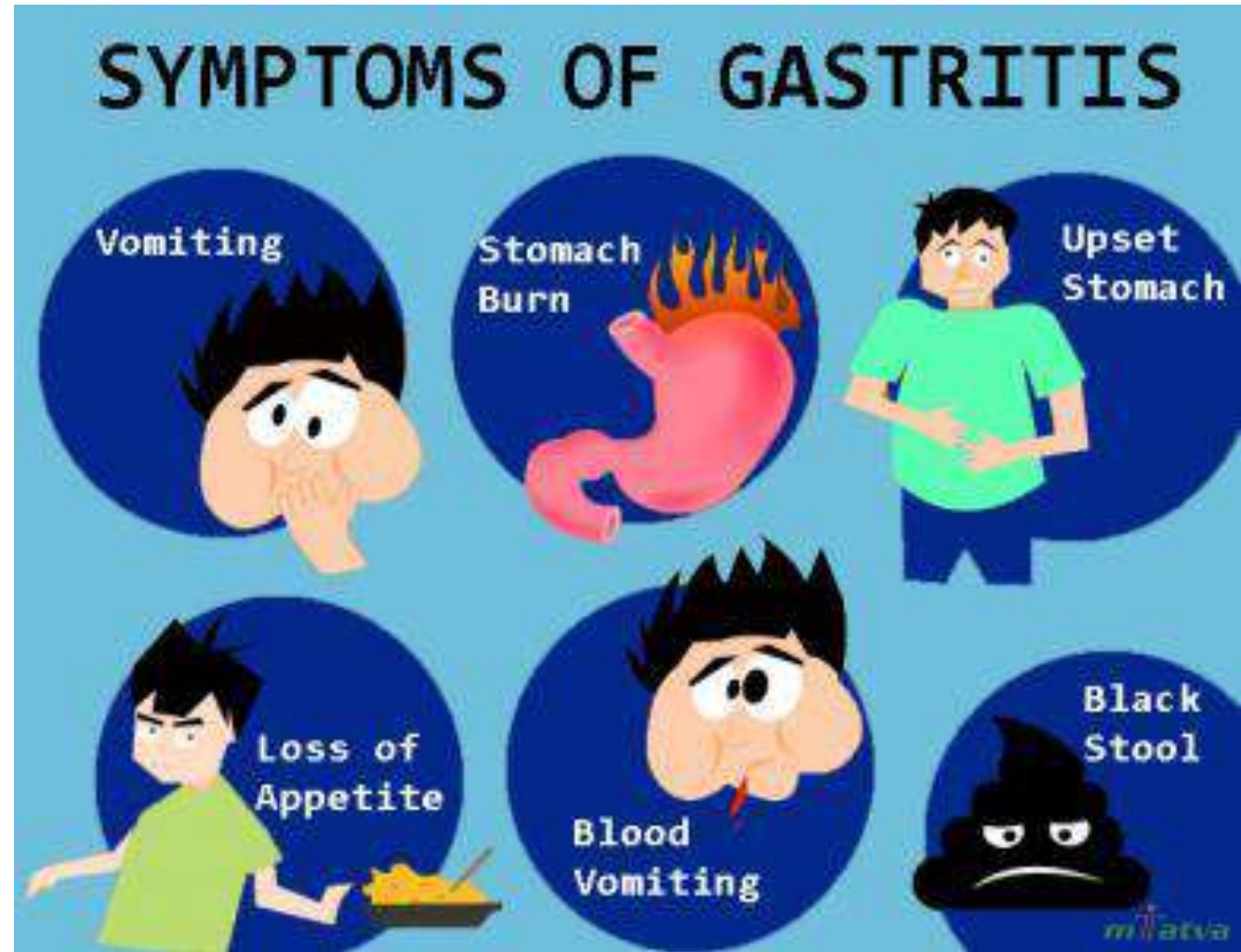
- Chronic gastritis
- There are three major types of chronic gastritis:
  - Helicobacter pylori gastritis
  - Autoimmune gastritis
  - Chemical gastropathy
- It results from reflux of alkaline duodenal contents, pancreatic secretions, and bile into the stomach.
- It is common in persons having gastroduodenostomy surgery and gallbladder disease.

# Gastrointestinal disorders

## Disorders of the stomach: **Gastritis**

### ▪ Symptoms

- Heart burning
- Abdominal pain and bloating
- Vomiting
- Loss of appetite
- Fullness feeling
- Bloody vomiting
- Black stool



# Gastrointestinal disorders

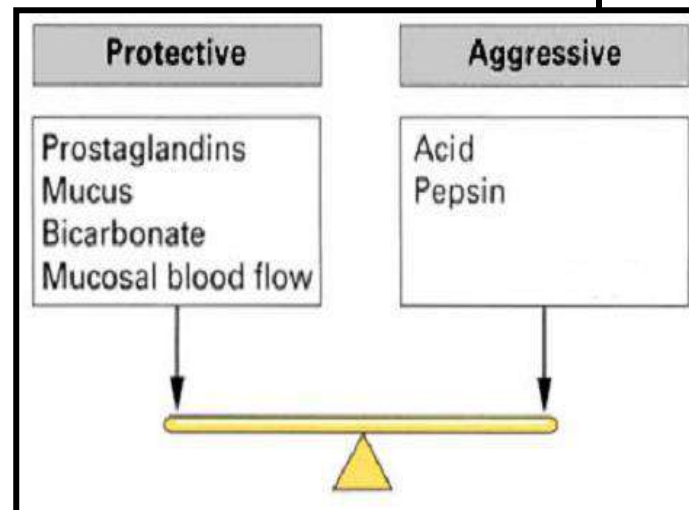
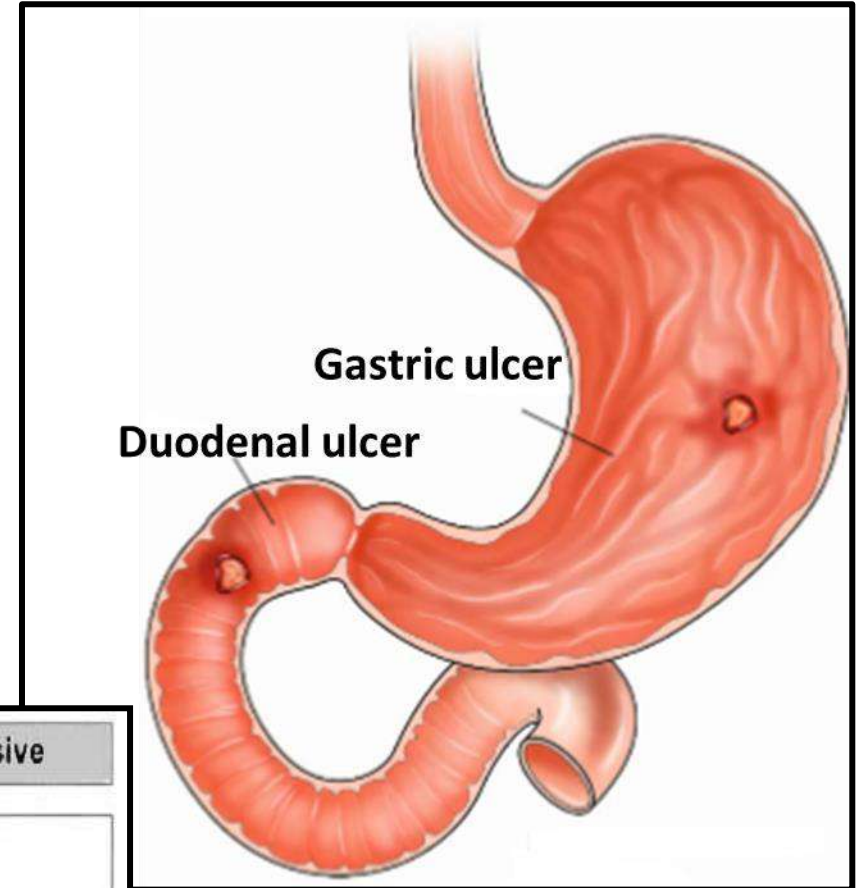
## Peptic ulcer

- It is a group of ulcerative disorders affecting gastric and intestinal (duodenum) mucosa.
  - Gastric ulcer
  - Duodenal ulcer

## Causes

- NSAIDs and corticosteroids
- *H. pylori* infection
- Stress: Curling ulcer and Cushing ulcer
- Zollinger-Ellison Syndrome (Gastrinomas)

## Risk factors

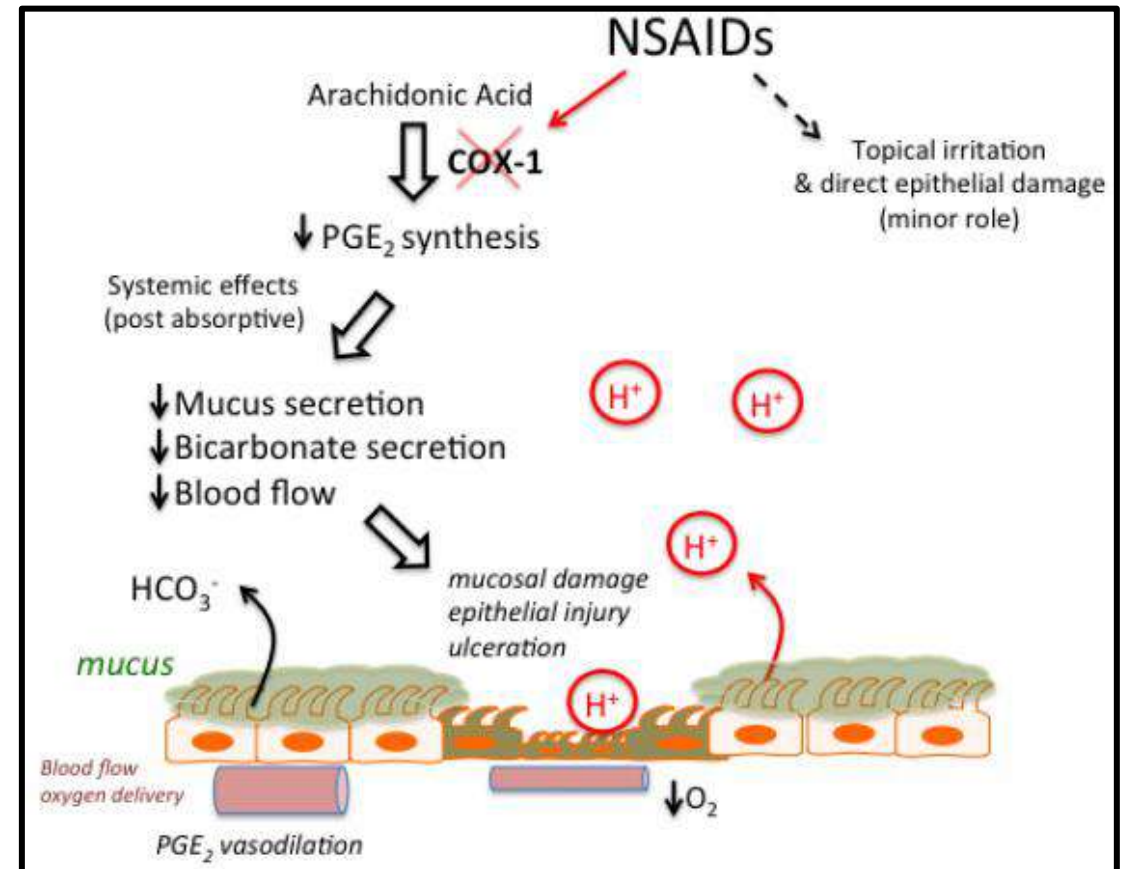
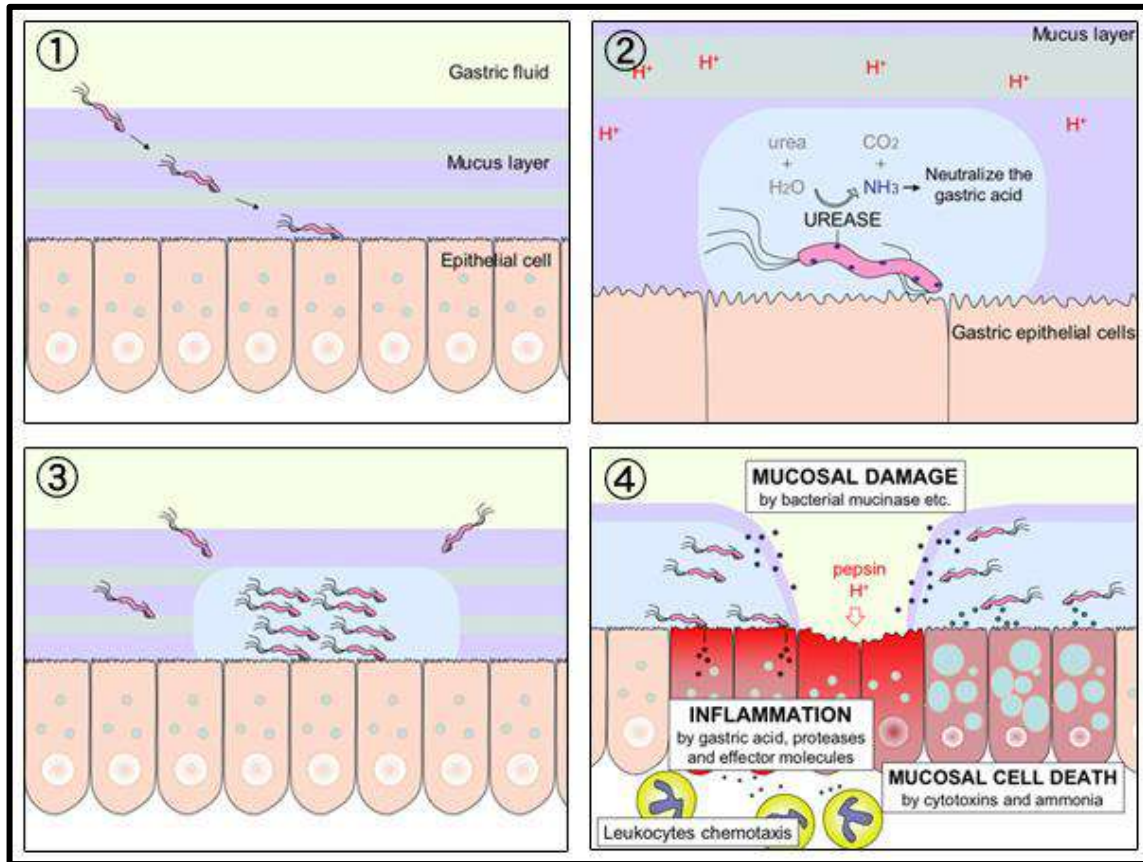




# Gastrointestinal disorders

## Peptic ulcer

### ■ Pathophysiology



# Gastrointestinal disorders

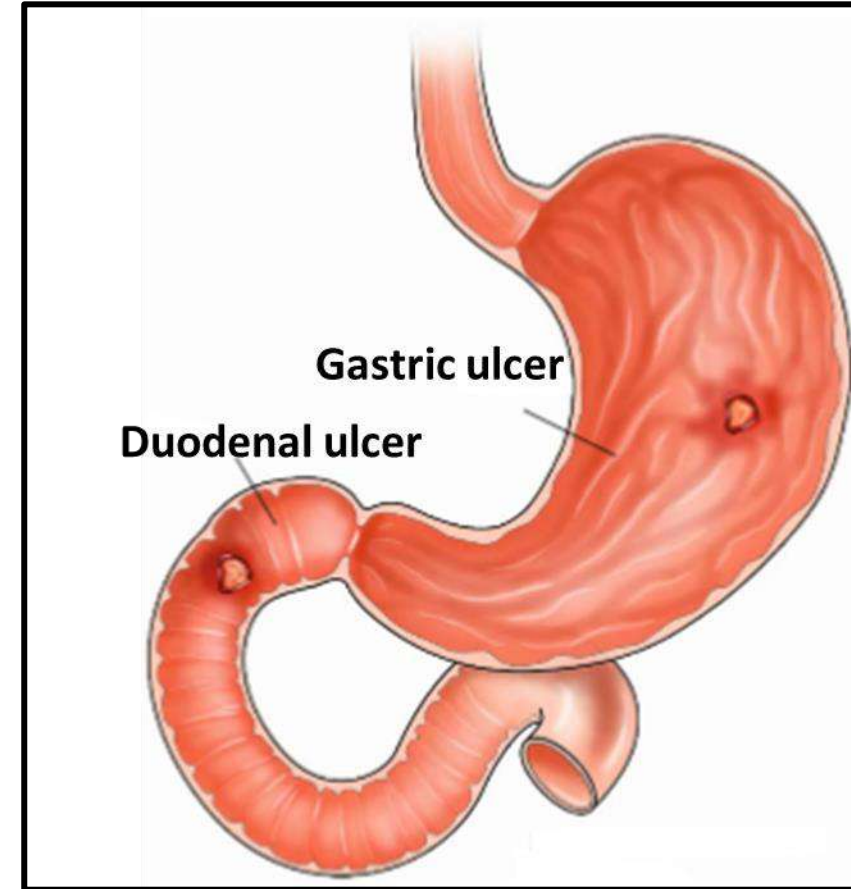
## Peptic ulcer

### Symptoms

- Abdominal pain: burning and cramp-like
- Bloating
- Loss of appetite, weight gain ??????
- Nausea and vomiting

### Complications

- Hemorrhage
  - Bloody vomiting (**Hematemesis**)
  - Black stool (**Melena**)
- Perforation: Peritonitis
- Penetration
- Gastric outlet obstruction



# Gastrointestinal disorders

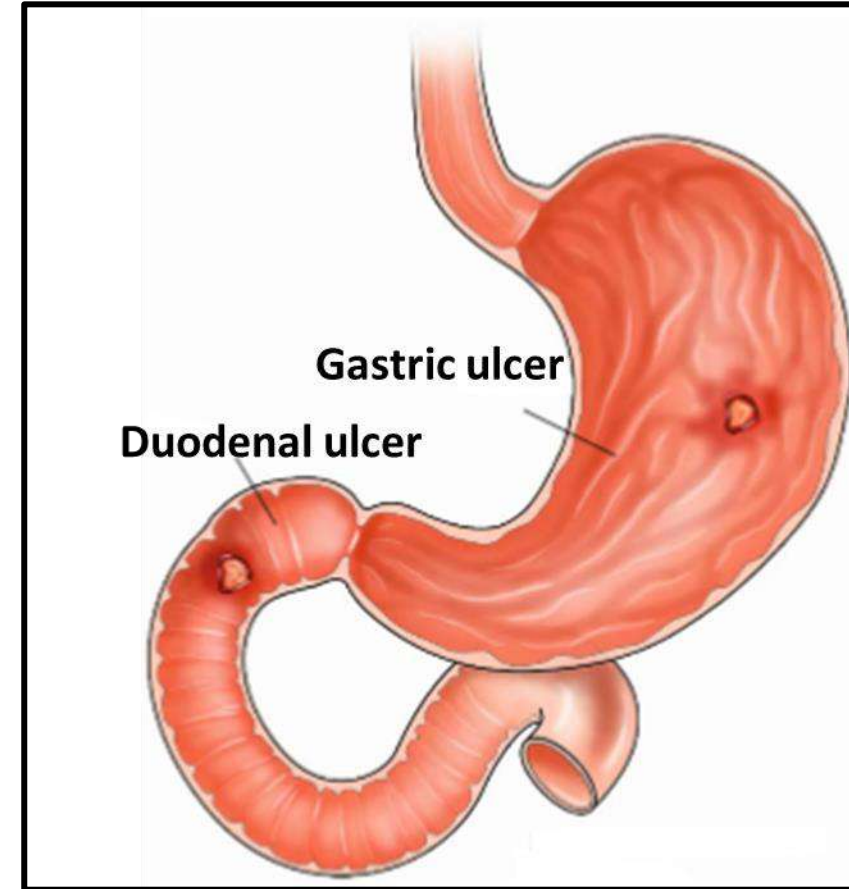
## Peptic ulcer

### Diagnosis

- Laboratory tests
- Radiologic imaging
- Endoscopy: gastric and duodenal endoscopy

### Treatment

- Eradication of *H. pylori*: combination therapy including the use of two antibiotics (clarithromycin, amoxicillin, metronidazole) with proton pump inhibitor.
- H2-blocker
- Proton pump inhibitors
- PGE2 analogue

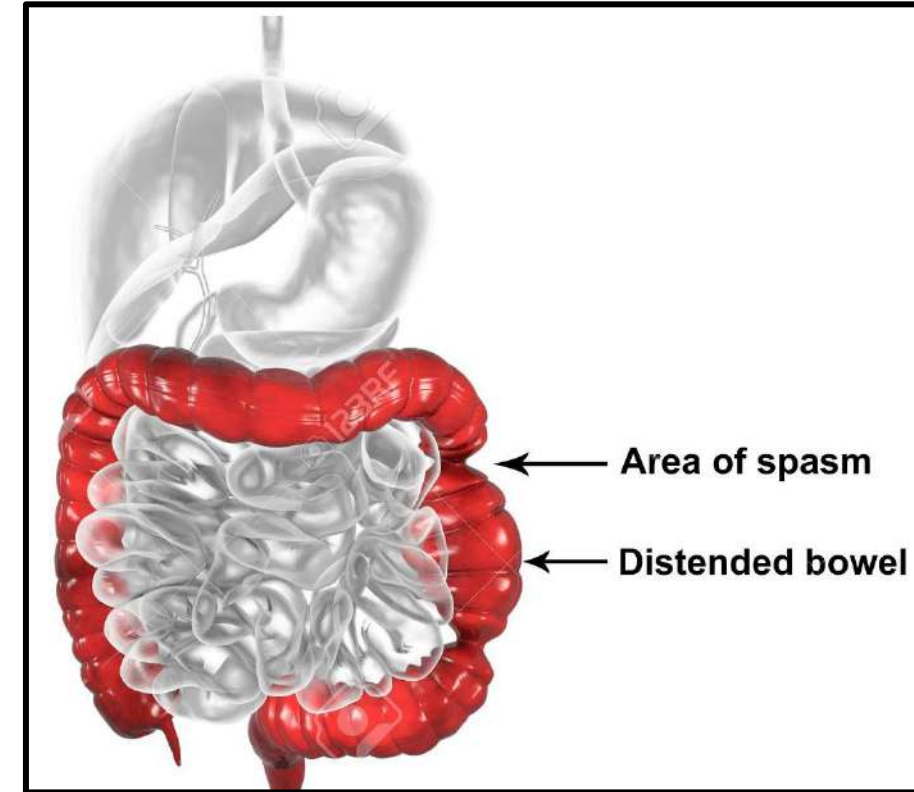


# Gastrointestinal disorders

## Intestinal disorders

### 1. Irritable bowel syndrome (IBS)

- It is a functional GI disorder affecting the large intestine.
- Cramping, abdominal pain, bloating, and diarrhea or constipation, or both.
- Women more than men.





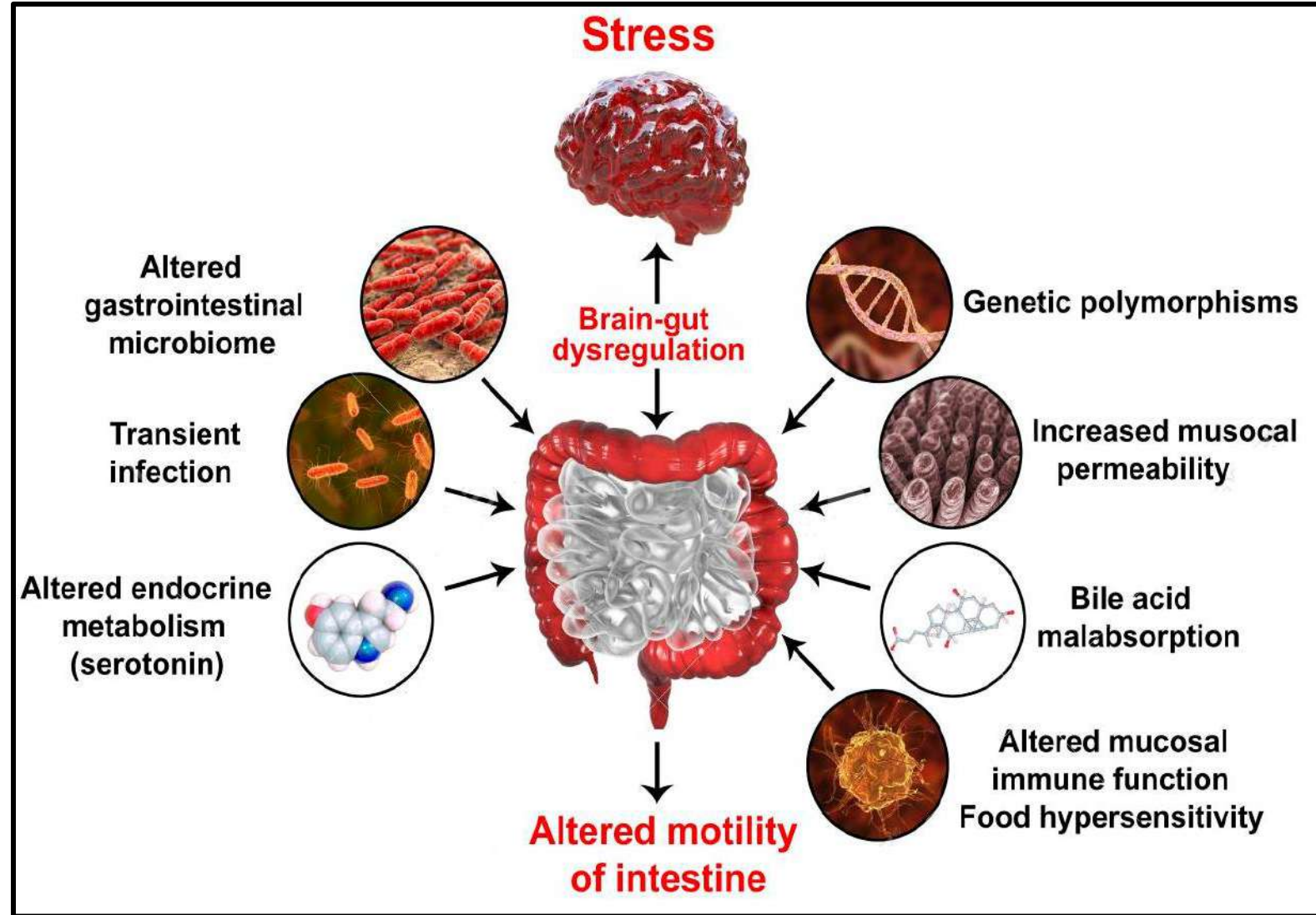
# Gastrointestinal disorders

## Intestinal disorders

### 1. Irritable bowel syndrome (IBS)

- Causes

- Pathogenesis



# Gastrointestinal disorders

## Intestinal disorders

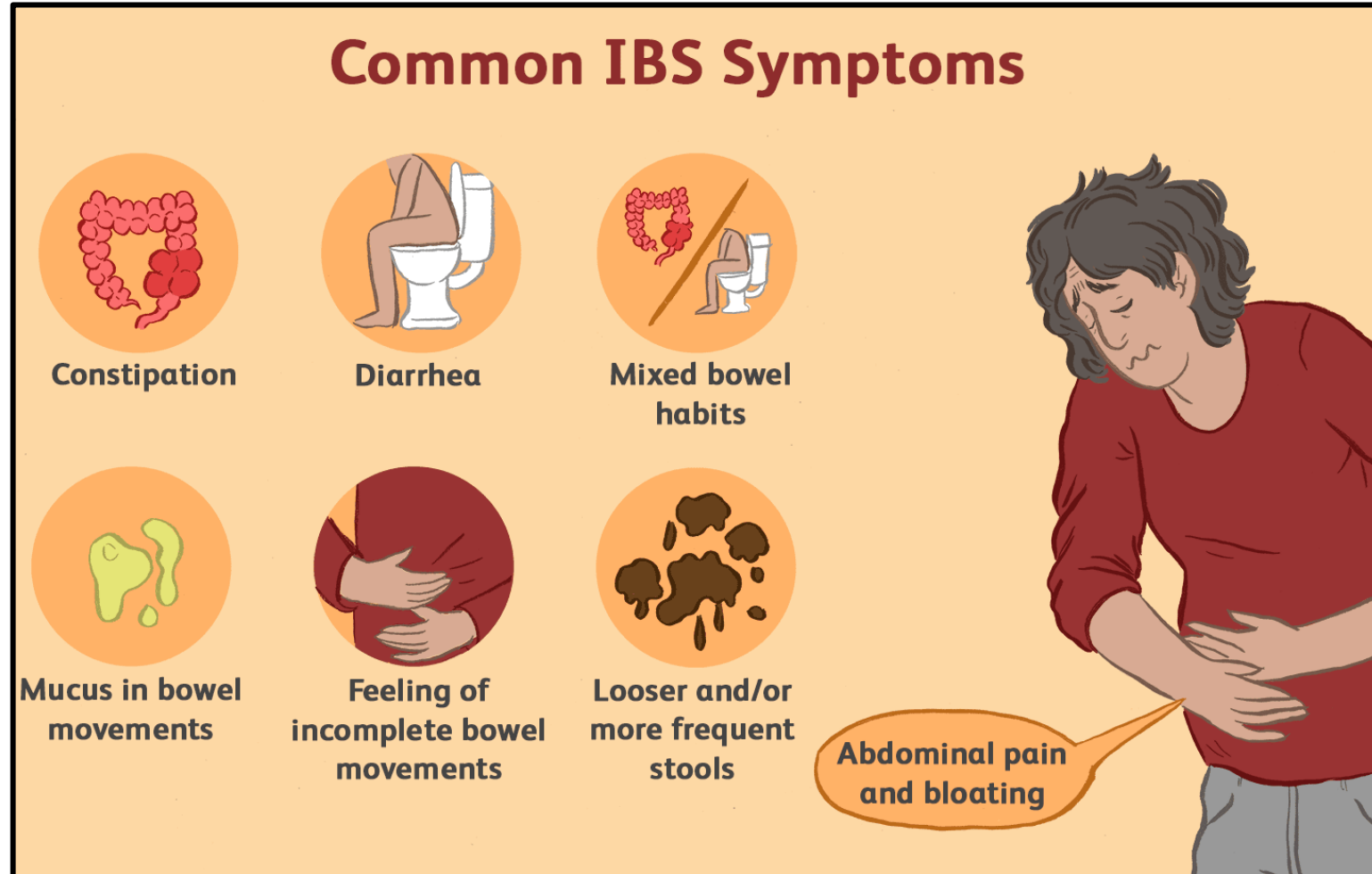
### 1. Irritable bowel syndrome (IBS)

#### ▪ Symptoms

#### ▪ Diagnosis

#### ▪ Treatment

- Education of patient
- Anticholinergic
- Antispasmodics
- Anti-diarrheal
- Laxatives

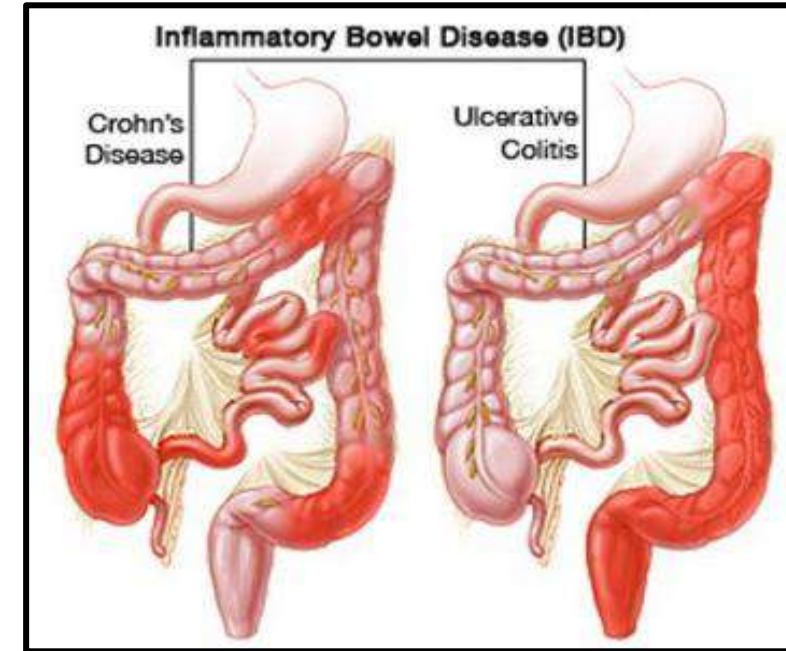


# Gastrointestinal disorders

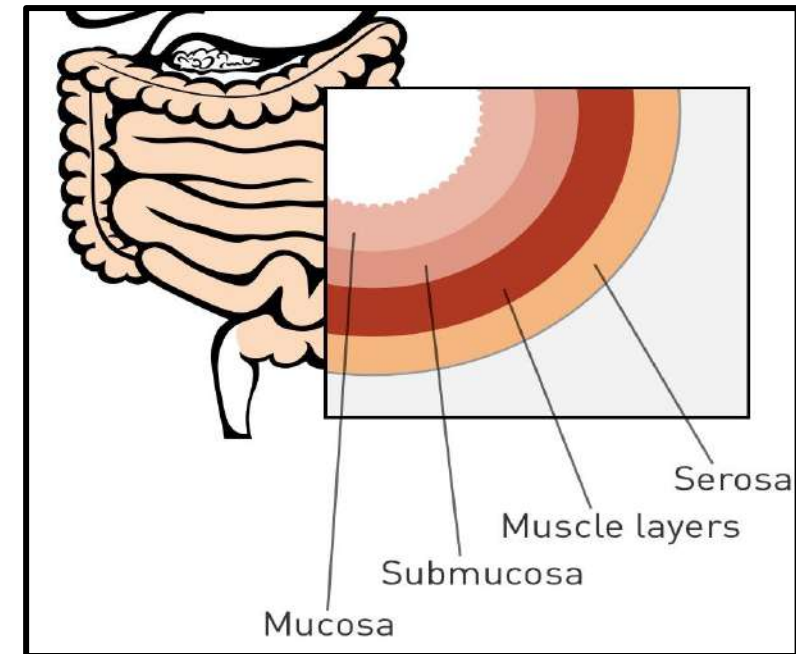
## Intestinal disorders

### 2. Inflammatory bowel disease (IBD)

- Inflammatory diseases affecting the small intestine and colon.
  - Crohn's disease:** a granulomatous type of inflammatory response
  - Ulcerative colitis:** an ulcerative inflammatory response



CHARACTERISTIC	CROHN DISEASE	ULCERATIVE COLITIS
Types of inflammation	Granulomatous	Ulcerative and exudative
Level of involvement	Primarily submucosal	Primarily mucosal
Extent of involvement	Skip lesions	Continuous
Areas of involvement	Primarily ileum, secondarily colon	Primarily rectum and left colon
Diarrhea	Common	Common
Rectal bleeding	Rare	Common
Fistulas	Common	Rare
Strictures	Common	Rare
Perianal abscesses	Common	Rare
Development of cancer	Uncommon	Relatively common



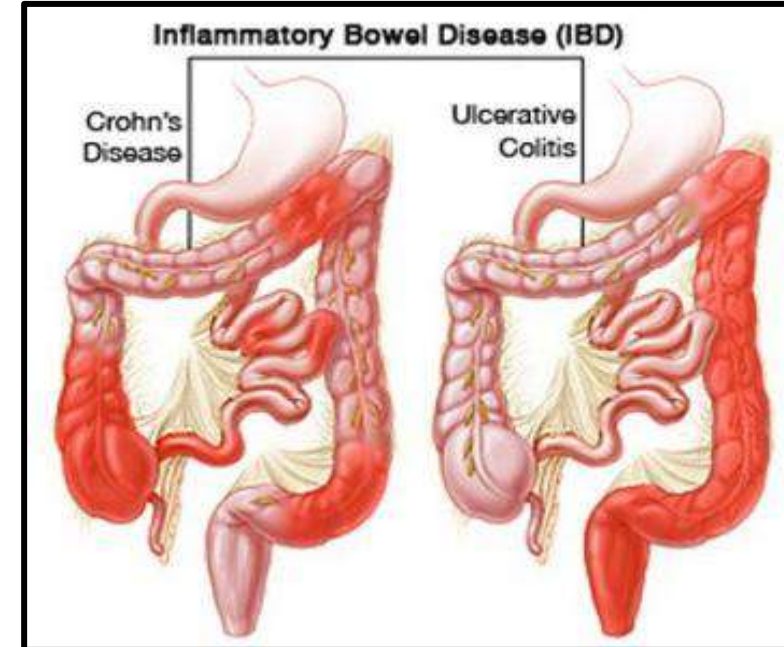
# Gastrointestinal disorders

## Intestinal disorders

### Inflammatory bowel disease (IBD)

#### ■ Causes

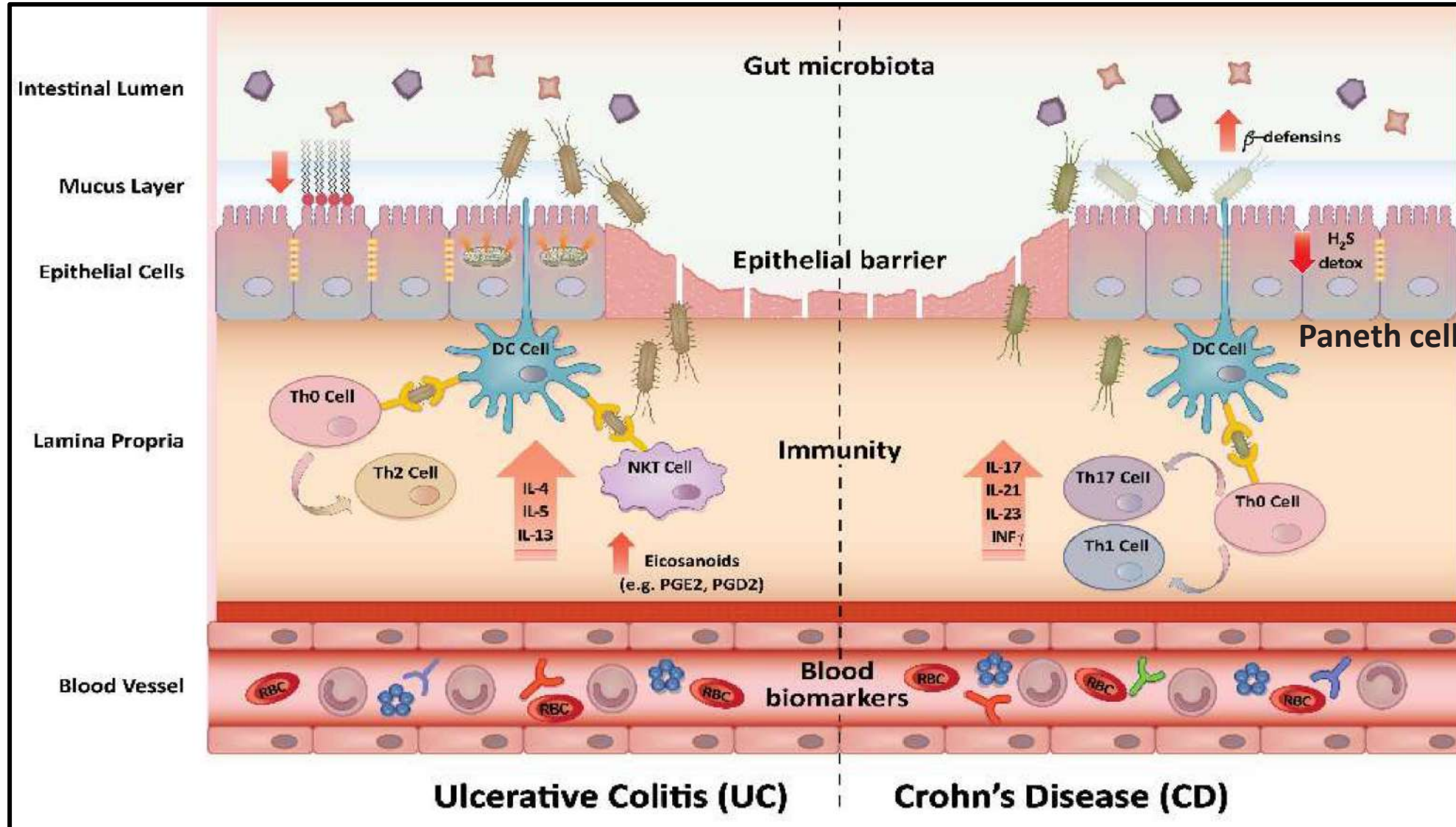
- Intestinal microbiota: HOW?
- Intestinal epithelial dysfunction: HOW?
- Unusual immune responses: HOW?
- Genetic mutations: **NOD2 (nucleotide oligomerization domain2), HOW?**





# Gastrointestinal disorders

## Inflammatory bowel disease (IBD): Pathogenesis

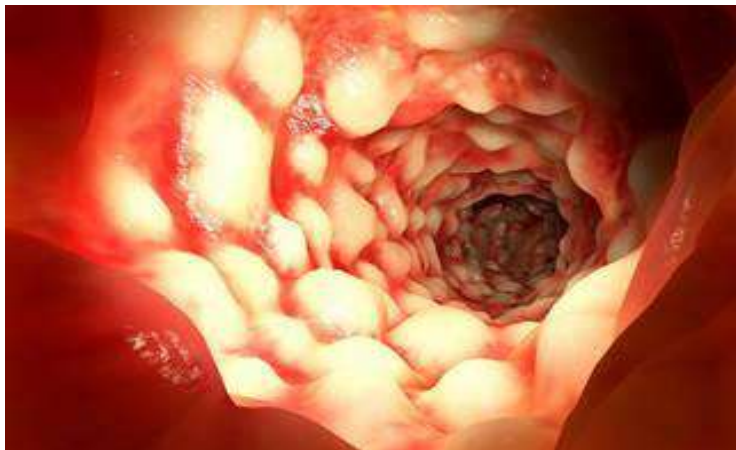


# Gastrointestinal disorders

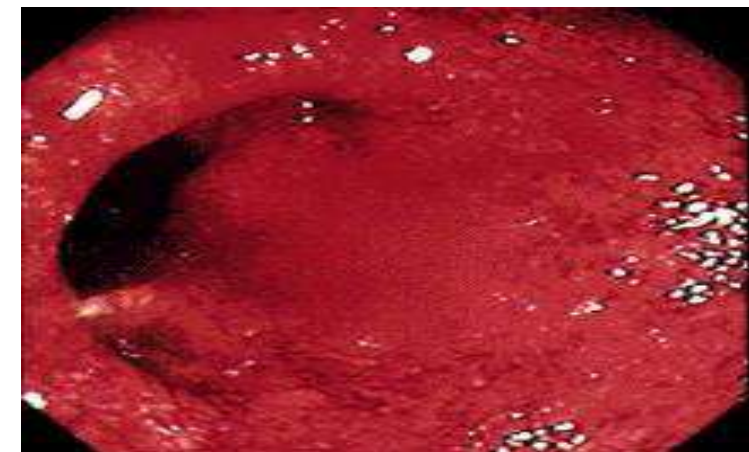
- Symptoms

- Uveitis
- Arthritis
- Skin lesions

TABLE 45.1 DIFFERENTIATING CHARACTERISTICS OF CROHN DISEASE AND ULCERATIVE COLITIS		
CHARACTERISTIC	CROHN DISEASE	ULCERATIVE COLITIS
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Perianal abscesses	Common	Rare
Development of cancer	Uncommon	Relatively common



Granulomatous lesions (Cobblestone appearance)



Ulcerative lesions

# Gastrointestinal disorders

## Inflammatory bowel disease (IBD)

- **Diagnosis**
  - Endoscopy
  - CT scan
  - Contrast dye
  
- **Treatment**
  - Diet that is high in calories, vitamins, fibers and proteins is recommended. (avoid fats)
  - Total parenteral nutrition
  - Anti-inflammatory drugs
  - Antibiotics
  - Immunosuppressant drugs

**Many thanks, dear  
students and future  
pharmacists**