

Introduction to Clinical Pharmacology

- Chapter 39
Lower Gastrointestinal System Drugs



Alter Function of Lower Gastrointestinal System

- **Constipation:** hardened fecal material that is difficult to pass
- **Diarrhea:** loose, watery stool
- **Inflammatory bowel disease:** inflammation of the bowel (e.g., Crohn disease and ulcerative colitis)

Types of Drugs

- Aminosalicylates
- Antidiarrheals
- Antiflatulents
- Laxatives



MAJOR NDC 0904-7205-48
Compare to the active ingredient
in Pepto-Bismol™

Bismuth Subsalicylate

262 mg

**Upset Stomach Reliever/
Antidiarrheal**

Soothing, coating action
provides fast relief for
heartburn, indigestion,
nausea, upset stomach
and diarrhea



30 Chewable Tablets

Aminosalicylates: Actions and Uses

- Aspirin-like compound with anti-inflammatory action
- Exerts topical anti-inflammatory effect in bowel
- Used to treat Crohn disease, ulcerative colitis, inflammatory diseases

Aminosalicylates: Adverse Reactions

- GI system reactions:
 - Abdominal pain, nausea, diarrhea
- Headache
- Dizziness
- Fever, weakness



Aminosalicylates: Contraindications and Precautions

- Contraindicated:
 - In patients with known hypersensitivity to drugs or salicylate-containing drugs
 - In patients with hypersensitivity to sulfonamides and sulfites, intestinal obstruction; in children under 2 years
- Used cautiously in patients:
 - During pregnancy and lactation

Aminosalicylates: Interactions

Interactant drug	Effect of interaction
Digoxin	Reduced absorption of digoxin
Methotrexate	Increased risk for immunosuppression
Oral hypoglycemic drugs	Increased blood glucose level
Warfarin	Increased risk for bleeding

Antidiarrheals: Actions and Uses

- Used in:
 - Treatment of diarrhea
 - Treatment of chronic diarrhea associated with IBD
- Drugs are opioid related, have sedative and euphoric effects but no analgesic activity



Antidiarrheals: Adverse Reactions

- Gastrointestinal reactions:
 - Anorexia, nausea, vomiting, constipation
 - Abdominal discomfort, pain, distention
- Other reactions:
 - Dizziness, drowsiness, headache
 - Sedation and euphoria
 - Rash

Antidiarrheals: Contraindications and Precautions

- Contraindicated in:
 - Patients whose diarrhea is associated with organisms that can harm intestinal mucosa
 - Children younger than 2 years
- Used with caution in patients:
 - With pseudomembranous colitis, abdominal pain of unknown origin, obstructive jaundice

Antidiarrheals: Interactions

Interactant drug	Effect of interaction
Antihistamines, opioids, sedatives, or hypnotics	Increased risk for CNS depression
Antihistamines and general antidepressants	Increased cholinergic blocking adverse reactions
MAOI antidepressants	Increased risk for hypertensive crisis

Antiflatulents: Actions

- Simethicone and charcoal:
 - Help body release gas by belching or flatus
- Simethicone:
 - Defoaming action that disperses and prevents formation of gas pockets in intestine
- Charcoal:
 - Helps bind gas for expulsion

Antiflatulents: Uses and Adverse Reactions

- Used to relieve painful symptoms of excess gas in the digestive tract, which are caused by:
 - Postoperative gaseous distention and air swallowing
 - Dyspepsia
 - Peptic ulcer
 - Irritable bowel syndrome or diverticulosis
- No adverse reactions reported

Antiflatulents: Contraindications, Precautions, and Interactions

- Contraindicated in patients:
 - With known hypersensitivity to components of drug
- Interactions:
 - Decreased effectiveness of other drugs due to adsorption by charcoal, which adsorbs other drugs in GI tract

Laxatives: Actions and Uses

- Actions:
 - Relief of constipation
- Uses:
 - Stimulant, emollient, saline laxatives
 - Stool softeners or mineral oil
 - Psyllium and polycarbophil
 - Hyperosmotic (lactulose) agents



Laxatives: Adverse Reactions #1

- Constipation
- Diarrhea and loss of water and electrolytes
- Abdominal pain or discomfort
- Nausea and vomiting
- Perianal irritation, fainting, bloating
- Flatulence
- Cramps and weakness

Laxatives: Adverse Reactions #2

- Prolonged use of a laxative:
 - Serious electrolyte imbalances
- Administering bulk-forming laxatives:
 - Obstruction of esophagus, stomach, small intestine, and colon

Laxatives: Contraindications and Precautions

- Contraindicated in patients:
 - With known hypersensitivity, persistent abdominal pain, nausea, vomiting of unknown cause or signs of acute appendicitis, fecal impaction, intestinal obstruction, acute hepatitis
- Used cautiously in patients:
 - With rectal bleeding
 - During pregnancy and lactation

Laxatives: Interactions

- Mineral oil may impair the GI absorption of fat-soluble vitamins
- Reduce absorption of drugs present in GI tract by combining with them chemically or hastening their passage through intestinal tract
- Surfactants administered with mineral oil, may increase mineral oil absorption
- Milk, antacids, histamine H₂ antagonists, and proton pump inhibitors should not be administered 1 to 2 hours before bisacodyl tablets because the enteric coating may dissolve early

Nursing Process: Assessment #1

- Preadministration assessment:
 - Review patient's chart for medical diagnosis and reason for administration of prescribed drug
 - Question regarding type and intensity of symptoms to provide baseline for evaluation of effectiveness of drug therapy
 - Auscultate bowel sounds; palpate abdomen; monitor signs of guarding, discomfort

Nursing Process: Assessment #2

- Ongoing assessment:
 - Assess the patient for relief of symptoms
 - Monitor vital signs daily or more frequently if severe diarrhea, other condition
 - Observe for adverse reactions
 - Evaluate effectiveness of the drug therapy



Nursing Process: Diagnosis

- **Risk for Imbalanced Fluid Volume**
related to diarrhea

Nursing Process: Planning

- Expected outcomes:
 - Optimal response to drug therapy
 - Support of patient needs related to management of adverse reactions
 - Understanding of and compliance with prescribed therapeutic regimen

Nursing Process: Implementation

#1

- Promoting an optimal response to therapy
 - Antidiarrheals:
 - Inspect each bowel movement before administering the drug
 - Laxatives:
 - Give bulk-producing or stool-softening laxatives with full glass of water or juice
 - Administer mineral oil to the patient on empty stomach in the evening

Nursing Process: Implementation

#2

- Promoting an optimal response to therapy (cont.)
 - Laxatives (cont.)
 - Before administration, thoroughly mix and stir laxatives that are in powder, flake, granule form
 - Explain that laxative has an unpleasant or salty taste

Nursing Process: Implementation

#3

- Monitoring and managing patient needs
 - Imbalanced fluid volume:
 - Notify primary health care provider if elevation in body temperature or severe abdominal pain or abdominal rigidity or distention occurs
 - Closely monitor fluid intake, output
 - Cleanse area with mild soap and water after each bowel movement, dry the area with soft cloth, apply emollient for perianal irritation

Nursing Process: Implementation

#4

- Monitoring and managing patient needs (cont.)
 - Imbalanced fluid volume (cont.)
 - Record bowel movement results when laxative is administered
 - Notify the primary health care provider if excessive bowel movements or severe prolonged diarrhea occur or if laxative is ineffective

Nursing Process: Implementation

#5

- Educating the patient and family:
 - Antidiarrheals:
 - Explain the importance of taking the drug as directed
 - Emphasize observing caution when driving or performing other hazardous tasks
 - Instruct to avoid use of alcohol or other CNS depressants, other nonprescription drugs

Nursing Process: Implementation

#6

- Educating the patient and family (cont.)
 - Antiflatulents:
 - Emphasize the importance of chewing the tablets
 - Explain the necessity of contacting the primary health care provider immediately if symptoms are not relieved

Nursing Process: Implementation

#7

- Educating the patient and family (cont.)
 - Laxatives:
 - Emphasize the importance of avoiding long-term use of products unless recommended
 - Instruct patient not to use products in presence of abdominal pain, nausea, vomiting



Nursing Process: Implementation

#8

- Educating the patient and family (cont.)
 - Laxatives (cont.)
 - Explain the importance of drinking plenty of fluids, getting exercise, and eating foods high in bulk or roughage
 - Inform about the discoloration of urine that may occur

Nursing Process: Evaluation

- Therapeutic drug effect is achieved
- Adverse reactions are identified and reported
- Patient demonstrates understanding of drug regimen
- Patient verbalizes the importance of complying with prescribed treatment regimen
- Patient verbalizes an understanding of treatment modalities and importance of continued follow-up care

Question #1

- Is the following statement true or false?
- The lower gastrointestinal (GI) system includes the stomach and small and large intestines.

Answer to Question #1

- False
- The lower gastrointestinal (GI) system includes the small and large intestines.

Question #2

- Is the following statement true or false?
- Multiple OTC products exist to treat GI symptoms.

Answer to Question #2

- True
- Multiple OTC products exist to treat GI symptoms.

Question #3

- Is the following statement true or false?
- Absorption of both nutrients and fluid occurs in the intestines, as does the exchange of waste products.

Answer to Question #3

- True
- Absorption of both nutrients and fluid occurs in the intestines, as does the exchange of waste products.