NCLEX-RN · PHARMACOLOGY · VOL. 01

GI · EXOCRINE PANCREAS

Pancreatic *Enzymes.*

Pancrelipase — a porcine-derived replacement for lipase, amylase, & protease. High-yield, high-stakes, high-traps.

GENERIC: PANCRELIPASE | BRAND: CREON · ZENPEP · PANCREAZE · PERTZYE · ULTRESA | CLASS: PERT | SYSTEM: GI · ENDOCRINE

01 Drug Overview — Why We Give It

CORE INDICATIONS

- **Cystic fibrosis** — #1 tested population
- **Chronic pancreatitis**
- Pancreatic cancer
- Post-pancreatectomy / Whipple procedure
- Exocrine pancreatic insufficiency (EPI)
- Shwachman–Diamond syndrome
- Pancreatic duct obstruction

THE CLINICAL PROBLEM

- Pancreas can't secrete enough digestive enzymes
- Fats, proteins, and carbs pass through undigested
- Results in **steatorrhea** (bulky, pale, floating, foul stools)
- Leads to weight loss, malnutrition, fat-soluble vitamin deficiency (A, D, E, K)
- Pancrelipase **replaces** missing enzymes at mealtime

02 🟥 Mechanism of Action — Simplified

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Pancreatic insufficiency → ↓ enzymes in duodenum → maldigestion

Pancrelipase PO with meal → enteric coating protects from stomach acid → releases in alkaline duodenum

↳ Lipase → breaks fats into fatty acids + glycerol
↳ Amylase → breaks carbs into sugars
↳ Protease → breaks proteins into amino acids

→ absorption restored → ↓ steatorrhea → weight/nutrition improve
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- **Think "LAP"** — *L*ipase, *A*mylase, *P*rotease
- Enteric coating = must not be crushed or chewed (acid will destroy enzymes)
- Porcine-derived (pig pancreas) — pork allergy = contraindication

03 🟩 Therapeutic Effects — It's Working When...

- **Stools normalize** — less bulky, less greasy, less foul-smelling, no longer floating
- **Weight gain** or stable weight maintenance
- Decreased abdominal cramping, bloating, flatulence
- Improved nutritional markers: **albumin, prealbumin, fat-soluble vitamins**
- Growth velocity improves (pediatric CF patients)
- 72-hour fecal fat test trends toward normal
- Overall energy, appetite, and quality of life improve

04 🟧 Side Effects & Adverse Reactions

COMMON (EXPECTED)

- Abdominal cramping / pain
- Nausea, vomiting
- Diarrhea or constipation
- Flatulence, bloating
- Headache
- Oral or perioral skin irritation

🚨 SERIOUS / LIFE-THREATENING

- **Fibrosing colonopathy** — high-dose, especially pediatric CF. S/Sx: severe abdominal pain, bloody stool, obstruction
- **Anaphylaxis** — porcine hypersensitivity
- **Hyperuricemia → gout flare** — joint pain, ↑ uric acid
- GI obstruction if capsule swallowed incorrectly
- Oral mucosal ulceration if chewed

05 Priority Nursing Considerations

→ ASSESS & MONITOR

- Weight, BMI, growth (peds)
- Stool frequency, consistency, color, floating
- Abdominal pain, bloating, bowel sounds
- Nutritional intake & appetite
- Signs of fibrosing colonopathy (bloody stool, severe pain)
- Joint pain / gout symptoms
- Hypersensitivity: rash, urticaria, wheezing, swelling

HOLD / CONTRAINDICATIONS

- **Pork / porcine hypersensitivity** — absolute contraindication
- Acute pancreatitis — during the acute phase
- Hold and notify if: rash, dyspnea, severe abdominal pain, bloody stools

KEY DRUG INTERACTIONS

- **Antacids with calcium or magnesium** — inactivate enzymes; separate administration
- **Iron supplements** — absorption may be ↓; monitor ferritin
- **PPIs / H2 blockers** — often *added intentionally* to raise gastric pH and protect the enteric coating (not an error)
- Alkaline foods/liquids (dairy, hot foods) — destroy enzymes on contact

06 Labs & Diagnostics

- **Fat-soluble vitamins (A, D, E, K)** — ↓ levels = inadequate replacement, malabsorption continues
- **Serum uric acid** — ↑ levels = risk of hyperuricemia / gout flare
- **72-hour fecal fat test** — gold standard for malabsorption; elevated = underdosed
- **Weight, BMI, growth charts** — nutritional trending
- **Albumin, prealbumin** — protein status
- **Fecal elastase-1** — confirms pancreatic insufficiency (low = insufficient)
- **CBC + electrolytes** — baseline nutritional assessment; dehydration from diarrhea
- Abdominal imaging if suspecting fibrosing colonopathy

07 🟥 Administration & Safety

DO

- Give **WITH every meal and snack** — not before, not after
- **Swallow capsule whole** with full glass of water
- If unable to swallow: open capsule, sprinkle beads on **small amount of applesauce**
- Consume mixture **immediately** — do not store
- Wipe lips / perioral skin after dose
- Start at lowest effective dose, titrate to stool response
- Administer with PPI / H2 blocker if prescribed

DON'T

- Do **NOT crush, chew, or break** capsules (destroys enteric coating)
- Do **NOT hold in mouth** (oral mucosal ulceration)
- Do **NOT mix with dairy, milk, pudding, ice cream** (alkaline → inactivates enzymes)
- Do **NOT mix with hot foods** (heat destroys enzymes)
- Do **NOT exceed** recommended unit/kg dose (fibrosing colonopathy risk)
- Do **NOT give** with calcium/magnesium antacids at same time

08 🟦 Patient Education — Must Know

TEACHING POINTS

- Take with **every** meal and snack — never skip
- Swallow whole — if you can't, sprinkle on **applesauce only**
- Drink a full glass of water after each dose
- Wipe mouth after — enzymes irritate skin
- Keep capsules cool and dry; protect from moisture
- Expect: smaller, less greasy, less smelly stools
- Maintain hydration and balanced, high-calorie diet (CF)

🚨 CALL THE PROVIDER IF…

- **Severe abdominal pain** or **bloody stools** (fibrosing colonopathy)
- **Rash, hives, wheezing, swelling** (porcine anaphylaxis)
- **Joint pain, swelling** (gout / hyperuricemia)
- **No improvement in stools** after 1–2 weeks (dose & timing review)
- Persistent weight loss despite adherence

09 🟨 NCLEX Test Traps ⚠️

⚠ **Timing trap** — **"30 min before meals"** is WRONG. **WITH meals** is correct. Without food to digest, enzymes do nothing.

⚠ **Mixer trap** — **milk, pudding, ice cream, yogurt** all INACTIVATE enzymes (alkaline). **Applesauce only** — acidic and cool.

⚠ **Crushing trap** — never crush or chew. Enteric coating must reach duodenum intact. Chewing = oral ulcers.

⚠ **Allergy trap** — **pork / porcine allergy** = absolute contraindication. Ask about this before first dose.

⚠ **PPI trap** — if patient is on a PPI with Creon, this is **intentional** (raises gastric pH to protect coating). Not a prescribing error.

⚠ **High-dose trap** — in CF kids, **>2,500 lipase units/kg/meal** → fibrosing colonopathy. More is NOT better.

⚠ **Skin trap** — enzymes digest skin protein. Wipe lips/perioral area. Don't let capsule contents sit on skin.

⚠ **Flatulence trap** — mild gas is **expected**, not a reason to stop. Report bloody stools or severe pain instead.

⚠ **Evaluation trap** — don't judge effectiveness by symptom relief alone. **Weight + stool character + vitamin levels** together.

10 🟩 Memory Boosters

LAP

Lipase · **A**mylase · **P**rotease — the three enzymes inside every capsule.

PEP with every Plate

Pancreatic **E**nzymes + **P**late = WITH every meal and snack.

AAA

Acidic **A**pplesauce **A**lways — the only acceptable mixer if capsule is opened.

"DAIRY is a DARE"

Alkaline dairy kills the drug. Never mix with milk, pudding, yogurt, or ice cream.

"PIG = NO"

Porcine source → pork allergy = contraindication. Always ask before first dose.

"Stool tells the story"

Effectiveness = smaller, formed, non-floating, non-greasy stools + weight gain.

★ FINAL SECTION · CLINICAL JUDGMENT SNAPSHOT

Think like the *NCLEX.*

When the question gets hard, anchor on these three answers.

Q1 · #1 PRIORITY RISK

Anaphylaxis from porcine hypersensitivity & fibrosing colonopathy at high doses.

Always screen for pork allergy before the first dose. In CF, keep dosing ≤ 2,500 lipase units/kg/meal. Severe abdominal pain + bloody stools = STOP drug, escalate immediately.

Q2 · WHAT HARMS FIRST?

Malnutrition from wrong administration timing.

If the patient takes it before or after meals, or mixes it with milk, the enzymes never work. Steatorrhea continues → fat-soluble vitamin deficiency → weight loss → failure to thrive, especially in CF pediatrics.

Q3 · FIRST NURSING ACTION

Assess administration technique & timing before escalating.

"Not working" almost always = patient took it wrong. Ask: *When do you take it? What do you mix it with? Do you chew it?* If rash/dyspnea → STOP drug + assess airway. If bloody stool/severe pain → STOP drug + notify provider.