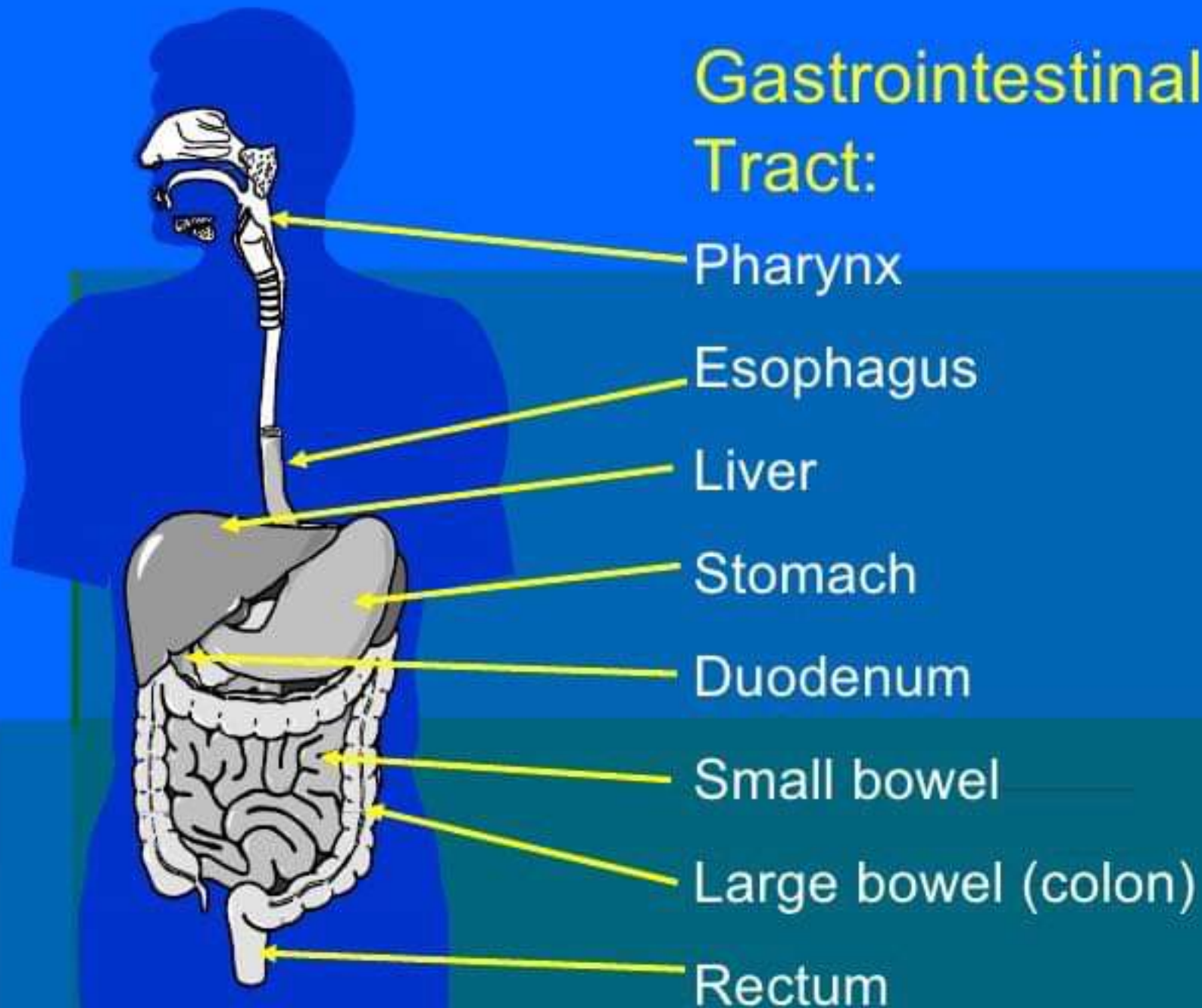


# **Gastrointestinal Disease:** Objectives

1. To increase students' working knowledge of gastrointestinal anatomy, physiology and pathology
2. To incorporate this working knowledge into patient assessment and clinical decision making

# Gastrointestinal Tract:



# GI: Disorders

Gastro Esophageal Reflux Disease (GERD)

Peptic Ulcer Disease (PUD)

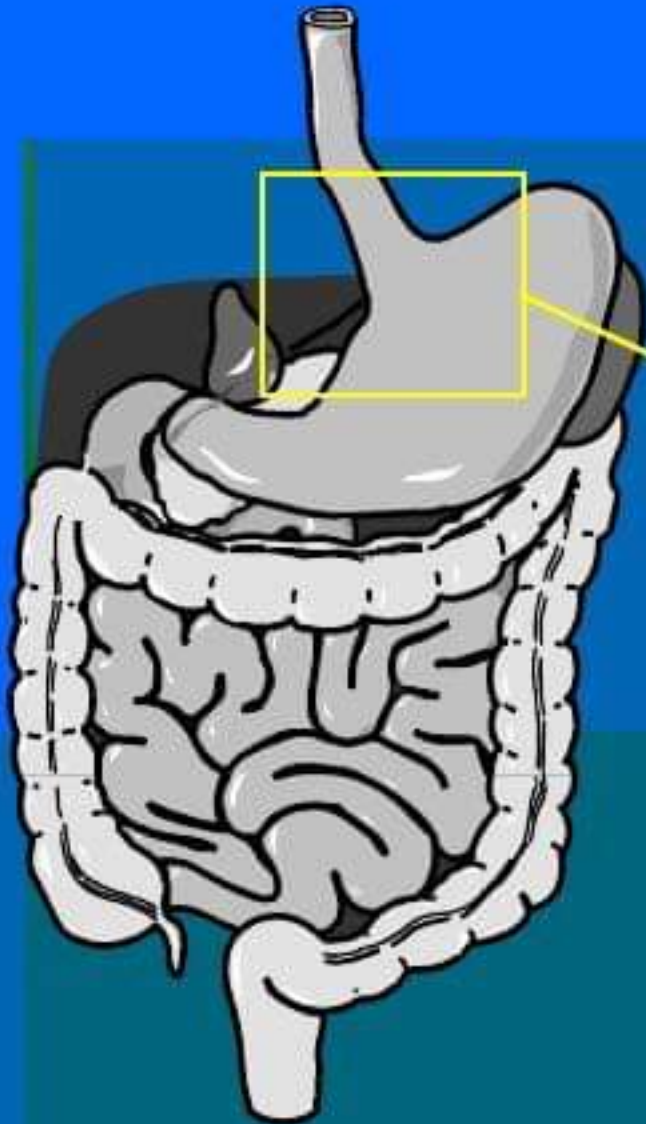
Inflammatory Bowel Disease (IBD)

Pseudomembranous colitis

Irritable Bowel Syndrome (IBS)



# Gastro Esophageal Reflux Disease (GERD)



Gastro esophageal  
junction

# GI: Disorders: GERD

Gastro Esophageal Reflux Disease (GERD)

Problem: reflux of acidic gastric contents  
into the esophagus

Often related to hiatus hernia

# GI: Disorders: GERD

## Complications:

ulceration

stricture

bleeding

Fe deficiency anemia (2<sup>o</sup> to bleeding)

aspiration

Barrett's epithelium: increased risk of  
esophageal cancer

# GI: Disorders: GERD

## Symptoms

Typical: heartburn (pain)

Atypical: cough, asthma, hoarseness,  
chest pain, aphthous ulcers,  
hiccups, dental erosions

Warning (of stricture): dysphagia, early  
satiety, weight loss, bleeding



# GI: Disorders: GERD

Diagnosis

Symptoms

Endoscopy

Response to Proton Pump Inhibitor



# GI: Disorders: GERD

Treatment: Lifestyle modification

Diet, meal timing, HOB up 6 inches

Decrease: fat, cola, chocolate, coffee,  
alcohol, smoking

# GI: Disorders: GERD

Treatment: Drugs

Antacids: Tums, Rolaids

H2 blockers: ranitidine, cimetidine,  
famotidine

Proton pump inhibitors: omeprazole,  
lansoprazole

Prokinetic agents: bethanechol,  
metoclopramide, domperidone

# GI: Disorders: GERD

## Dental Considerations:

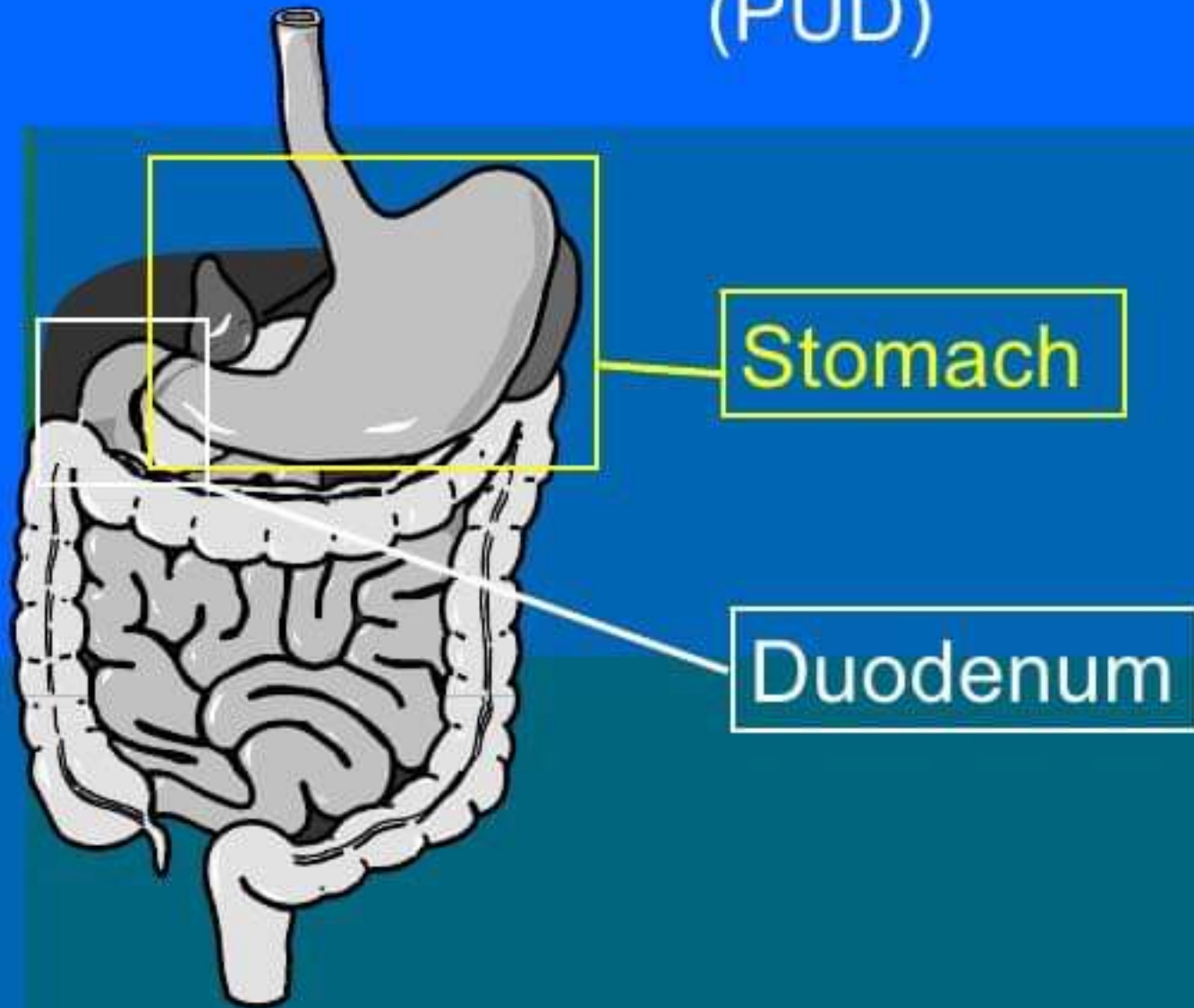
Be aware of worsening symptoms

Risk of aspiration with positioning or sedation

Dental changes due to oral acid reflux



# Peptic Ulcer Disease (PUD)



# GI: Disorders (PUD)

## Peptic Ulcer Disease (PUD)

- 3 mm or greater break in the mucosa
- 80% duodenal / 20% gastric
- 10% have multiple ulcers
- prevalence 5 - 10% of population
- 100 patients in a 2000 patient population

# GI: Disorders (PUD)

## Peptic Ulcer Disease: Etiology

- *Helicobacter pylori*
- found in 20% of adults > age 20 in NA  
80% in developing countries
- approx 20% of infected individuals  
go on to having PUD



# GI: Disorders (PUD)

## Peptic Ulcer Disease: Etiology

- Helicobacter pylori (70-90%)
- acid hypersecretion
- cigarette smoking / alcohol
- NSAID use (15-20%)
- psychological and physical stress
- age 30 - 50
- steroid use

# GI: Disorders (PUD)

## Peptic Ulcer Disease: Pathophysiology

- Helicobacter pylori produces urease which converts urea to  $\text{NH}_3$  and  $\text{CO}_2$
- this initiates an inflammatory cascade which causes mucosal breakdown often in association with co-factors

# GI: Disorders (PUD)

## Peptic Ulcer Disease: Complications

- Hemorrhage ... worse if anti-coagulated
- Perforation ... peritonitis
- Scarring ... pyloric stenosis
- Malignant transformation: carcinoma or lymphoma



# GI: Disorders (PUD)

## Peptic Ulcer Disease: S & S

- Pain
- Relief by antacids, milk or food
- Melena (blood in stool) due to bleeding
- Worsening of symptoms may indicate complications such as perforation or pyloric outlet obstruction

# GI: Disorders (PUD)

## Peptic Ulcer Disease: Diagnosis

- Signs and Symptoms
- Urea breath test  $^{13}\text{C}$  (office) or  $^{14}\text{C}$  (lab)  
for Dx and response to Tx
- Double contrast barium radiograph
- Fiberoptic endoscopy:  
visualization and biopsy

# GI: Disorders (PUD)

## Peptic Ulcer Disease: Treatment

**Without** *H. pylori*: antisecretory drugs

H2 antagonists:	cimetidine (Tagamet)
	ranitidine (Zantac)
	famotidine (Pepcid)

Proton pump inhibitors:	omeprazole (Prilosec)
(PPIs)	lansoprazole (Prevacid)
	esomeprazole (Nexium)



# GI: Disorders (PUD)

## Peptic Ulcer Disease: Treatment

**With** *H. pylori*: antibiotics and antisecretory drugs

Antibiotics: tetracycline and metronidazole  
amoxicillin and clarithromycin

Proton pump inhibitors: omeprazole (Prilosec)  
(PPIs) lansoprazole (Prevacid)  
esomeprazole (Nexium)

Bismuth subsalicylate (Pepto-Bismol)

# GI: Disorders (PUD)

Peptic Ulcer Disease: Treatment results

With triple or quadruple drug therapy: 92 to 99% success in eradicating *H. pylori* and curing ulcer

Failure typically due to:

- noncompliance with drug therapy
- continued use of NSAIDs, alcohol, smoking
- continued ingestion of spicy foods
- continued stressful lifestyle

# GI: Disorders (PUD)

## Peptic Ulcer Disease: Dental concerns

- Be alert to signs and symptoms: refer
- Role of cyclo-oxygenase-2 (COX-2) inhibitors?...details to follow
- Use acetaminophen preparations

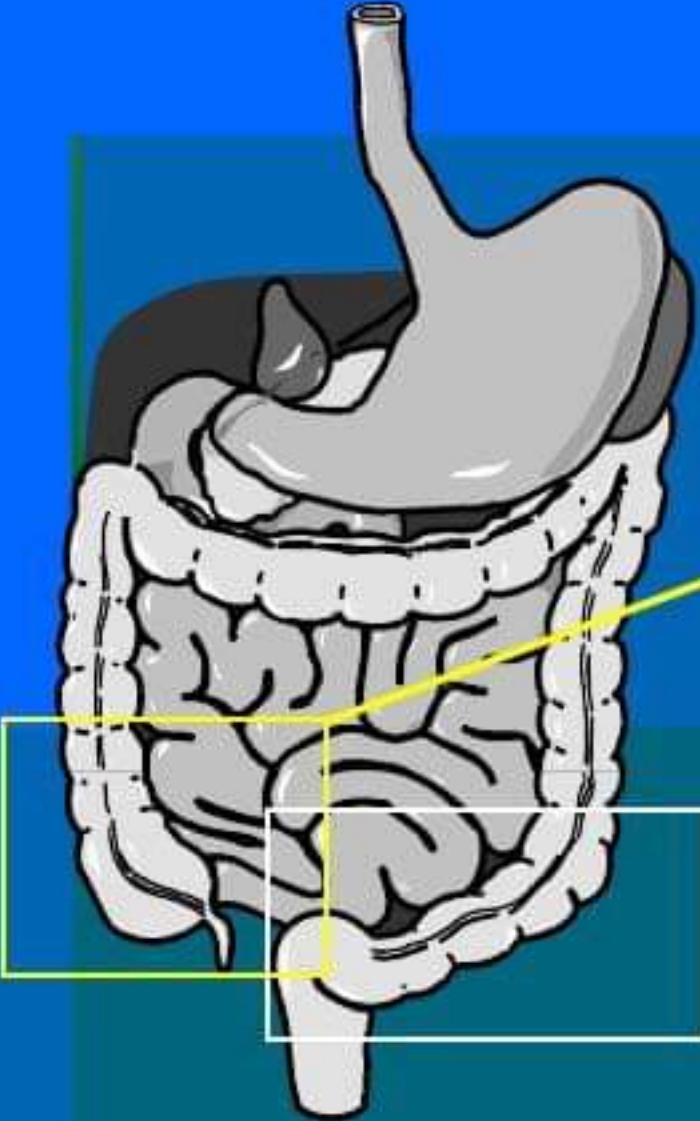


# GI: Disorders (PUD)

Peptic Ulcer Disease: Dental concerns

- Use NSAIDs with caution or with PPIs or misoprostol (Cytotec)
- Avoid NSAIDs if:
  - patient over 75
  - history of bleeding
  - concomitant steroid use

# Inflammatory Bowel Disease (IBD)



The diagram shows a stylized human digestive system. The stomach is at the top left, with the liver and gallbladder below it. The small intestine (ileum) leads into the large intestine (colon). A yellow box highlights the distal ileum and proximal colon, with a yellow line pointing to the text box. A white box highlights the distal colon and rectum, with a white line pointing to the text box.

**Crohn's Disease:**  
Distal ileum and  
proximal colon

**Ulcerative Colitis:**  
Distal colon and  
rectum

# GI: Disorders

Inflammatory Bowel Disease (IBD)

Ulcerative Colitis and Crohn's Disease

- Idiopathic (??? Genetic + environment)
- Age of onset: 20 to 40
- 5 patients in a 2000 patient practice



# GI: Disorders: IBD

## Findings

### Ulcerative Colitis

- Limited to large intestine (rectum-colon)
- Limited to mucosa
- Continuous
- Episodic
- Diarrhea
- Bleeding, cramping

### Crohn's Disease

- Any portion of GI tract (lips to anus)
- Transmural
- Segmental
- Episodic
- Diarrhea
- Pain LRQ, fever, wt loss

# GI: Disorders: IBD

## Complications

### Ulcerative Colitis

- Anemia, malabsorption
- Toxic megacolon
- Malignant transformation more likely

### Crohn's Disease

- Anemia, malabsorption
- Fistulae, stricture
- Surgery more likely

# GI: Disorders: IBD

## Treatment

- **Supportive therapy:** rest, fluids, lytes, nutritional supplementation
- 2. **Antiinflammatories:** sulphasalazine, 5-ASA, corticosteroids



# GI: Disorders: IBD

## Treatment

3. **Immunosuppressives:** methotrexate, cyclosporin,
4. **Antibiotics:** Flagyl / Cipro
5. **Surgery**

# GI: Disorders: IBD

## Dental Concerns

1. Potential for **adrenocortical** suppression with steroids
2. **Methotrexate**: pneumonia, marrow suppression, hepatic fibrosis

**Cyclosporin**: renal damage

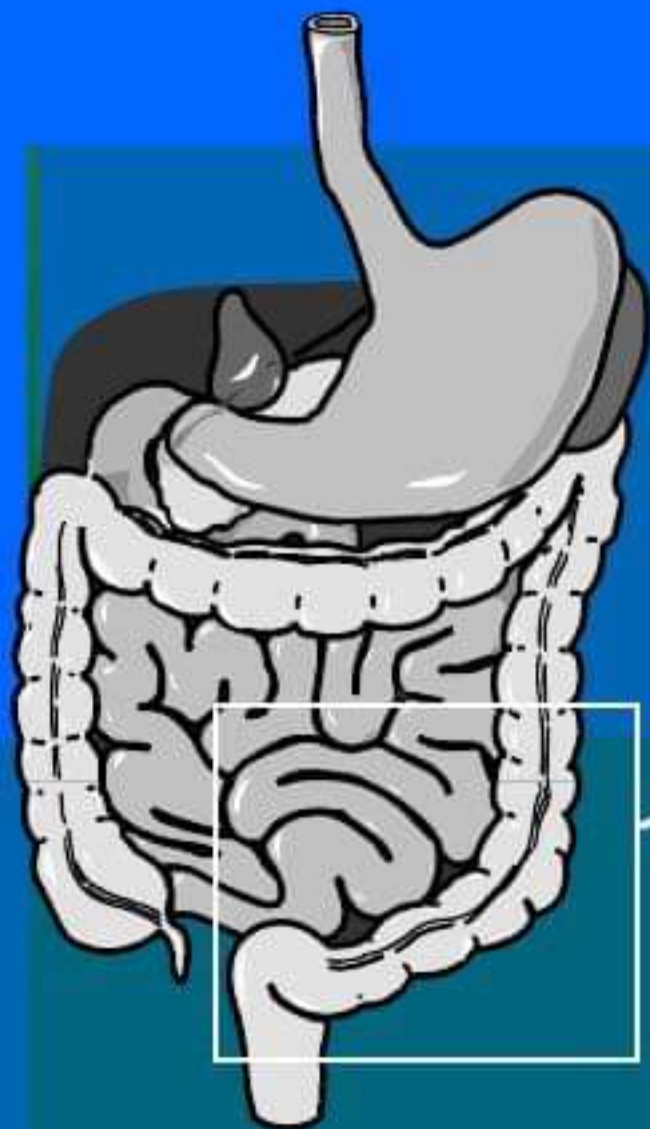
# GI: Disorders: IBD

## Dental Concerns

3. Use acetaminophen / Avoid **NSAIDs**
4. Use **Narcotics** with caution
5. Opportunistic infections / lymphoma due to immuno-suppression
6. Crohn's disease can manifest orally



# Pseudomembranous Colitis



Distal colon

# GI: Disorders

## Pseudomembranous colitis

Broad spectrum antibiotics cause loss of enteric bacteria leading to an overgrowth of *Clostridium difficile* which produce enterotoxins that induce potentially fatal colitis and diarrhea

commensal in 2-3% of adults / 50% of elderly

# GI: Disorders

## Pseudomembranous colitis

Clindamycin:	2 to 20%
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Ampicillin/amoxicillin:	5 to 9%
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Cephalosporins:	< 2%
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# GI: Disorders

Pseudomembranous colitis

Signs and symptoms:

typically develop in 4 to 10 days

profuse, watery diarrhea

bloody diarrhea, fever, abdo pain

death

# GI: Disorders

Pseudomembranous colitis

**Diagnosis:** enterotoxin found in stool

**Treatment:** d/c offending antibiotic  
give PO Flagyl or Vancomycin

# GI: Disorders

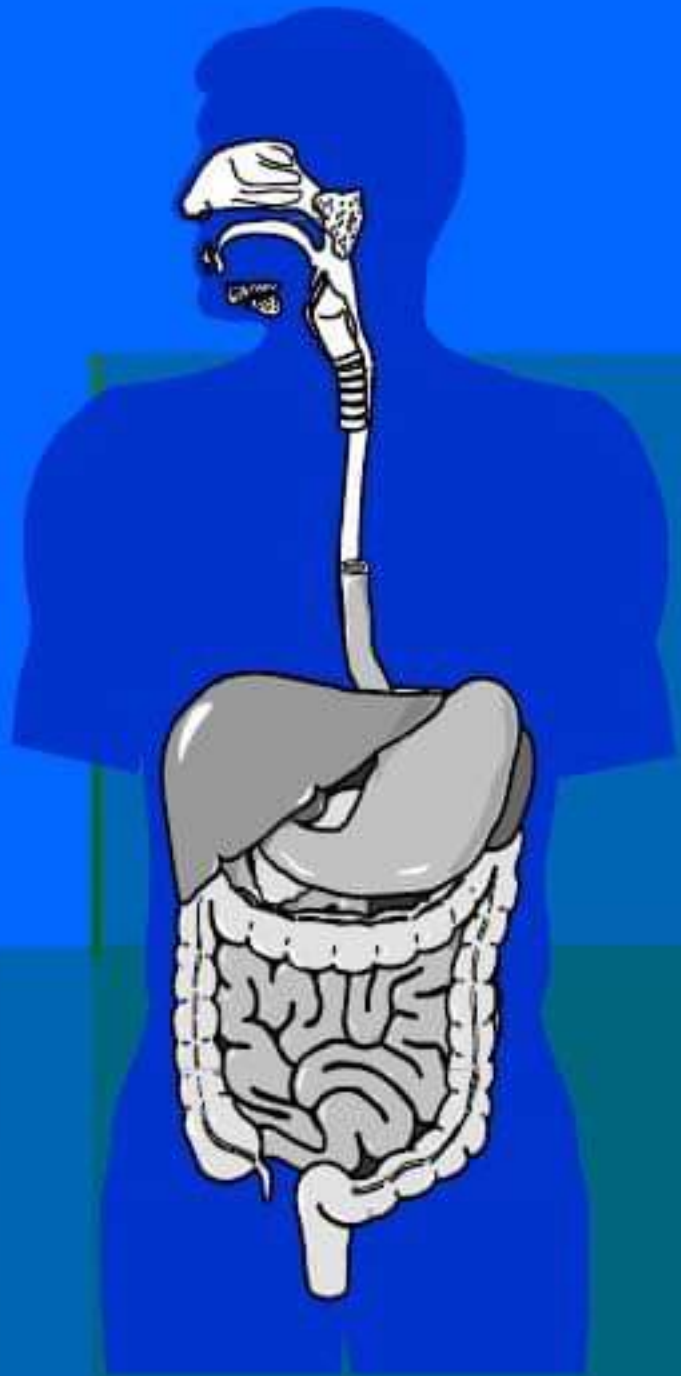
Pseudomembranous colitis

Dental consideration:

be cautious with the use of antibiotics



# Irritable Bowel Syndrome (IBS)



# GI: Disorders

Irritable Bowel Syndrome (IBS)

Most common GI problem: functional

Idiopathic ... psycho-social issues

Diarrhea, constipation, bloating, abdo pain

Difficult to control: dietary change, stress management, antidepressants