NCLEX-RN · PHARMACOLOGY · GI SYSTEM

2026 TEST PLAN

Antidiarrheals

Slowing the gut, saving the fluid balance — and knowing when NOT to reach for the bottle. A rapid-review masterclass for clinical judgment under pressure.

CLASS · MULTIPLE | SYSTEM · GASTROINTESTINAL | ROUTE · PO / SQ / IV | ⚠ HIGH-ALERT CONSIDERATIONS

01

Drug Overview — Why We Give It

- **Acute non-infectious diarrhea** — symptom control, preserve hydration
- **Traveler's diarrhea** — bismuth for prophylaxis & treatment
- **Chronic diarrhea** — IBS-D, functional bowel disorders
- **Ostomy output control** — loperamide reduces ileostomy volume
- **Post-chemo / radiation diarrhea** — quality-of-life intervention
- **Severe secretory diarrhea** — octreotide for carcinoid, VIPoma, HIV-associated
- **Bile-acid diarrhea** — cholestyramine binds excess bile salts

⚠ **PRIORITY RULE:** Diarrhea is often the body clearing a pathogen or toxin. Always identify the **cause** before suppressing the symptom. If infection is suspected, antidiarrheals can trap toxins and trigger toxic megacolon or sepsis.

02

Mechanism of Action

Loperamide (Imodium)

μ-opioid receptor agonist → gut wall only (poor CNS penetration)

→ ↓ peristalsis → ↑ transit time → ↑ water & electrolyte reabsorption → firmer, less frequent stool

Diphenoxylate + Atropine (Lomotil)

Opioid (diphenoxylate) → same gut-slowing effect as loperamide

Atropine added in sub-therapeutic anticholinergic dose → discourages abuse (causes unpleasant SE at high doses)

Bismuth Subsalicylate (Pepto-Bismol)

Antisecretory + anti-inflammatory + mild antimicrobial

→ binds bacterial toxins → coats GI mucosa → ↓ fluid secretion

Cholestyramine (Questran)

Bile-acid sequestrant → binds bile salts in intestinal lumen

→ ↓ bile-acid-induced secretion & motility (useful post-cholecystectomy or ileal resection)

Octreotide (Sandostatin)

Somatostatin analog → ↓ release of GI hormones (VIP, gastrin, serotonin)

→ ↓ splanchnic blood flow → ↓ intestinal fluid secretion

03

Therapeutic Effects — Is It Working?

- **↓ Stool frequency** (goal: <3 loose stools/day)
- **↑ Stool consistency** — firmer, more formed
- **↓ Urgency & cramping**
- **Restored hydration** — moist mucous membranes, brisk cap refill, good skin turgor, UOP ≥0.5 mL/kg/hr
- **Normalized vitals** — resolved tachycardia, stable BP, no orthostatic changes
- **Balanced electrolytes** — K^+, Na^+, HCO_3^- within range
- **Weight stabilization** in chronic/oncology patients
- **Improved quality of life** — return to ADLs, sleep, work

04 Side Effects & Adverse Reactions

COMMON · EXPECTED

- Constipation (most common)
- Abdominal cramping, bloating, distension
- Dry mouth (atropine in Lomotil)
- Dizziness, drowsiness, fatigue
- Nausea, vomiting
- **Black tongue & stool** (bismuth — harmless but TEACH)
- Urinary retention, blurred vision (anticholinergic)

SERIOUS · 🚨 LIFE-THREATENING

- **Toxic megacolon** — distended abdomen, fever, ↓ bowel sounds
- **Paralytic ileus** — absent bowel sounds, obstipation
- **Loperamide cardiotoxicity** — QT prolongation, torsades, cardiac arrest (high-dose abuse)
- **CNS depression / respiratory depression** — diphenoxylate overdose (esp. pediatric)
- **Reye's syndrome** — bismuth + viral illness in children/teens
- **Salicylate toxicity** — tinnitus, tachypnea, confusion (bismuth)
- **Pancreatitis** (octreotide, rare)
- Anaphylaxis (rare)

LOPERAMIDE WARNING: Abuse for opioid-like effects at supratherapeutic doses causes **prolonged QT, torsades de pointes, and sudden cardiac death**. Never exceed 16 mg/day (OTC) or 8 mg/day (OTC self-treatment).

05

Priority Nursing Considerations

Assessment Before Administration

- ASSESS Stool — color, consistency, frequency, blood, mucus, pus
- ASSESS Onset, duration, recent travel, antibiotic use (C. diff?), food exposures
- ASSESS Hydration — skin turgor, mucous membranes, cap refill, urine output, weight
- ASSESS Bowel sounds in all 4 quadrants — establish baseline
- ASSESS VS — fever suggests infection (HOLD drug); tachycardia/hypotension = dehydration

HOLD the Drug If...

- HOLD **Bloody, black, or tarry stools** (GI bleed / invasive infection)
- HOLD **Fever > 101.3°F (38.5°C)** — infectious cause likely
- HOLD **Suspected / confirmed C. difficile** — antidiarrheals worsen outcomes
- HOLD **Pseudomembranous colitis** or IBD flare
- HOLD **Bacterial enteritis** — Salmonella, Shigella, E. coli O157:H7
- HOLD **Abdominal distension / absent bowel sounds** (ileus, obstruction)
- HOLD **Children <2 years** — loperamide contraindicated
- HOLD Bismuth in children/teens with flu or chickenpox (Reye's)

Monitor Continuously

- MONITOR I&O strictly, daily weights
- MONITOR Electrolytes — especially K^+ (hypokalemia → cardiac arrhythmias)

- MONITOR Abdominal distension — early toxic megacolon sign
- MONITOR Neuro status in pediatrics on diphenoxylate
- MONITOR ECG if high-dose loperamide (QT interval)

Drug Interactions

- **Loperamide + quinidine / ritonavir / ketoconazole** → ↑ loperamide plasma levels → cardiotoxicity
- **Bismuth + warfarin / anticoagulants** → ↑ bleeding risk (salicylate effect)
- **Bismuth + tetracyclines / quinolones** → ↓ antibiotic absorption (separate by 2 hrs)
- **Cholestyramine + ANY oral med** → ↓ absorption (give others 1 hr before or 4–6 hrs after)
- **Diphenoxylate + CNS depressants / MAOIs** → respiratory depression, hypertensive crisis

Notify Provider

- NOTIFY No improvement in **48 hours**
- NOTIFY Worsening pain, distension, vomiting
- NOTIFY New fever or bloody stool during therapy
- NOTIFY Signs of dehydration despite treatment

06

Labs & Diagnostics

LAB / TEST	WHY IT MATTERS	CRITICAL / ABNORMAL
Stool culture & C. diff toxin	Rule OUT infectious cause before antidiarrheal	Positive → HOLD antidiarrheal; treat infection
Potassium (K^+)	Major loss in stool → arrhythmia risk	<3.5 mEq/L = hypokalemia (weakness, U waves, dysrhythmia)
Sodium (Na^+)	Fluid loss → hyponatremia or hypernatremia	<135 or >145 mEq/L — neuro symptoms
Bicarbonate (HCO_3^-)	Lost in stool → metabolic acidosis	<22 mEq/L = acidosis (Kussmaul respirations)
BUN / Creatinine	Dehydration → pre-renal AKI	↑ BUN/Cr ratio >20:1 = dehydration
CBC	Infection (↑ WBC), GI bleed (↓ Hgb/Hct)	WBC >12,000 = infection; Hgb drop = bleed
Lactate	Severe dehydration / bowel ischemia	>2 mmol/L = tissue hypoperfusion
ECG (12-lead)	Loperamide high-dose cardiotoxicity	QTc >500 ms = torsades risk — HOLD drug
Abdominal X-ray / KUB	Rule out obstruction, toxic megacolon	Colonic dilation >6 cm = toxic megacolon emergency

07

Administration & Safety

- **Loperamide:** PO. Adult initial 4 mg, then 2 mg after each loose stool. **Max 16 mg/24 hr (Rx)** or 8 mg/24 hr (OTC)
- **Diphenoxylate/atropine:** PO, **Schedule V controlled**. 2 tabs QID PRN; reduce once controlled
- **Bismuth subsalicylate:** PO liquid/tabs. Shake well. Space from other oral meds by 1–2 hrs
- **Cholestyramine:** Powder mixed in 60–180 mL fluid (juice, water). Never swallow dry → esophageal obstruction. Other meds **1 hr before or 4–6 hrs after**
- **Octreotide:** SQ or IV. Rotate SQ sites. Bring to room temp to reduce injection pain

HIGH-ALERT PRECAUTION: Loperamide & diphenoxylate are **subject to abuse** for opioid effects. Count doses in inpatient settings. Teach patients to never exceed labeled dose.

PEDIATRIC SAFETY: Diphenoxylate/atropine overdose can cause fatal respiratory depression in children. Keep locked. Loperamide contraindicated in children <2. Bismuth NEVER given to children/teens with fever or viral illness.

08 Patient Education

Hydration & Diet

- Drink **oral rehydration solutions** (Pedialyte, diluted Gatorade, broth) — plain water alone ≠ adequate
- Follow **BRAT diet**: Bananas, Rice, Applesauce, Toast — low-fiber, binding
- Avoid dairy, caffeine, alcohol, greasy/spicy foods, sorbitol-sweetened products
- Resume regular diet gradually as stools firm up

Medication Safety

- **Do NOT exceed labeled dose** — risk of heart problems and even death with loperamide overdose
- Bismuth will **turn tongue & stool black** — harmless, expected
- **Never give aspirin or bismuth to children/teens with flu or chickenpox** (Reye's syndrome — brain and liver injury)
- Lomotil causes drowsiness — **no driving or heavy machinery**
- Cholestyramine: always mix with liquid; take vitamins (especially fat-soluble A, D, E, K) separately

Seek Help Immediately If...

- **Bloody or black stools**
- **High fever (>101.3°F / 38.5°C)**
- **Severe abdominal pain or distension**
- **Signs of dehydration**: dizziness, dry mouth, dark urine, no tears, confusion
- **Diarrhea lasts > 48 hours** on medication
- **Palpitations, fainting, chest pain** — especially on loperamide

- **Ringing in ears** (salicylate toxicity from bismuth)

09

NCLEX Test Traps ⚠

TRAP #1 — "Treat the diarrhea first": WRONG. The PRIORITY is identifying the cause. If infectious (C. diff, Salmonella, Shigella, E. coli), antidiarrheals *trap toxins* → toxic megacolon, sepsis. ⚠

TRAP #2 — Bismuth + pediatric fever: NEVER. Contains salicylate → *Reye's syndrome* in children/teens with viral illness (flu, varicella). ⚠

TRAP #3 — "Black stool = GI bleed": On bismuth, black stool is *expected*. But **always assess** to rule out true melena (tarry, foul-smelling, drop in Hgb). ⚠

TRAP #4 — "More loperamide = better": FALSE. High doses cause *QT prolongation, torsades, sudden cardiac death*. It's a cardiac drug at abuse doses. ⚠

TRAP #5 — C. diff & antidiarrheals: Recent antibiotics + watery diarrhea + fever = C. diff until proven otherwise. HOLD antidiarrheal, obtain stool sample, initiate contact precautions (soap & water — NOT alcohol gel). ⚠

TRAP #6 — Cholestyramine timing: Never given with other meds. Separate by *1 hr before or 4–6 hrs after*. Common trap with digoxin, warfarin, thyroid meds. ⚠

TRAP #7 — Diphenoxylate in children: Lomotil is potentially *lethal in small children*. Always clarify age and weight before administration. ⚠

TRAP #8 — Mistaking dehydration for worsening illness: Tachycardia, hypotension, oliguria, confusion in an elderly diarrhea patient = volume depletion first, not sepsis until ruled out. *Fluid resuscitate.* ⚠

10

Memory Boosters

MNEMONIC

"DIARRHEA" — Priorities for any diarrhea patient

Dehydration — assess & replace

Infection — rule out BEFORE antidiarrheal

Acid-base — metabolic acidosis (lost HCO_3^-)

Rest the bowel

Replace fluids & electrolytes

Hypokalemia — watch K^+, cardiac monitor

Evaluate stool (color, blood, mucus)

Assess skin turgor, I&O, weight

MNEMONIC

"STOP" — Before Giving Any Antidiarrheal

Stool characteristics — blood? mucus?

Temperature — fever → suspect infection

Obstruction ruled out? (bowel sounds, distension)

Pathogen ruled out? (recent abx, travel, culture)

MNEMONIC

"LOPE slows the ROPE" — Loperamide slows peristalsis (the gut "rope")

MNEMONIC

"Pepto turns it BLACK" — Bismuth → black tongue & stool (harmless but teach)

MNEMONIC

"No Pepto for Little People" — Bismuth contraindicated in children/teens with viral illness (Reye's)

MNEMONIC

"Lomotil = Little Opioid + atropine" — the atropine is there to make you miserable if you abuse it

11 · CAPSTONE

🧠 Clinical Judgment Snapshot

1 *What is the #1 priority risk with this drug?*

Masking an infectious process — suppressing diarrhea when the body is clearing a pathogen (C. diff, Salmonella, Shigella, E. coli O157:H7) causes toxin retention → **toxic megacolon, perforation, sepsis, death**.

2 *What will harm the patient FIRST?*

Dehydration + hypokalemia + metabolic acidosis from unrecognized fluid & electrolyte loss — leading to hypovolemic shock, cardiac dysrhythmias, and AKI before the drug itself causes harm.

3 *What is the FIRST nursing action in a scenario?*

ASSESS before you suppress. Evaluate stool (blood, mucus, frequency), VS (fever, tachycardia, BP), hydration status, bowel sounds, recent antibiotic/travel history. **Rule out infection & obstruction BEFORE administering any antidiarrheal.**

12 Most-Tested Drugs in This Class

OPIOID · OTC

Loperamide

Imodium

- μ-opioid receptor agonist (gut-only)
- Most commonly tested; OTC & Rx
- Max 16 mg/day (Rx), 8 mg/day (OTC)
- ⚠ Cardiotoxicity / torsades at abuse doses
- Contraindicated <2 yrs

OPIOID · C-V

Diphenoxylate + Atropine

Lomotil

- Opioid + anticholinergic deterrent
- Schedule V controlled substance
- Drowsiness, dry mouth, blurred vision
- ⚠ Lethal pediatric overdose risk
- Avoid with MAOIs, CNS depressants

ADSORBENT

Bismuth Subsalicylate

Pepto-Bismol · Kaopectate

- Binds toxins, coats mucosa, antimicrobial
- Traveler's diarrhea prophylaxis
- Turns tongue & stool black (harmless)
- ⚠ Reye's syndrome risk (contains salicylate)
- ⚠ ↑ bleeding with anticoagulants

BILE BINDER

Cholestyramine

Questran

- Bile-acid sequestrant
- Post-cholecystectomy / ileal resection diarrhea
- Mix powder in fluid — never dry
- Separate from other meds by 1 hr before or 4–6 hrs after
- ⚠ Fat-soluble vitamin deficiency (A, D, E, K)

SOMATOSTATIN

Octreotide

Sandostatin

- Somatostatin analog (SQ/IV)
- Severe secretory diarrhea: carcinoid, VIPoma, HIV, post-chemo
- Also used for esophageal variceal bleeding
- ⚠ Hyperglycemia, gallstones, pancreatitis
- Rotate injection sites

PROBIOTIC

Lactobacillus / Saccharomyces

Culturelle · Florastor

- Restores normal gut flora
- Adjunct for antibiotic-associated diarrhea
- Cautious use in immunocompromised
- Generally well-tolerated

Key Differences at a Glance

DRUG	*MECHANISM*	*TOP WATCH-OUT*
Loperamide	Slows peristalsis (opioid, gut only)	QT prolongation at high doses
Diphenoxylate/atropine	Slows peristalsis + abuse deterrent	CNS/resp depression, C-V scheduled
Bismuth	Binds toxins, coats mucosa	Reye's, salicylate toxicity

DRUG	MECHANISM	TOP WATCH-OUT
Cholestyramine	Binds bile acids	Drug absorption interference