

## GI Drugs I - Stomach (and some duodenum)

Problem: Increased acid production and decreased mucosal resistance

Solutions: Neutralize acid, decrease secretion and increase mucosal resistance

- Neutralize (Antacids) – SE: All can interfere with drug absorption
  - o Calcium – SE: Constipations, hypercalcemia → digitalis antagonist
  - o Sodium bicarb. – SE: alkalosis, hypernatremia
  - o Magnesium – SE: Diarrhea, hypermagnesemia, iron deficiency
  - o Aluminum – SE: Constipation, hypophosphotemia, delayed gastric emptying, encephalopathy
  - o Other ingredients of antacids
    - *Simethicone* – defoaming agent, prevents gas and distributes antacids
    - Sodium – salt and water retention, do not use in edema and HTN
- Decrease secretion
  - o Anticholinergics (*Atropine, Propantheline, Methantheline*)
    - Anticholinergic effects – Dry as bone, blind as bat, mad as a hatter.
    - Must be given before meals
    - Contraindicated in pyloric obstruction or hiatus hernia (need to get stomach moving)
  - o H<sub>2</sub> Blockers (*Cimetidine, Ranitidine, Famotidine, Nizatidine*)
    - Decrease basal and food stimulated secretion (can be taken w/o relationship to meals)
    - Inhibit 50-80% of 24-hour secretion
  - o Proton Pump Inhibitors (PPI) (*Omeprazole, Lansoprazole, Rabeprazole, Esomeprazole, Pantoprazole*)
    - Inhibits >90% of 24-hour acid (strongest acid inhibitor)
    - SE: Headache, gynecomastia, inhibits P450 (not *Pantoprazole*)
- Increase Mucosal Resistance
  - o Coat ulcer (*Bismuth salts, Sucrulfate*)
  - o Prostaglandin Analogues (*Misoprostol*)
    - Help counter effects of NSAID therapy on gastric mucosa
    - Contraindicated in pregnancy – induces labor
  - o Antibiotics to eradicate H. Pylori
    - Triple therapy – PPI or H<sub>2</sub> Blocker + Amox, Clarith, Metro (any 2)
    - Quadruple therapy – PPI + Bismuth + Metro + Tetracycline

\*\*Mnemonic \*\*

Calcium - Constipation

Magnesium (Mg) - Makes you Go (diarrhea)

Aluminum - Minimum stool (constipation)

## GI Drugs II – LES, Vomiting, Diarrhea, Constipation, IBD, IBS

Gastro Esophageal Reflux Disease (GERD) - overly relaxed LES, too much acid, too little acid clearance, delayed gastric emptying (acid sits in stomach longer)

- Tx
  - o Lifestyle: Elevate head of bed, don't eat before bedtime, don't eat fatty or spicy food, don't drink/smoke, don't get pregnant?
  - o Without esophagitis – Antacids, H<sub>2</sub> Blockers, and Proton pump inhibitors (*Cisapride, Metoclopramide*)
  - o With esophagitis – Higher H<sub>2</sub> blocker dose, PPI or surgery

Vomiting (Gastroparesis) - Vomiting center in brain or local irritation

- Tx
  - o Central
    - Antidopamine (SE relate to antidopa) – *Prochlorperazine, Trimethobenzamide, Metoclopramide* (CNS and periphery)
    - Antihistamine/Anticholinergic (SE: sleepy) – *Promethazine*
    - THC - ?anticholinergic – Marijuana, *Nabilone*
    - Antiserotonin (SE: Headache, dizzy, sleepy) – *Ondansetron, Gransitron, Dolasteron*
  - o Peripheral
    - Proton pump inhibitors – *Metoclopramide, Cisapride, Domperidone*

Diarrhea - Secretory, Osmotic, damaged mucosa, decreased absorption, increased motility

- Tx
  - o Decrease secretion – drink less fluid
  - o Decrease Motility
    - Anticholinergic – *Atropine*
    - Opioids – *Loperamide, Diphenoxylate, Codeine*
  - o Absorb excess water – *Metamucil* (colloid), *Kaopectate* (Pectin)
  - o Antibiotics

Constipation - Functional, Colonic, Rectal, Neurologic, Metabolic, Drugs

- Tx
  - o Irritants – *Castor oil, Cascara sagrada, Senna, Bisacodyl*
  - o Osmotics – Magnesium and sodium containing drugs, *Lactulose*
  - o Bulk forming (fiber) – *Psyllium, Methycellulose*
  - o Lubricant – Mineral oil, *Dioctyl sodium sulfo-succinate* (Colace), *Poloxalkol*

IBD (Crohn's and UC) - Probably autoimmune in origin

- Tx
  - o Acute
    - Anti-inflammatory – *Mesalamine, Sulfasalazine, Olsalazine*
    - Steroids
    - Antibiotics
  - o Chronic
    - Antimetabolites (interfere with DNA synthesis) – *Azathioprine*
    - Steroids
    - Monoclonal antibodies to TNF-alpha – *Infliximab*
    - T-cell suppression – *Cyclosporine*

IBS - Psychosocial factors, altered sensation and altered motility

- Tx
  - o Bulk forming (diarrhea or constipation) – *Metamucil, Fibercon*
  - o Opioids(diarrhea) – *Loperamide*
  - o Anticholinergic (diarrhea, spasms) – *Dicyclomine, Hyoscyamine*
  - o Serotonin antagonists (diarrhea) – *Alosetron*
  - o Serotonin agonists (constipation) – *Tegaserod*
  - o Antidepressants