

GASTROENTEROLOGY

Primary Care Paramedicine

Module: 17

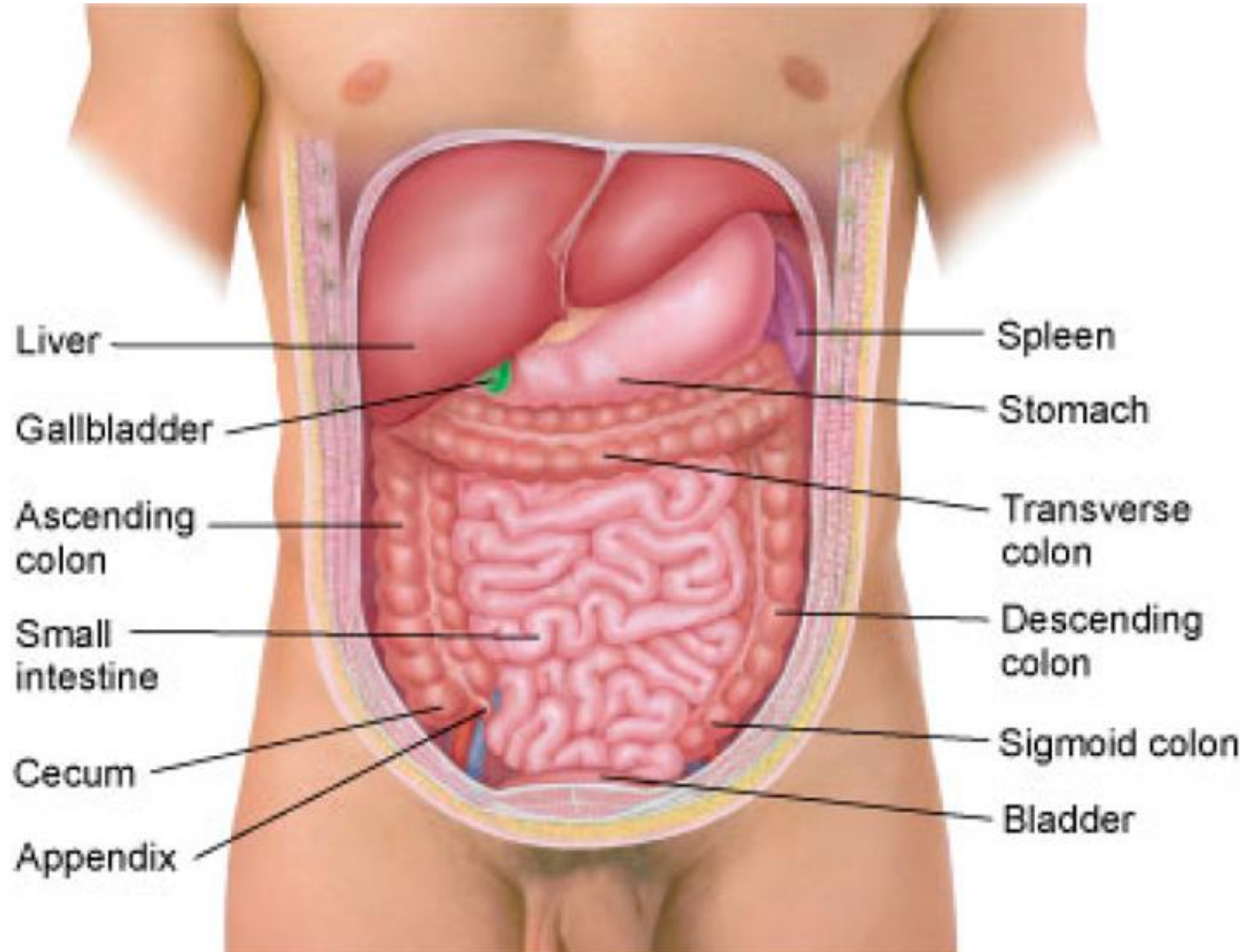
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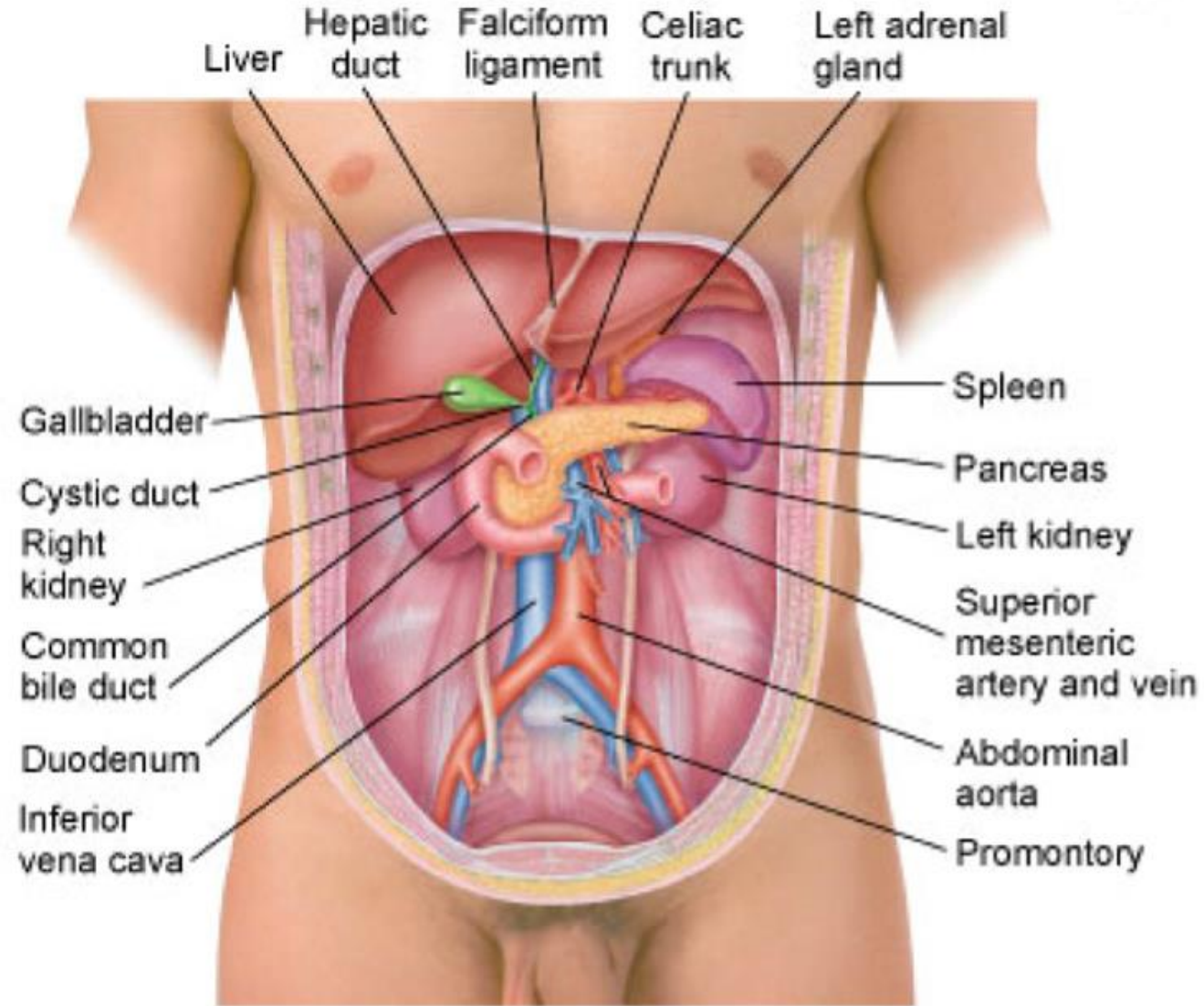


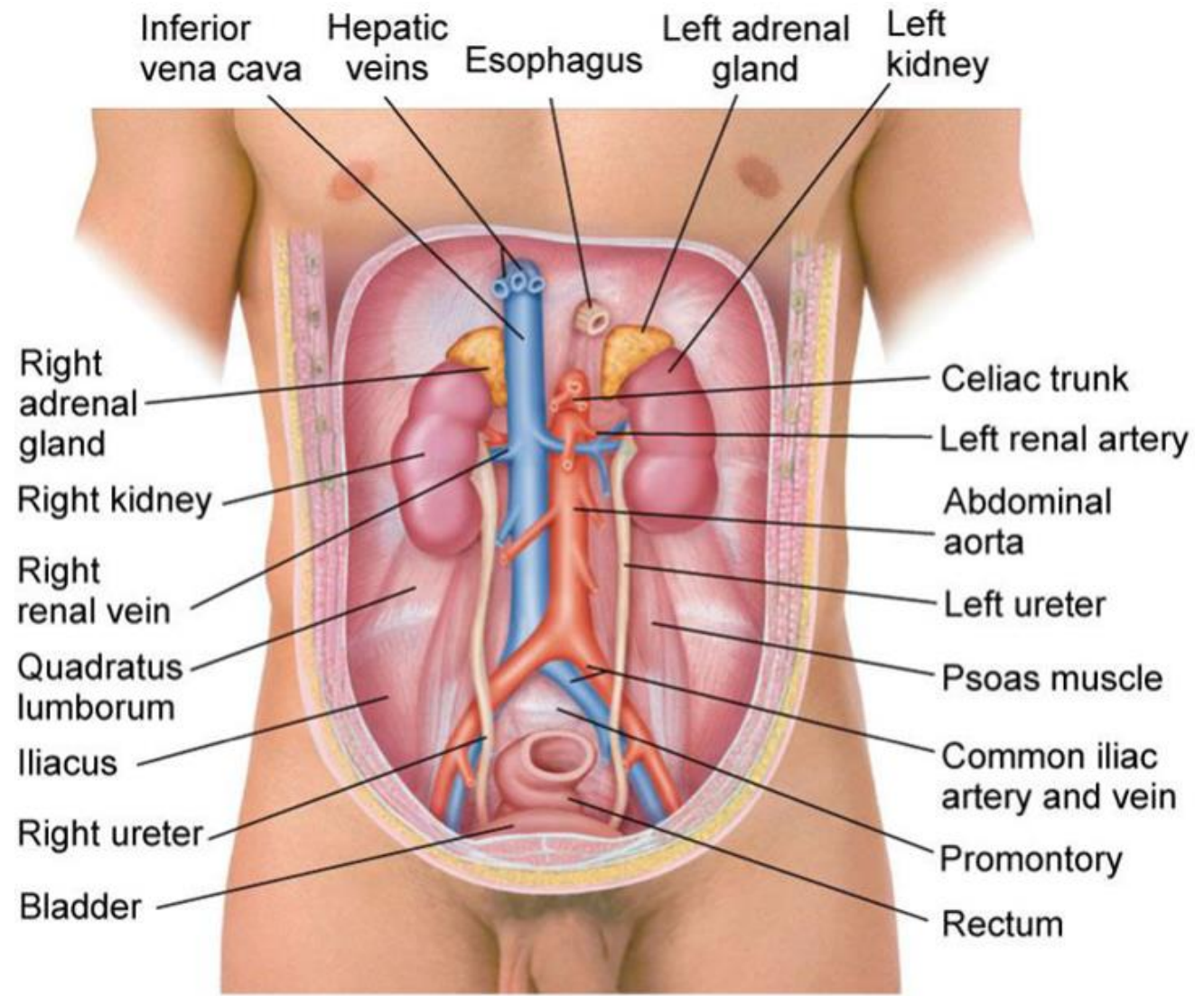
- Introduction
- Pathophysiology
- Specific illnesses

- GI complaints account for ~5% of all hospital visits
- Significant rise in the number of elderly patients affected
- Acute emergencies usually arise from chronic underlying problems

- Excessive alcohol consumption
- Excessive smoking
- Increased stress
- Ingestion of caustic substances
- Poor bowel habits







- Visceral
 - Dull, poorly localized
 - Originates from the walls of hollow organs
- Somatic
 - Sharp, localized pain
 - Originates from the walls of the body (e.g. skeletal muscle)
- Referred
 - Pain that originates in a region other than where it is felt

- Inflammation
- Distension
- Ischemia

- The Abdominal exam is performed
 - As part of the comprehensive physical examination
 - When patient presents with signs or symptoms of an abdominal disease process
 - As part of ruling in or out differential concerns

- It can involve the core examination skills in a particular sequence
 - Inspection
 - Auscultation
 - Percussion
 - Palpation

- Inspection
 - Pulsating masses
 - Distension is an ominous sign
 - Cullen's sign
 - Grey-Turner's sign
- Palpation
 - Palpate all four quadrants
 - Begin in area of pain
- Auscultation does not usually elicit valuable information

- Onset
- Provocation/palliation
- Quality
- Region/radiation
- Severity
- Time
- Associated symptoms
- Pertinent negatives

- Abdominal pain
 - Onset and duration
 - Character
 - Associated symptoms
 - Relationship factors
 - Stool characteristics
 - Urine characteristics
 - Medications: high doses of aspirin, steroids, nonsteroidal anti-inflammatory drugs (NSAIDs)

General Management

- Maintain the airway.
- Support breathing.
 - High-flow oxygen or assisted ventilations.
- Maintain circulation.
- Monitor vital signs and cardiac rhythm.
- Establish IV access.
- Transport in position of comfort.

- Converts food into nutrient molecules and excretes solid wastes
- GI tract is one long tube
 - Upper GI tract
 - Lower GI tract
- Associated structures
 - Liver
 - Gallbladder
 - Pancreas
 - Appendix

- Physical digestion of food and some chemical digestion
- Components
 - Mouth
 - Esophagus
 - Stomach
 - Duodenum

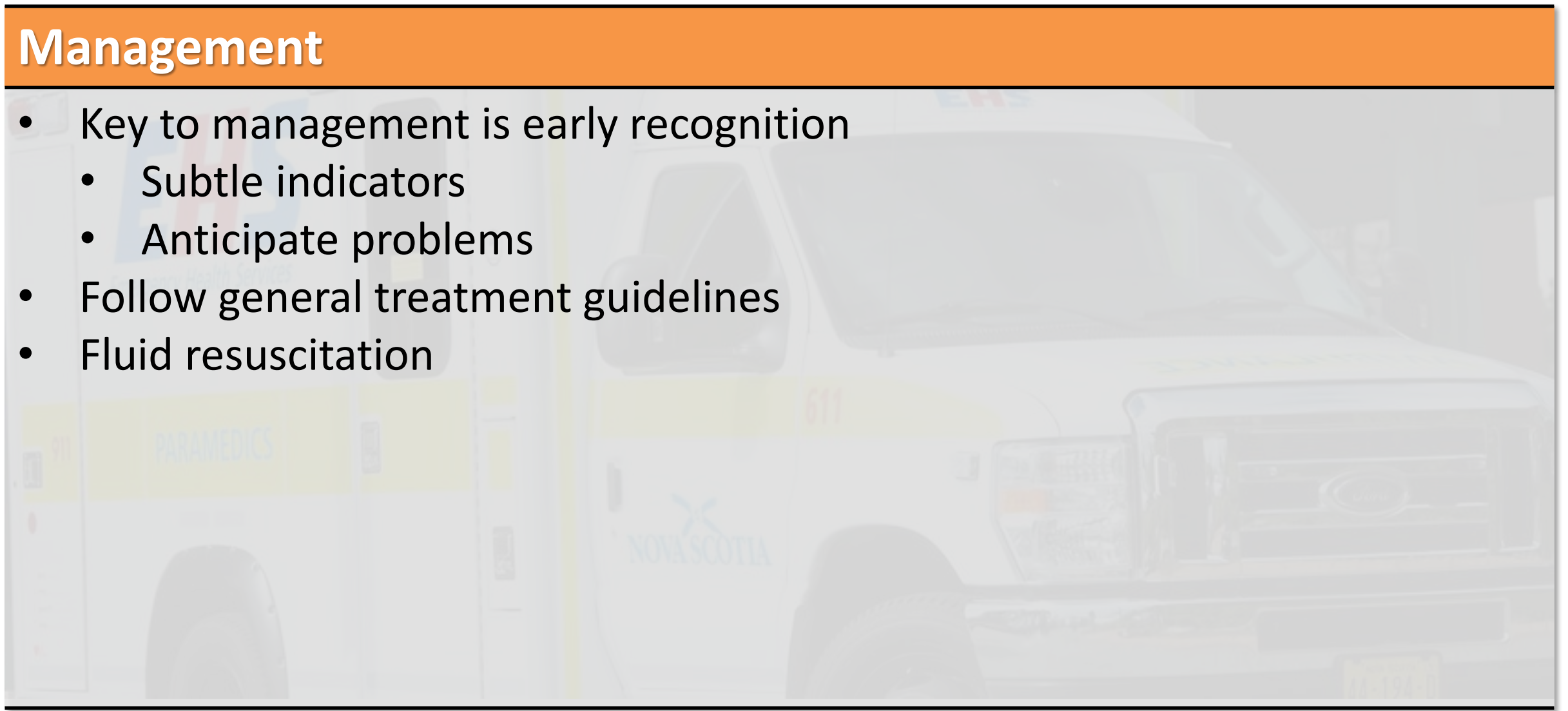
- Ranges from light to life threatening
- Blood is a GI irritant
 - Patients often present with nausea and vomiting
- Hematemesis
 - Bloody vomitus
 - Blood in the upper GI tract
- Melena
 - Dark tarry stools
 - Blood has passed through the lower GI tract

- Peptic ulcer disease
- Gastritis
- Varix rupture
- Mallory-Weiss tear
- Esophagitis
- Duodenitis

- General abdominal discomfort
- Hematemesis and melena
- Classic signs and symptoms of shock
- Changes in orthostatic vital signs

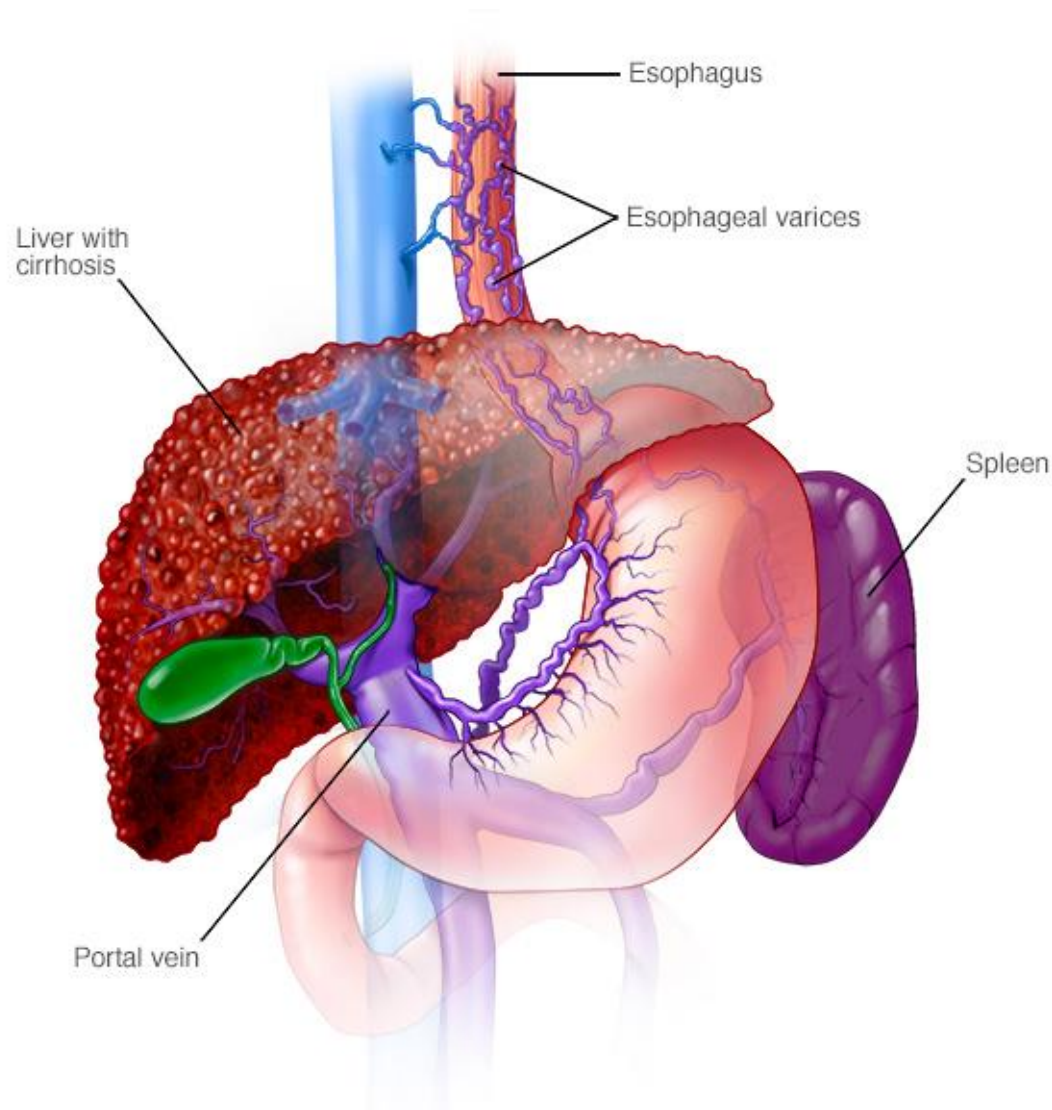
Management

- Key to management is early recognition
 - Subtle indicators
 - Anticipate problems
- Follow general treatment guidelines
- Fluid resuscitation

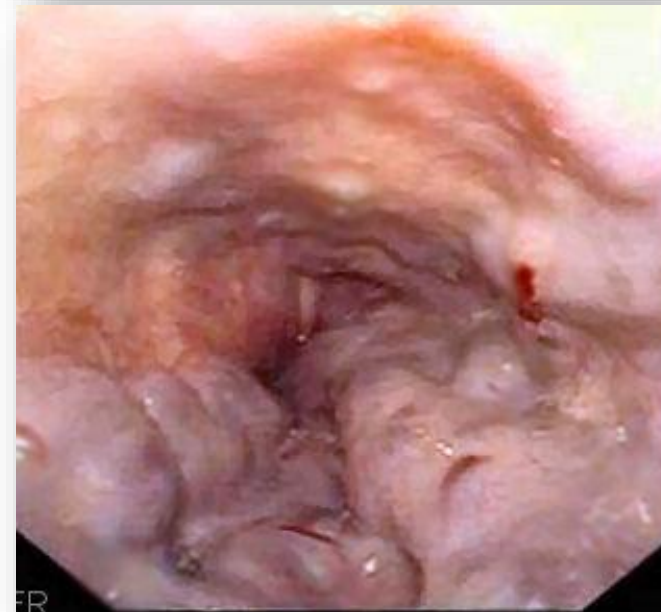


- Esophageal varices
 - Swollen vein of the esophagus
 - Varices rupture, mortality > 35%
- Primary causes
 - Chronic alcohol abuse
 - Liver cirrhosis leading to portal hypertension
 - Ingestion of caustic substances

Esophageal Varices



Severe Variceal Bleeding



- Presentation
 - Hematemesis, dysphagia
 - Painless bleeding
 - Hemodynamic instability
 - Classic signs of shock

Management

- Follow general management guidelines.
 - Aggressive airway management
 - Aggressive fluid resuscitation
- Nasogastric tubes should be avoided

- Sudden onset of inflammation of the stomach and intestines
 - Hemorrhage and erosion of the mucosal and submucosal layers of the GI tract.
- Risk Factors
 - Alcohol and tobacco use
 - Chemical ingestion (NSAIDs, chemo drugs)
 - Systemic infections

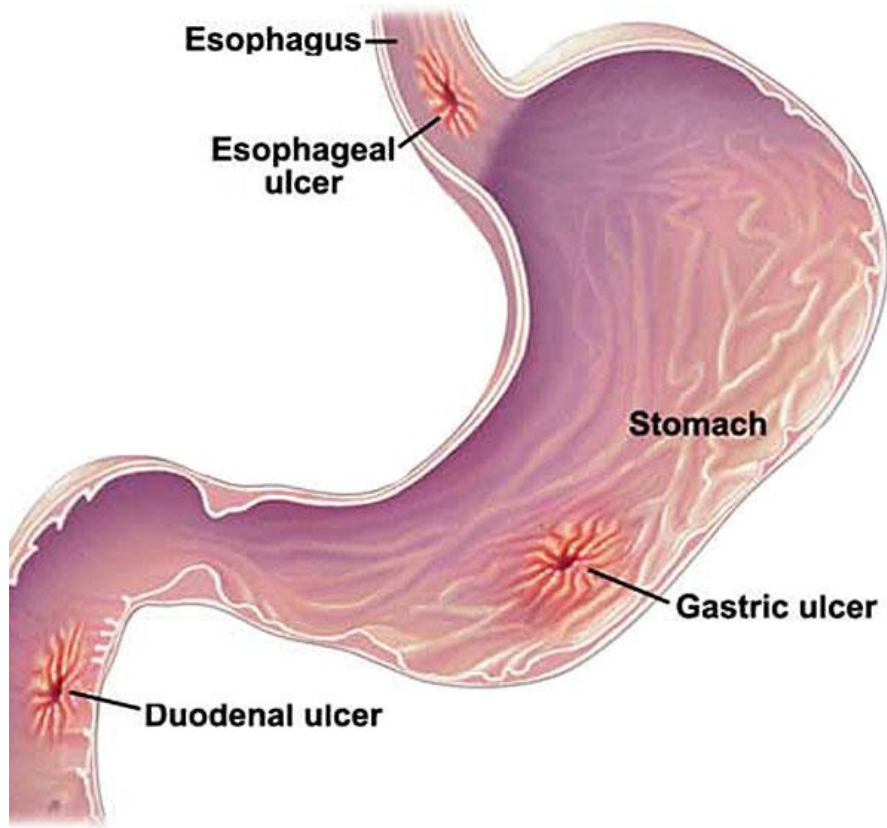


- Rapid onset of severe vomiting and diarrhea
- Hematemesis
- Hematochezia
- Melena
- Diffuse abdominal pain
- Classic signs of shock

Management

- Exercise extreme caution
- BSI throughout patient contact
- Generally supportive care
 - Follow general management guidelines.
 - Fluid volume replacement.
 - Consider administration of antiemetics.

- Non-acute inflammation of the gastrointestinal mucosa
- Most cases are viral
- More common in developing countries
- Fecal-oral contamination



- Erosions caused by gastric acids
- Terminology based on location
 - Gastric ulcer
 - Duodenal ulcer
- Causes:
 - NSAIDs
 - Alcohol and tobacco use
 - *H. pylori* (most common)

- Clinical presentation varies
- Chronic peptic ulcer
 - Slow bleed resulting in anemia
- Acute presentation
 - Severe pain
 - Bleeding
 - Hematemesis
 - Melena

Management

- Depends on severity of pain
- Comfortable positioning and psychological support
- High flow oxygen
- Fluid resuscitation
- Medication administration
- Consider histamine blockers and antacids

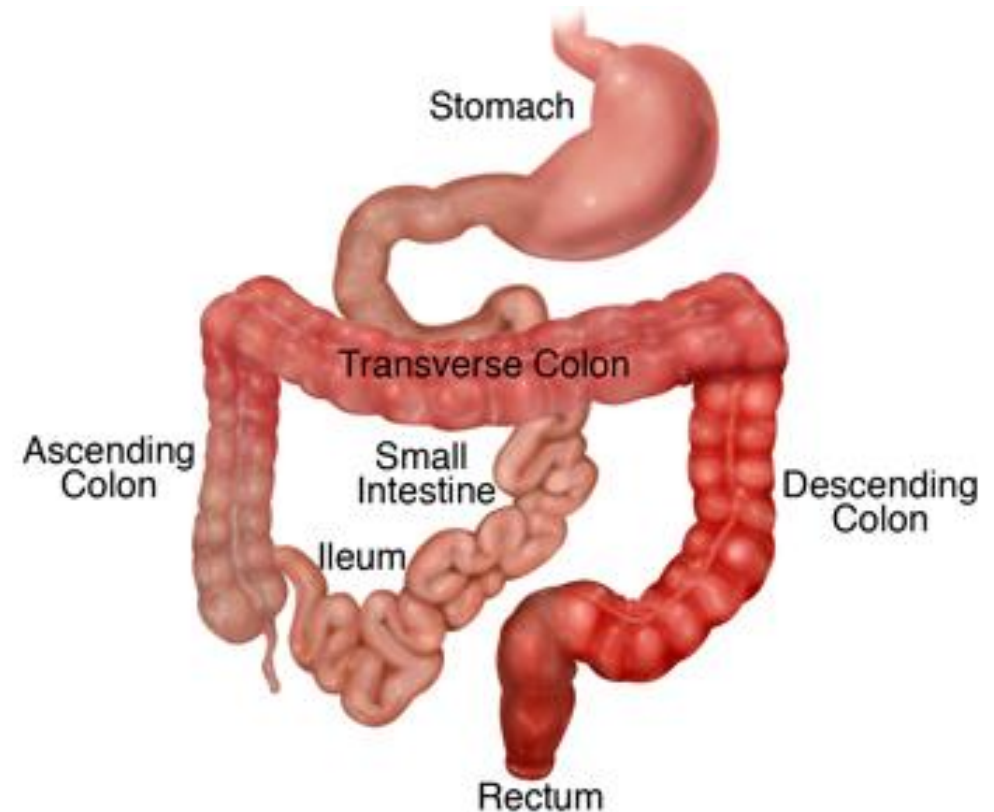
- Functions
 - Absorption of nutrients
 - Reabsorption of water
 - Formation of solid wastes
- Components
 - Jejunum
 - Ileum
 - Large intestine
 - Rectum
 - Anus

- Commonly occurs in conjunction with:
 - Chronic disorders
 - Anatomical changes associated with aging
- Usually chronic
 - Rarely results in exsanguinating hemorrhage

- Diverticulosis
- Colon lesions
- Rectal lesions
- Inflammatory bowel disorder

- Presentation
 - Determine acute versus chronic
 - Quantity/color of blood in stool
 - Abdominal pain
 - Signs of shock
- Management
 - BSI
 - Follow general management guidelines

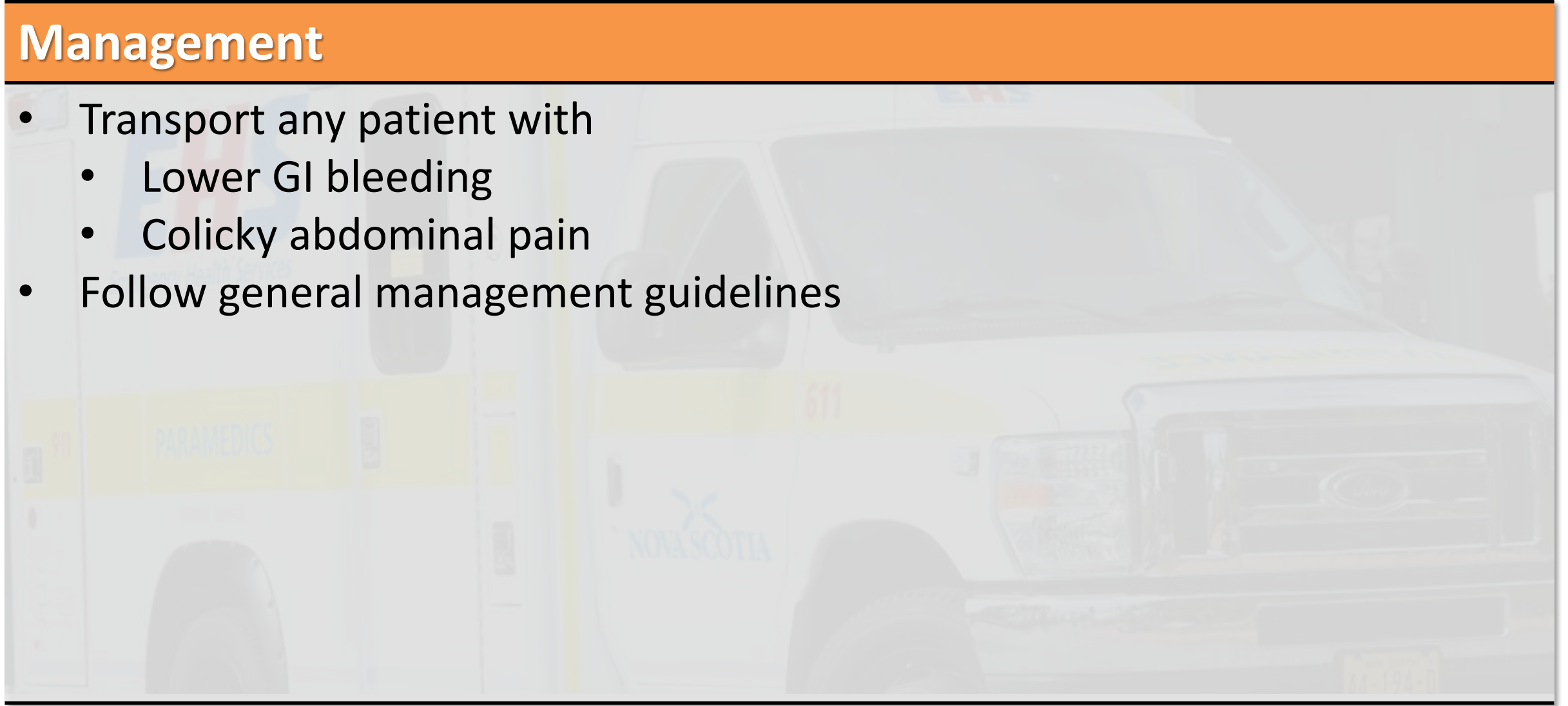
- Idiopathic inflammatory bowel disorder
- Creates continuous length of chronic ulcers in mucosal layer
 - Ulcers heal, thickening of mucosa
 - Usually starts in rectum, progresses proximally
- Increased risk of colon cancer



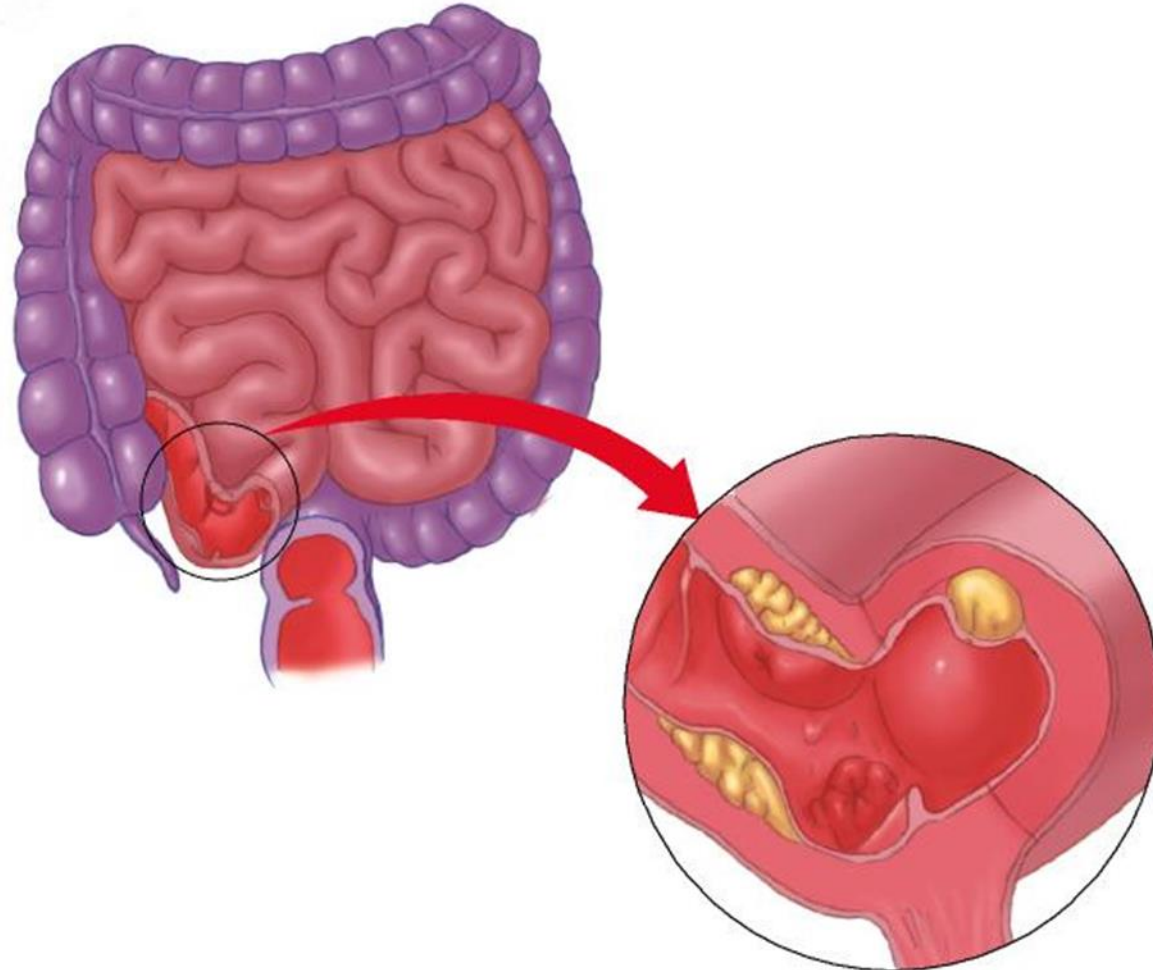
- Insidious onset
 - Difficult to differentiate from other disorders
- Colicky abdominal pain
- Nausea, vomiting
- Occasional fever
- Weight loss
- Severe cases may involve:
 - Hypotension and shock
 - Perforation of the bowel and sepsis

Management

- Transport any patient with
 - Lower GI bleeding
 - Colicky abdominal pain
- Follow general management guidelines



- Idiopathic inflammatory disorder associated with the small intestine
 - Can occur anywhere from the mouth to the rectum
- Inflammation and breakdown of mucosa
 - Ulceration and scarring
 - Hypertrophy and fibrosis of underlying muscle
 - Decreased size of GI lumen
 - Tears can result in small bleeds

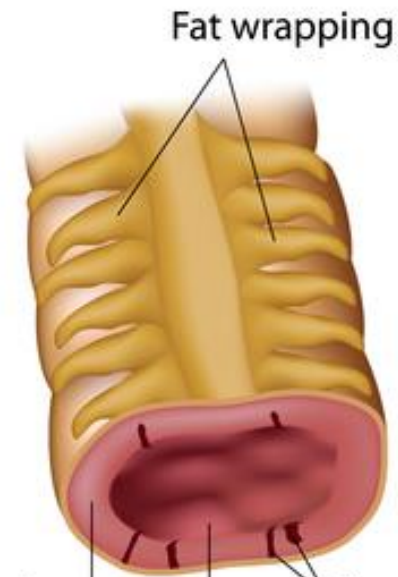


- Presentation
 - Difficult to differentiate.
 - Clinical presentations vary drastically.
 - GI bleeding, nausea, vomiting, diarrhea.
 - Abdominal pain/cramping, fever, weight loss.
- Treatment
 - Follow general management guidelines

Healthy

Crohn's disease

Ulcerative colitis



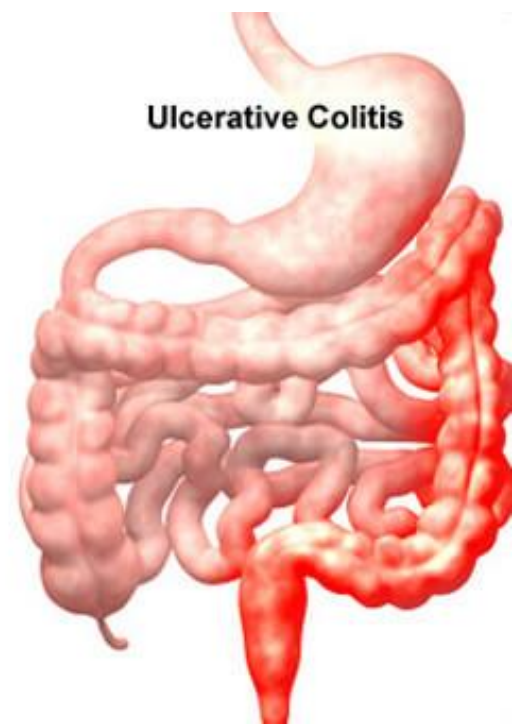
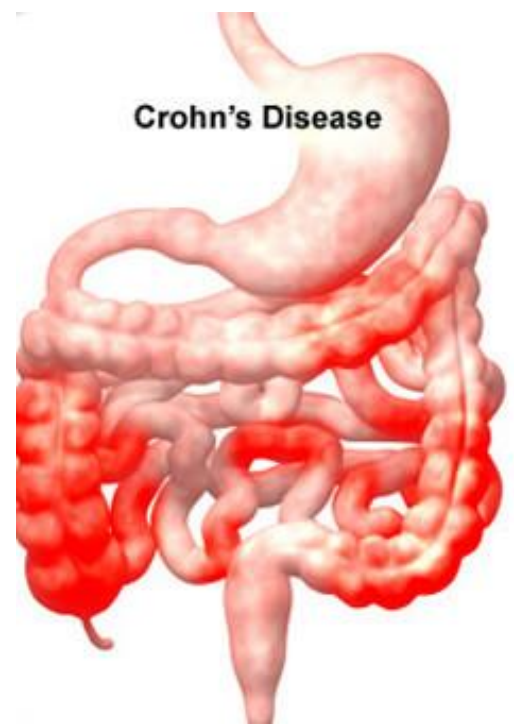
Fat wrapping

Muscle hypertrophy

Fissures

Cobblestone appearance

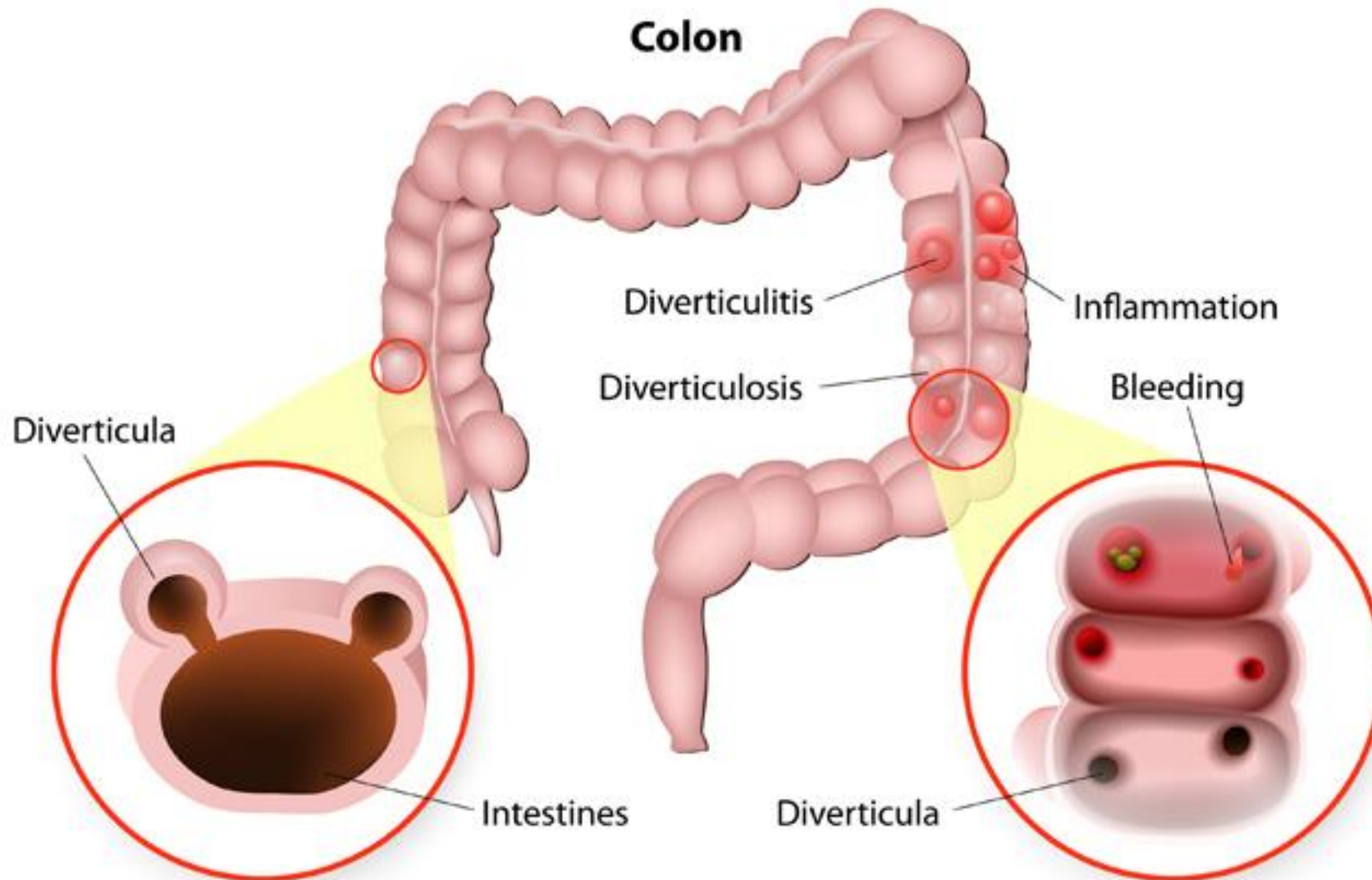
Ulceration within the mucosa



Crohn's Disease

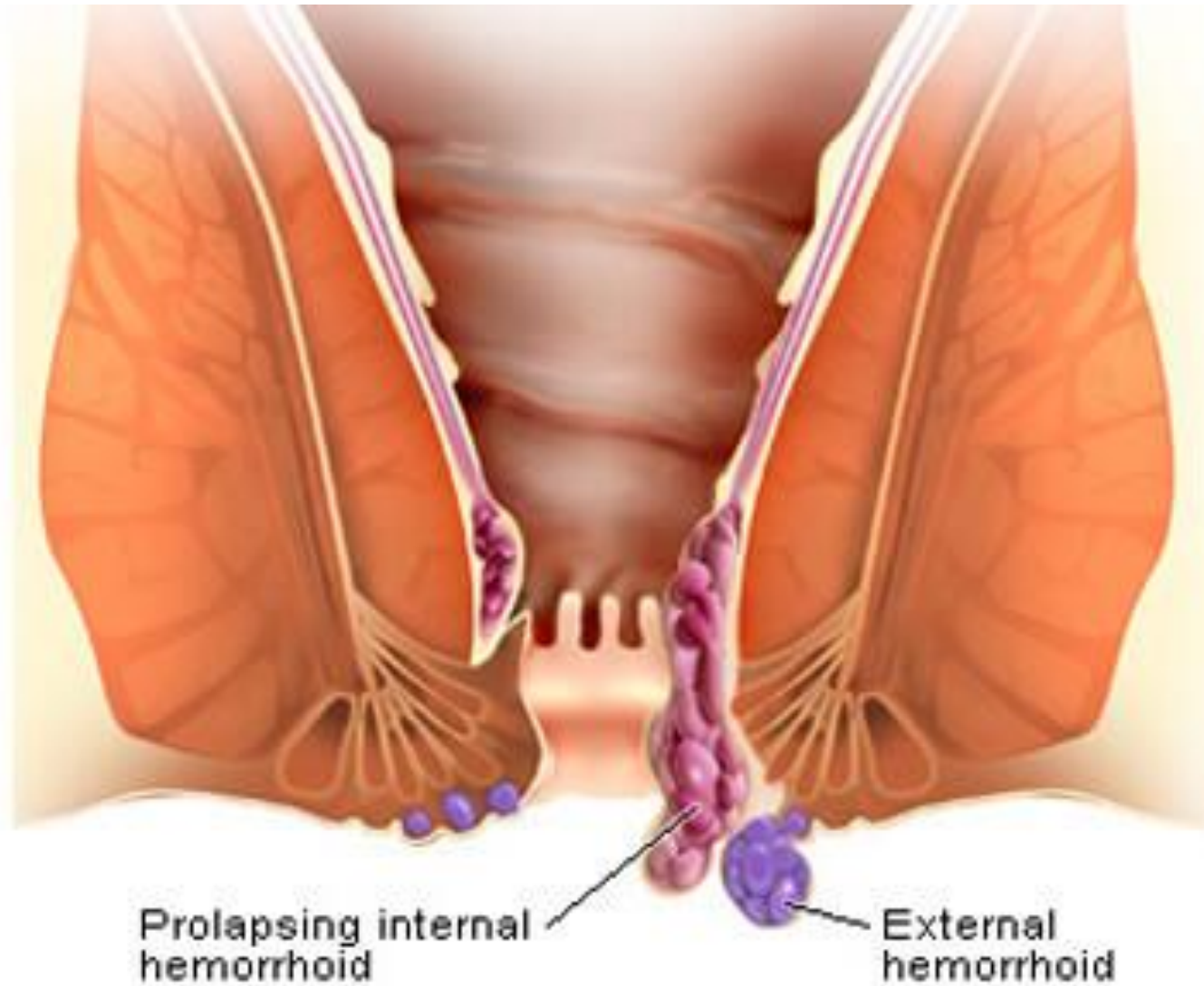
Ulcerative Colitis

- Relatively common complication of diverticulosis
- Inflammation of diverticula secondary to infection
 - Small outpockets in the mucosal lining
 - Bleeding or infection
- Pathogenesis
 - Sluggish passage of stool
 - Low fibre diets
 - Weakening and spasm of the muscle layer with aging



- Presentation
 - Colicky pain usually in the lower left quadrant
 - Nausea, vomiting, low grade fever
 - Tenderness
- Management
 - Mainly supportive
 - Follow general management guidelines
 - High fibre diet

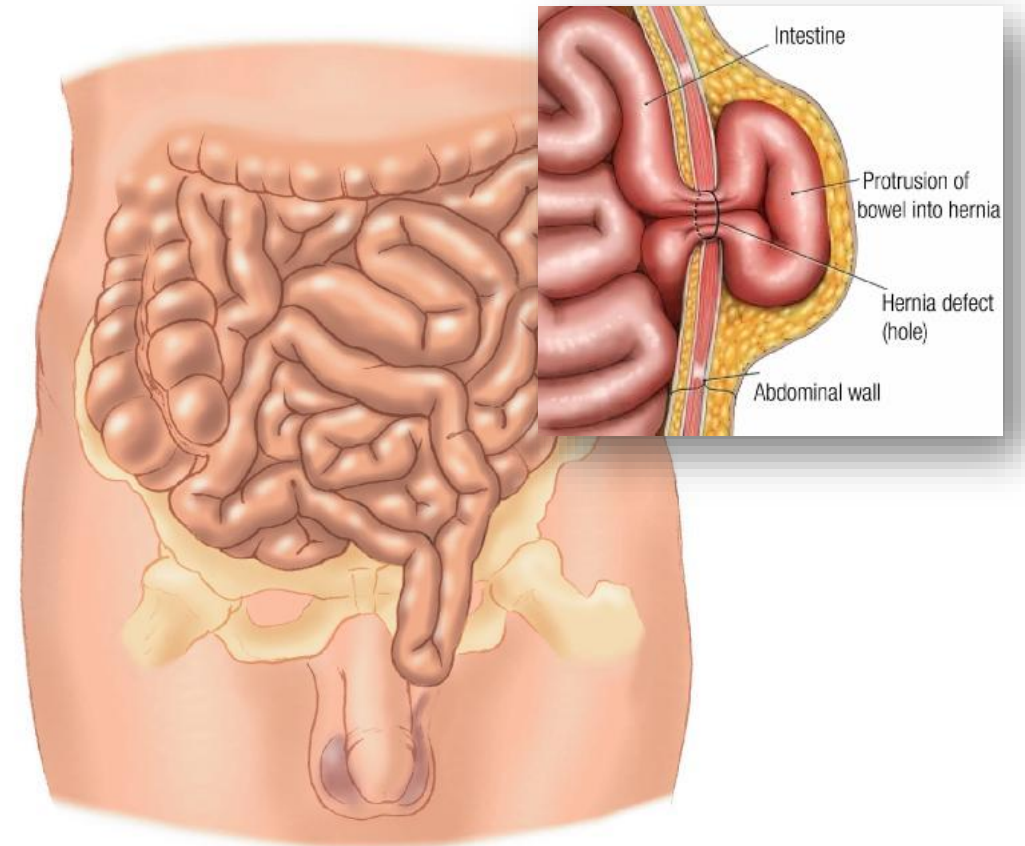
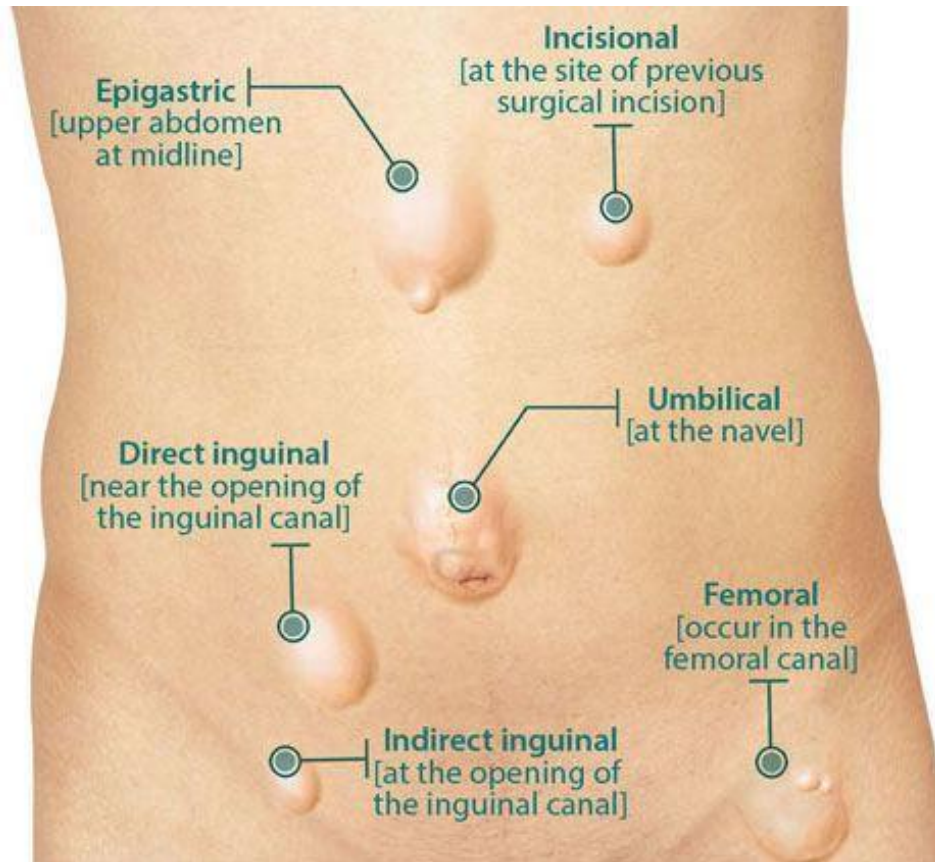
- Mass of swollen veins in anus or rectum.
- Generally idiopathic.
 - Associated with low fiber diets and straining with defecation
- Often bleed during the process of defecation
- Rarely result in life threatening hemorrhage



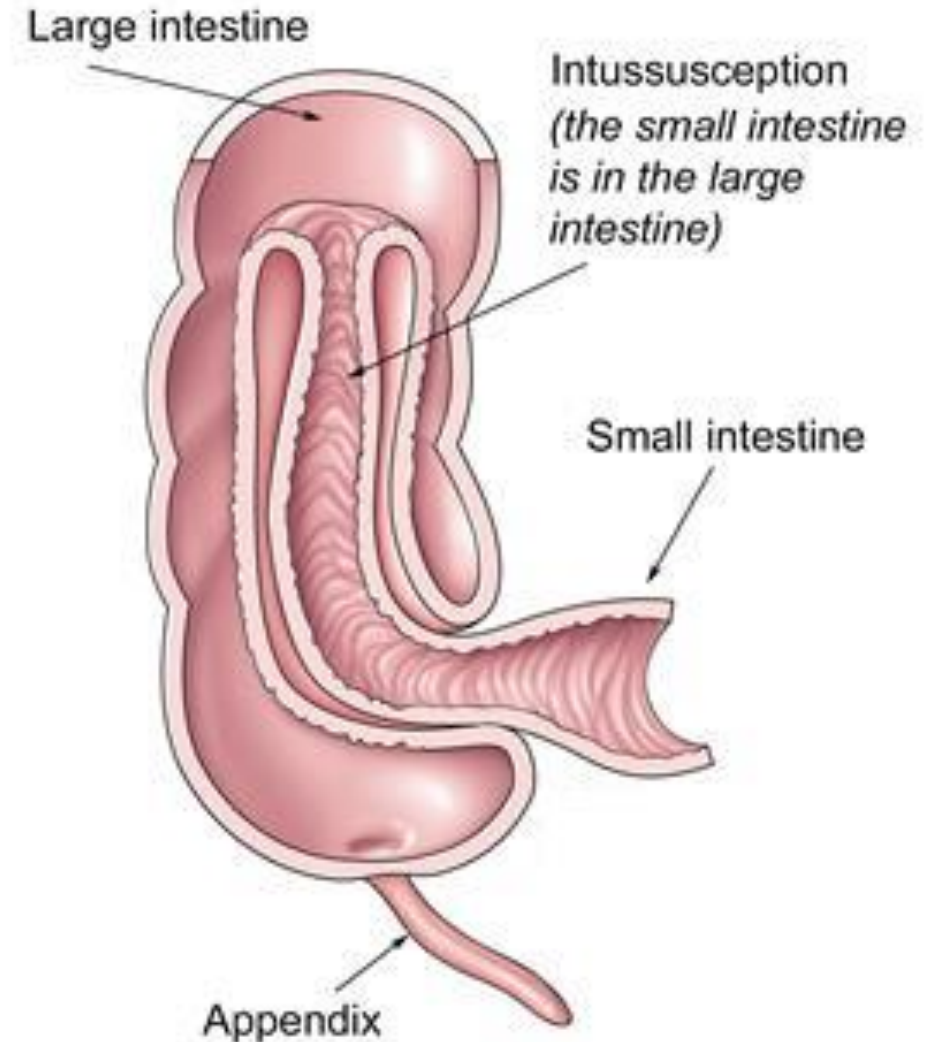
- Presentation
 - Limited bright red bleeding and painful stools.
 - Consider lower GI bleeding.
- Management
 - General management guidelines.

- Blockage of the hollow space of the small or large intestines
- Can be catastrophic if not rapidly diagnosed and treated
- Common causes
 - Hernia
 - Intussusception
 - Adhesion
 - Volvulus

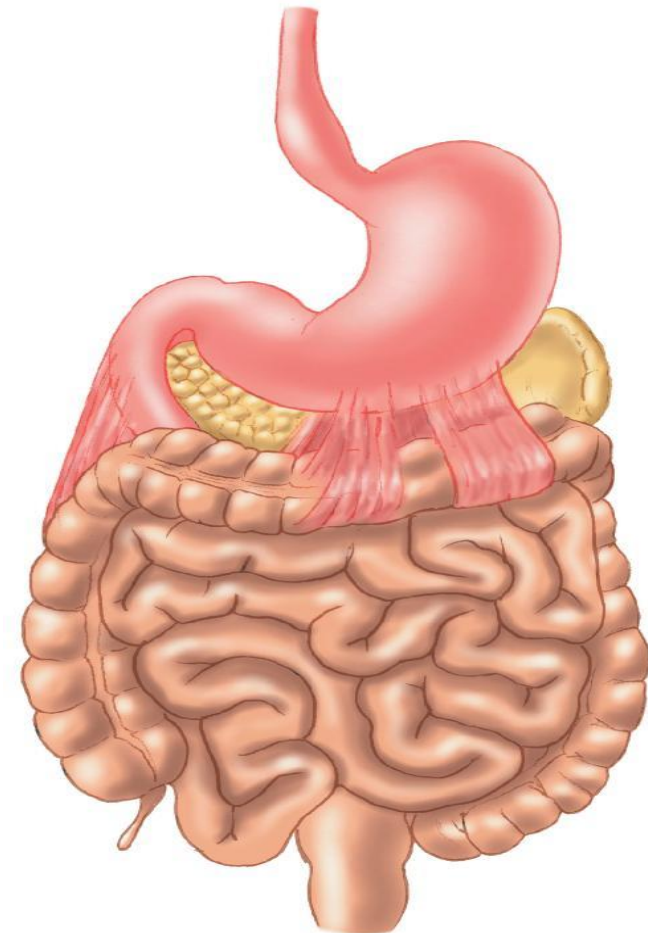
- Protrusion of an organ through its protective sheath



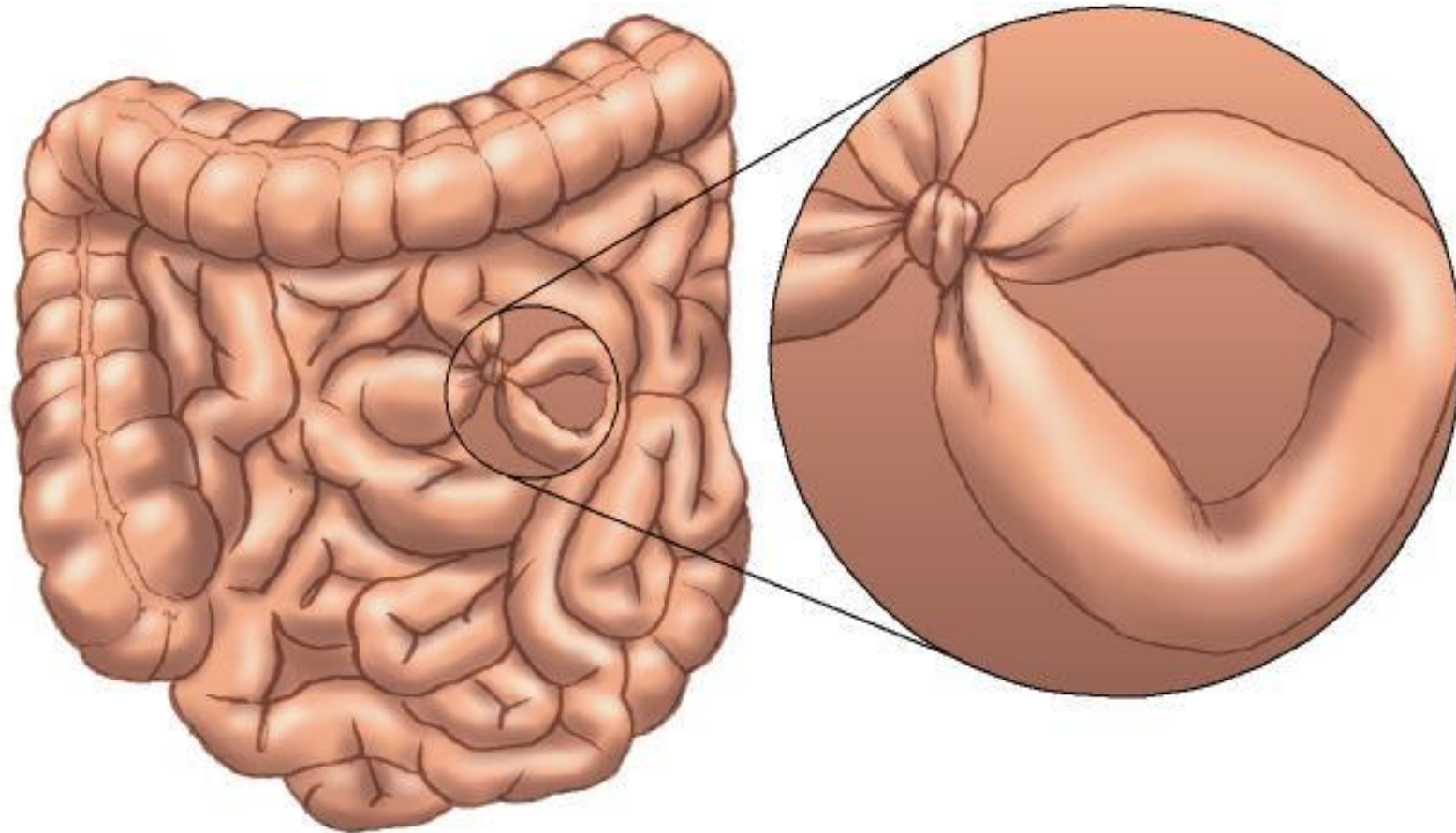
- Part of the intestine slips into the part just distal to itself



- Union of normally separate tissue surfaces by a fibrous band of new tissue



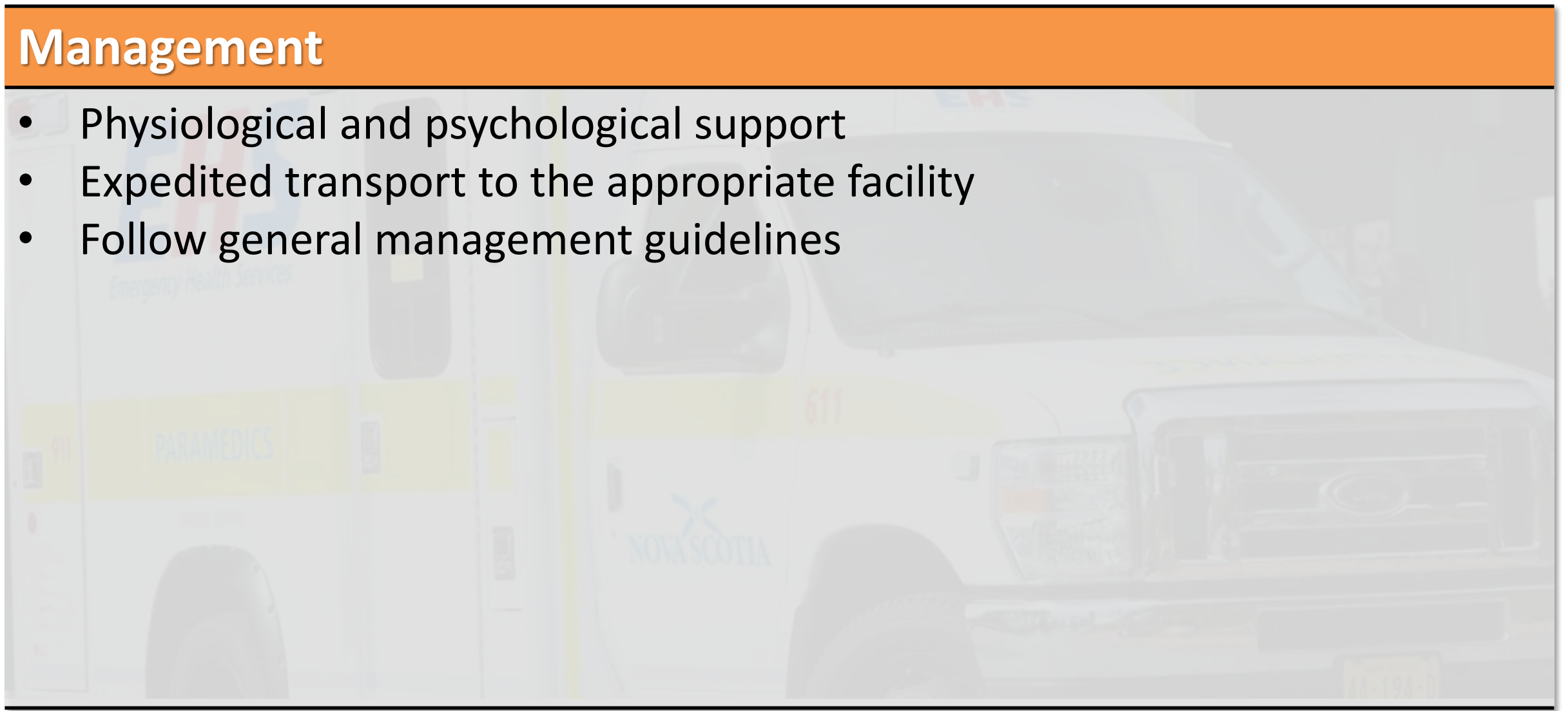
- Twisting of the intestine on itself



- Diffuse visceral pain
 - Poorly localized
- May be hemodynamically unstable
 - Necrosis of tissues
- Inspection
 - Distension, peritonitis, free air
 - Look for old scars
- Vomiting
 - May contain bile, feces in extreme cases

Management

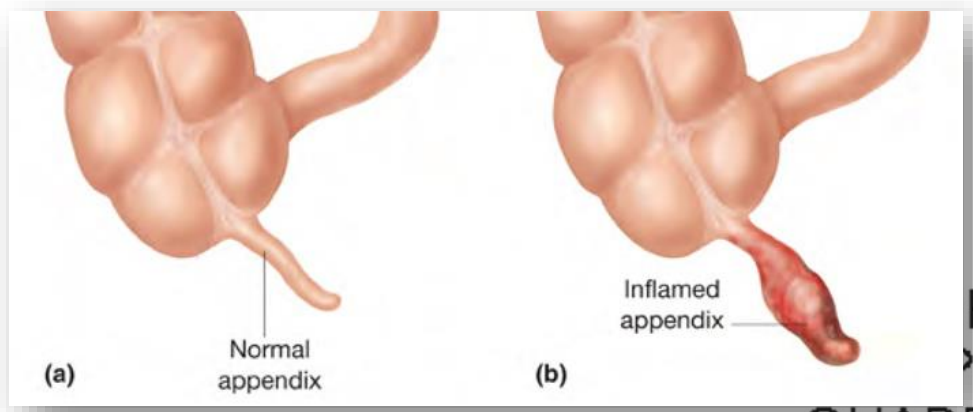
- Physiological and psychological support
- Expedited transport to the appropriate facility
- Follow general management guidelines



- Vermiform appendix
 - Appendicitis
- Gallbladder
 - Cholecystitis
- Pancreas
 - Pancreatitis
- Liver
 - Hepatitis

- Inflammation of the vermiform appendix
 - Frequently affects older children and young adults
- Appendix
 - Located at junction of the small and large intestine
 - No anatomical or physiologic function
 - Shape and position make it vulnerable to obstruction by feces
- Lack of treatment can cause rupture and subsequent peritonitis

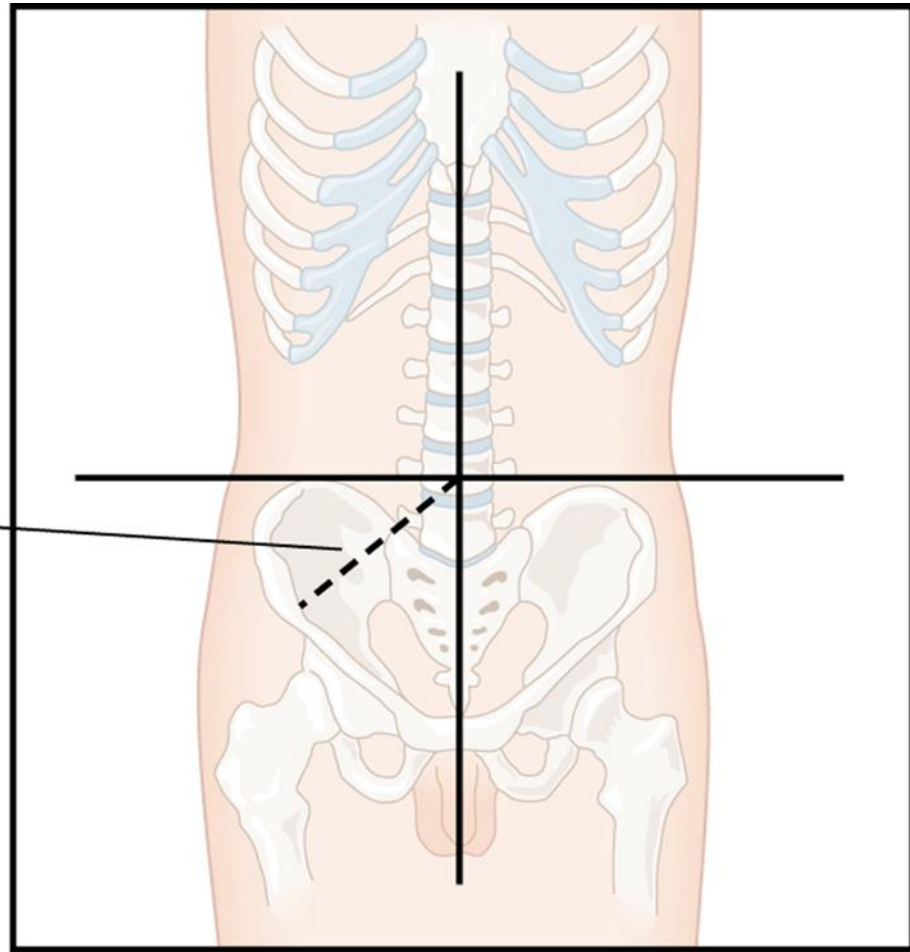
- Frequently misdiagnosed due to wide variety of presentations
- Early
 - Diffuse colicky pain with nausea and vomiting
 - Often localized to periumbilical region
- As the appendix continues to dilate
 - Pain migrates to McBurney's point
 - Rebound tenderness



RIGHT
UPPER
QUADRANT

McBurney's
point

RIGHT
LOWER
QUADRANT



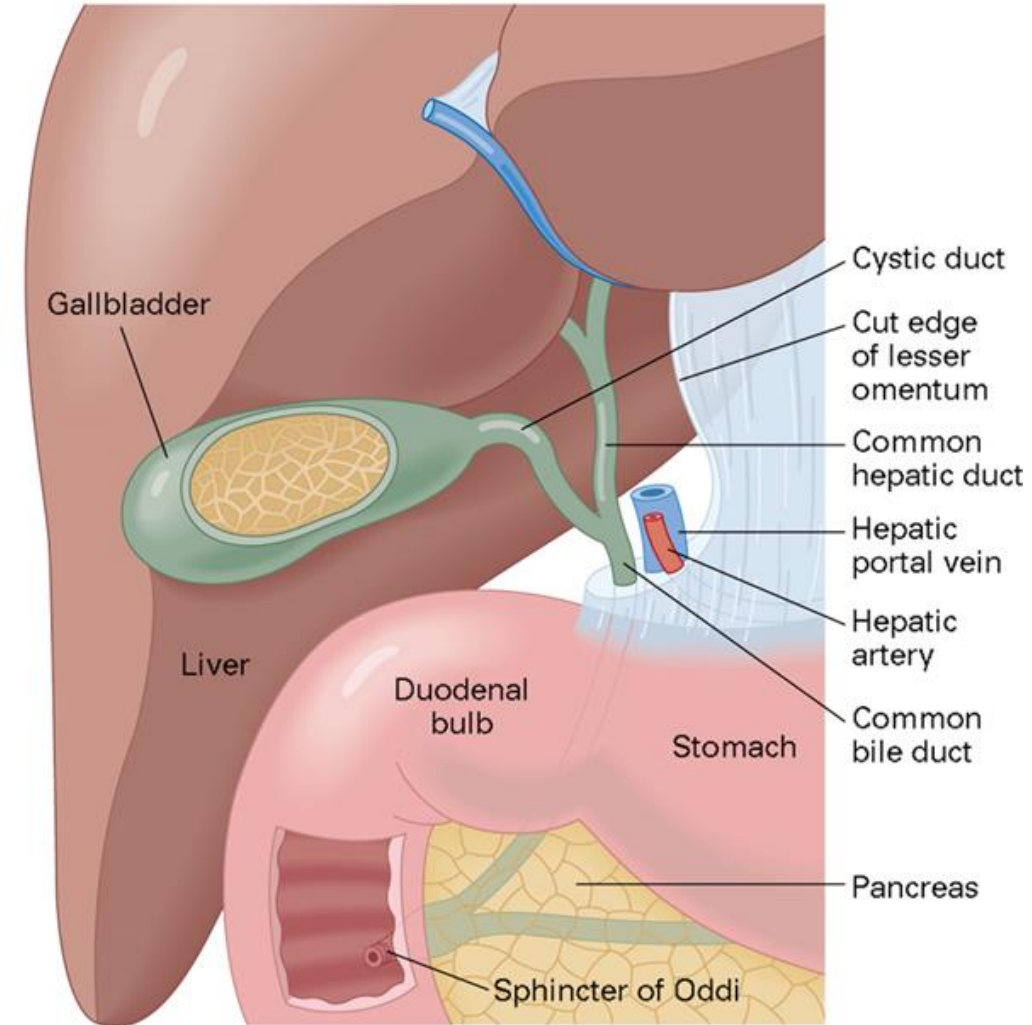
LEFT
UPPER
QUADRANT

LEFT
LOWER
QUADRANT

Management

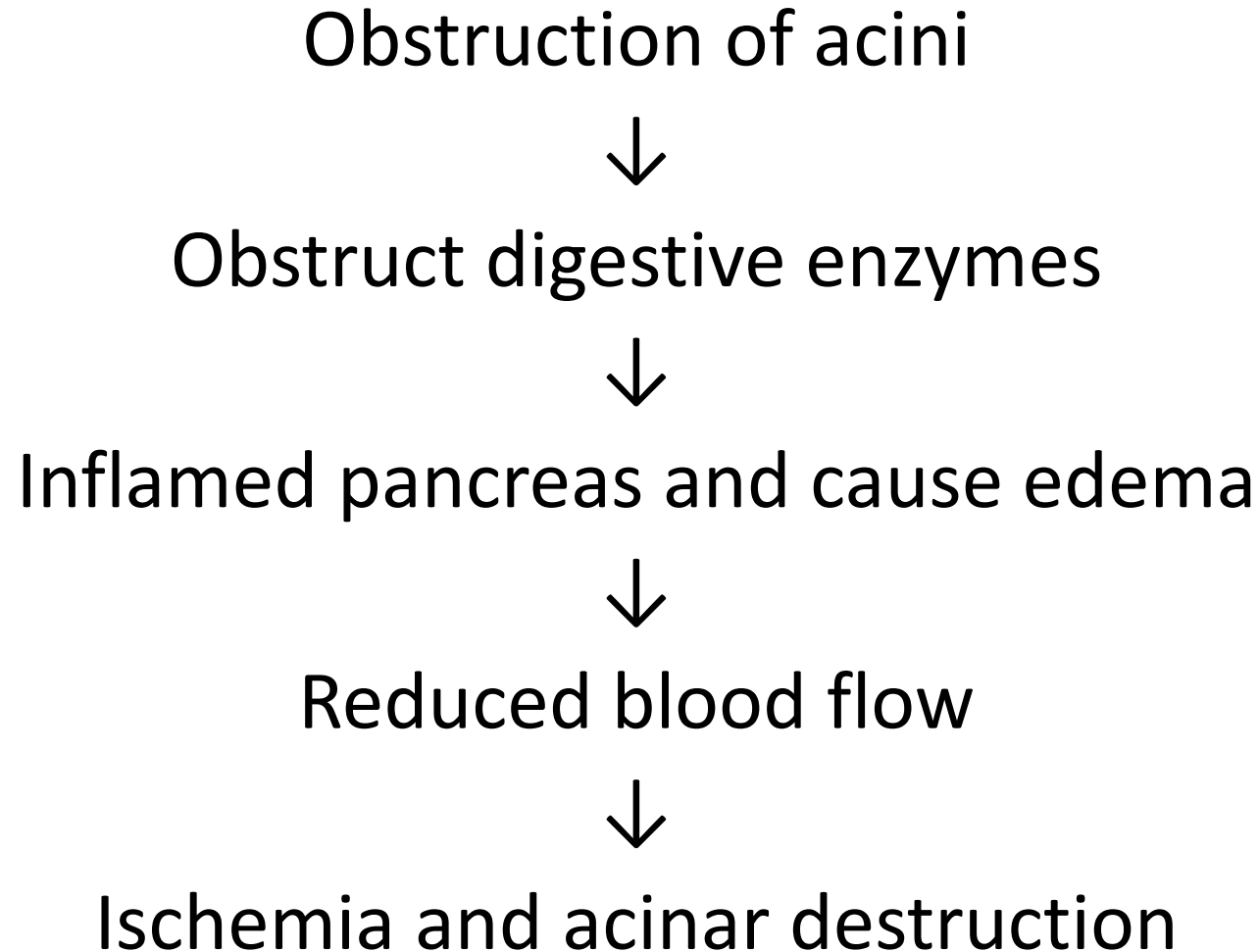
- Recognition and supportive care
- Hemodynamically stable as long as appendix hasn't ruptured
- Follow general management guidelines

- Inflammation of the gallbladder
- Cholelithiasis (gall stones)
- Occurs in 90% of cases
- Gall stones
- Cholesterol based
- Obese middle aged women, more than one child
- Bilirubin based



- Presentation
 - Right upper quadrant abdominal pain
 - Often occurs after a high fat meal
 - Murphy's sign
 - Often difficult to differentiate from cardiac related pain
- Management
 - Follow general management guidelines.

- Inflammation of the pancreas
- Metabolic
 - ~80% of cases
 - Specifically alcoholism
- Mechanical
 - Gall stones or elevated serum lipids
- Vascular
 - Thromboembolisms or shock
- Infectious



- Refractory hypotensive shock
 - Pancreas is highly vascular
- Pain may be localized to epigastrium or left quadrant
 - Radiate into back
 - Boring pain
- Nausea followed by uncontrolled vomiting and retching

Management

- Maintain ABCs
- Fluid resuscitation
- Follow general management guidelines
- Definitive management
- Gastric intubation and suctioning
- Peritoneal lavage
- Antibiotic therapy
- Surgery

- Chronic alcohol abuse
 - Deposition of platelet plugs in acinar tissue
- Digestive enzymes back up
 - Begin to digest acinar tissue
 - Appears as lesions and fatty tissue changes
- Presentation
 - Epigastric pain, nausea, abdominal distension

- Injury to hepatocytes
- Inflammation
 - Alcoholism
 - Trauma and other diseases
- Infection
 - Viruses A, B, C, D and E
- High mortality rate due to wide range of causes

- Crowded, unsanitary living conditions
- Poor personal hygiene
 - Fecal-oral transmission
- Exposure to blood borne pathogens
 - Unprotected sex
 - Dirty needles
 - Occupational exposure and needle sticks
- Chronic alcohol intake

- Presentation
 - URQ abdominal tenderness
 - May radiate into right shoulder
 - Loss of appetite, weight loss, malaise
 - Clay-colored stool, jaundice, scleral icterus
 - Photophobia, nausea/vomiting
- Treatment
 - Follow general management principles
 - Use PPE and follow BSI precautions

Classification

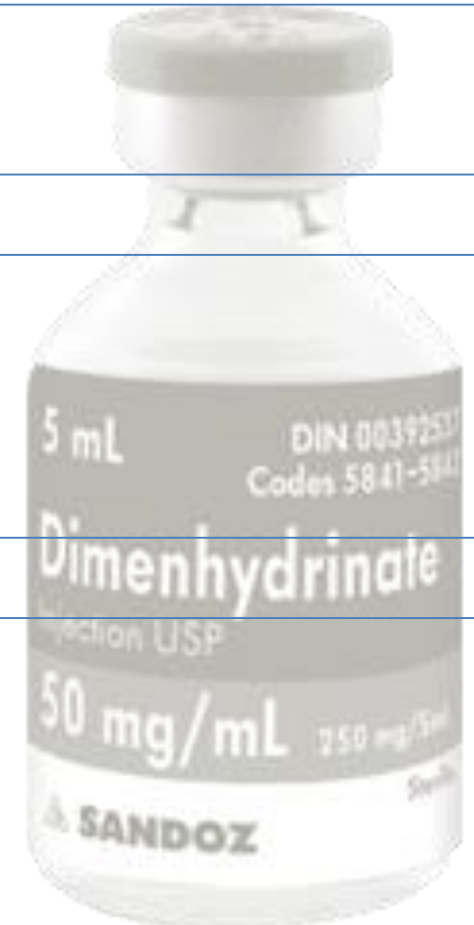
- Antiemetic, Antihistamine, Anticholinergic

Mechanism of Action

- Blocks histamine and Ach receptors in the vomiting center
- Blocks the pathway between the inner ear and vomit center that can cause N/V
- Similar to chemical composition of diphenhydramine

Indications

- Nausea and vomiting
- Relief or prevention of motion sickness and vertigo

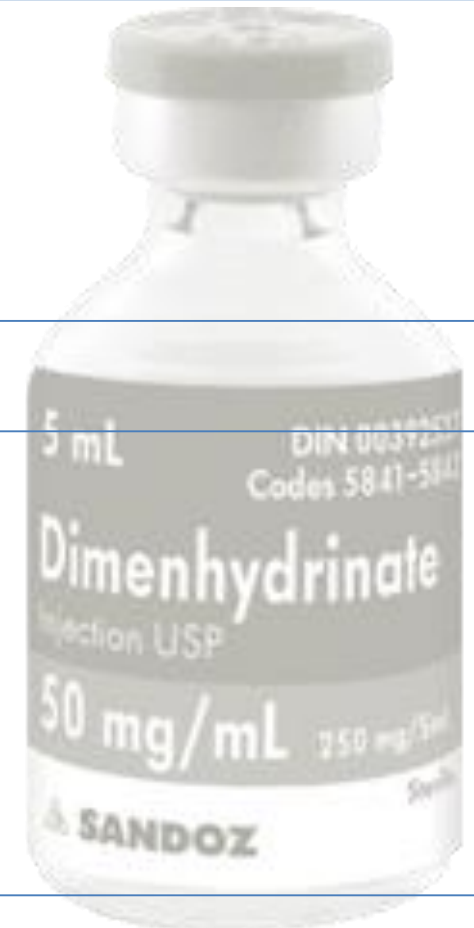


Contraindications

- Hypersensitivity

Dosage

- Adults
 - 25 – 100 mg IM q 4h PRN (25 – 50 mg most common)
 - 12.5 – 50 mg IV q 4h PRN (over 30 seconds)
- Pediatric
 - 1.0 mg/kg IV/IM max of 25 mg



Metoclopramide (Maxeran)

Classification

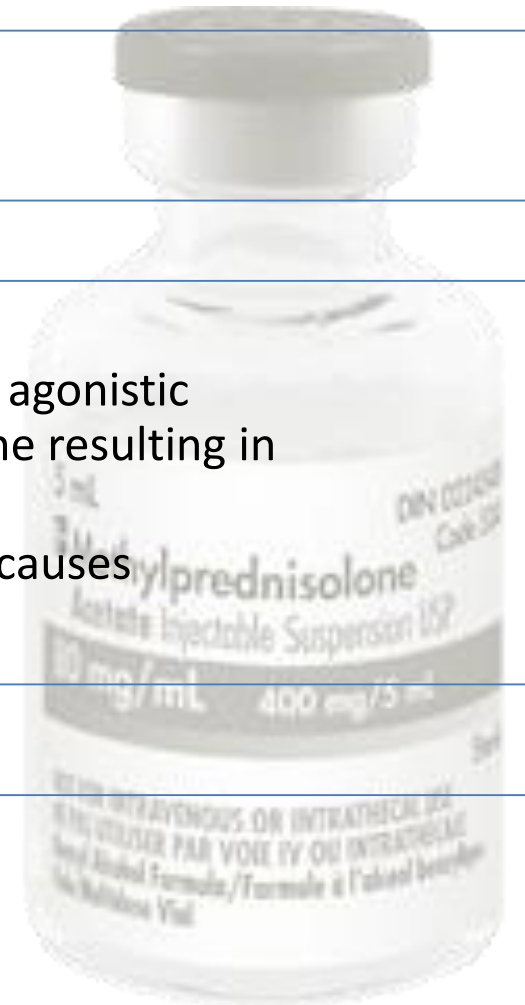
- Antiemetic

Mechanism of Action

- Antagonizes central and peripheral dopamine receptors, as well as 5HT4 receptor agonistic properties, which raises the threshold of activity in the chemoreceptor trigger zone resulting in antiemetic effects
- Increase the amplitude and tone of gastric contractions, increases peristalsis and causes accelerated gastric emptying and intestinal transit

Indications

- Nausea and vomiting
- Migraine headaches

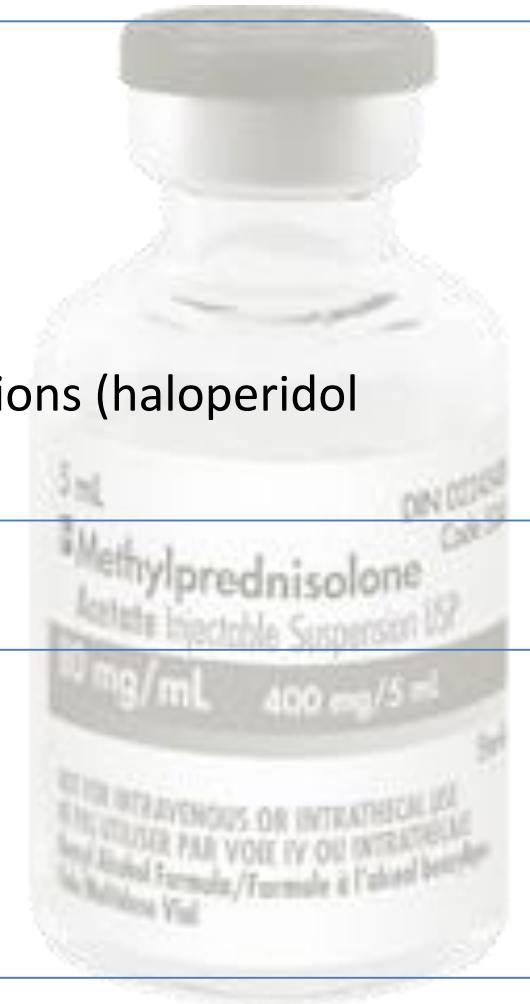


Contraindications

- Hypersensitivity
- GI Hemorrhage, mechanical obstruction or perforation
- Pheochromocytoma
- Seizure disorder
- Patients receiving medications that put them at risk of extrapyramidal reactions (haloperidol and fluphenazine)

Dosage

- Adults
 - 10 mg IV/IM/SQ q 4 – 6 h PRN
 - If given IV, mix 10 mg in 100 ml NaCL and run over 10 minutes



- Nausea and Vomiting
- Diarrhea
- Potential for dehydration and electrolyte abnormalities
 - Serious conditions in the pediatric patient

Table 42-12 SIGNS AND SYMPTOMS OF DEHYDRATION

Signs/Symptoms	Mild	Moderate	Severe
Vital Signs			
<i>Pulse</i>	normal	increased	markedly increased
<i>Respirations</i>	normal	increased	tachypneic
<i>Blood pressure</i>	normal	normal	hypotensive
<i>Capillary refill</i>	normal	2–3 seconds	> 2 seconds
Mental Status	alert	irritable	lethargic
Skin	normal	dry and ashen	dry, cool, mottled
Mucous Membranes	dry	very dry	very dry/no tears





- ▶ rapid breathing
- ▶ increased heartrate
- ▶ restlessness and/ or irritability
- ▶ lethargy/weakness
- ▶ poor skin turgor (pinching a fold of skin at the abdomen results in it returning slowly to normal)



- ▶ sunken fontanelle (in infants)
- ▶ sunken eyes
- ▶ lack of tears when crying
- ▶ wants to drink a lot of water (but may vomit), excessive thirst
- ▶ decreased urine output:
 - infants/babies – indicated by no wet diapers in a 6-8 hours period or diapers with a little dark-yellow urine
 - toddlers/older children – very little dark-yellow urine

- Pathophysiology
- General assessment
- General management
- Specific diseases
 - Upper GI tract
 - Lower GI tract
 - Accessory organs