🟦 MAST CELL STABILIZERS

NGN NCLEX-RN Pharmacology Infographic | 2026 Test Plan

Generic: Cromolyn Sodium • Nedocromil • Lodoxamide • Ketotifen

Brand: Intal®, Gastrocrom®, NasalCrom®, Crolom®, Tilade®, Alomide®, Zaditor®

Class: Mast Cell Stabilizer (Anti-inflammatory / Anti-allergic)

System: Respiratory / Immune / Ophthalmic / GI

🟨 1. DRUG OVERVIEW

🎯 KEY INDICATIONS (Why we give it):

- **Asthma prophylaxis** → chronic maintenance only (NOT for acute attacks)
- **Exercise-induced bronchospasm** → give 15–20 min BEFORE exercise
- **Allergic rhinitis** (NasalCrom®) → seasonal/perennial allergies
- **Allergic conjunctivitis** (Crolom®, Alomide®) → itchy, watery eyes
- **Systemic mastocytosis** (oral cromolyn/Gastrocrom®) → GI symptoms
- **Food allergies** (oral) → prevents mast cell GI reactions

💡 HIGH-YIELD CLINICAL USE:

⚠️ **PROPHYLAXIS ONLY — NEVER a rescue inhaler!**

- Safer than corticosteroids → often used in children & pregnancy (Category B)
- **Takes 2–4 weeks** for full therapeutic effect

🟥 2. MECHANISM OF ACTION (SIMPLIFIED)

🔬 THE DEGRANULATION BLOCKADE:

Stabilizes mast cell membrane

→ Blocks calcium (Ca^{2+}) influx into mast cells

→ Prevents **DEGRANULATION** of mast cells

→ Blocks release of **HISTAMINE, leukotrienes, prostaglandins, cytokines**

→ ↓ Inflammatory cascade

→ ↓ Bronchoconstriction, mucus, edema, itching

🧠 KEY CONCEPT:

✋ **STOPS the allergic reaction BEFORE it starts — does NOT reverse one in progress!**

- **No bronchodilator effect** (unlike albuterol)
- **No anti-inflammatory effect once mediators released** (unlike steroids)

🟧 3. THERAPEUTIC EFFECTS

✅ WHAT IMPROVEMENT TO EXPECT:

- ↓ Frequency of asthma attacks
- ↓ Need for rescue inhaler (albuterol)
- ↓ Nighttime awakenings from wheezing/coughing
- ↓ Exercise-induced symptoms
- ↓ Nasal congestion, sneezing, rhinorrhea
- ↓ Ocular itching, redness, tearing
- Improved PEFR (peak expiratory flow rate)

⏱️ TIMING OF EFFECT:

⚡ **Full effect: 2–4 WEEKS of consistent use**

- **Patient MUST use daily even when asymptomatic**
- Do NOT stop abruptly → symptoms return

🟩 4. SIDE EFFECTS & ADVERSE REACTIONS

🟢 COMMON (Usually Mild):

- **Cough, throat irritation** (most common inhaled SE)
- Bad/bitter taste in mouth
- Dry mouth, hoarseness
- Nasal burning/stinging (nasal form)
- Transient ocular stinging (eye drops)
- Headache, nausea, dizziness

🚨 SERIOUS / LIFE-THREATENING:

🚨 **PARADOXICAL BRONCHOSPASM — the drug meant to prevent wheezing CAUSES it!**

- **Paradoxical bronchospasm** → STOP drug, give rescue albuterol, notify HCP
- **Anaphylaxis** (rare but reported — angioedema, urticaria, hypotension)
- Laryngeal edema, stridor
- Eosinophilic pneumonia (rare, reversible)
- Severe dermatitis, SJS (very rare)

⚠️ TOXICITY SIGNS:

- **Worsening wheezing/SOB after dose**
- Facial swelling, tongue swelling, difficulty swallowing
- Chest tightness, stridor, urticaria

5. PRIORITY NURSING CONSIDERATIONS

ASSESS / MONITOR:

- → **Respiratory status:** breath sounds, RR, SpO_2, PEFR BEFORE and AFTER dose
- → Work of breathing, accessory muscle use, wheezing
- → Frequency of rescue inhaler use (should ↓ over 2–4 weeks)
- → Skin: rash, urticaria, angioedema
- → Symptom diary (asthma, rhinitis, conjunctivitis)

HOLD / STOP THE DRUG IF:

- **Paradoxical bronchospasm** (wheezing WORSE after dose)
- **Signs of anaphylaxis (angioedema, hives, hypotension)**
- **Acute asthma attack in progress** → give SABA instead!
- Severe dermatitis or SJS-like rash

CONTRAINDICATIONS:

- Hypersensitivity to cromolyn/nedocromil
- **Acute asthma exacerbation / status asthmaticus**
- Caution: renal or hepatic impairment (↓ dose)
- Caution: cardiac arrhythmias (rare reports with inhaled form)

DRUG INTERACTIONS:

- Minimal systemic absorption → FEW drug interactions
- Ketotifen: additive CNS depression with alcohol, sedatives, antihistamines

NOTIFY HCP IF:

- Symptoms WORSEN or no improvement after 4 weeks
- Any sign of anaphylaxis or paradoxical bronchospasm

6. LABS & DIAGNOSTICS

KEY LABS & TESTS:

- **PEFR (Peak Expiratory Flow Rate)** → gold standard for asthma control
- **Pulmonary Function Tests (PFTs)** → FEV_1 should improve
- **ABGs** → only if acute distress (this drug will NOT help!)
- **CBC with differential** → watch for eosinophilia (eosinophilic pneumonia)
- **BUN/Creatinine** → if renal impairment
- **LFTs** → if hepatic impairment

CRITICAL VALUES & INTERPRETATION:

- **PEFR <50% of personal best** → RED zone → MEDICAL EMERGENCY, cromolyn will NOT help
- **PEFR 50–80%** → Yellow zone → use rescue inhaler, evaluate
- **PEFR >80%** → Green zone → well controlled

- **SpO_2 <90%** → EMERGENCY — mast cell stabilizer is WRONG drug

🟥 7. ADMINISTRATION & SAFETY

💉 ROUTE & TIMING:

- **Inhaled (nebulizer/MDI):** 4 times daily; 15–20 min BEFORE exercise/allergen exposure
- **Nasal spray (NasalCrom®):** 3–6 times daily, start 1 week before allergy season
- **Ophthalmic drops:** 4–6 times daily for allergic conjunctivitis
- **Oral (Gastrocrom®):** 30 min BEFORE meals and at bedtime (for mastocytosis)

⚠️ SPECIAL INSTRUCTIONS:

- **Rinse mouth after inhaled dose → prevents throat irritation & bad taste**
- Use spacer with MDI for better delivery & fewer side effects
- If bronchospasm occurs → use SABA (albuterol) FIRST, then cromolyn
- Oral capsules (Gastrocrom): dissolve in hot water, then add cold water — DO NOT mix with food/juice
- Ophthalmic: remove contacts, wait 10 min to reinsert
- Do NOT stop abruptly → taper under HCP guidance

🔒 HIGH-ALERT PRECAUTIONS:

🚨 **NEVER substitute for a rescue inhaler. NEVER use in acute attack.**

- Always assess baseline respiratory status BEFORE first dose
- Have SABA available during initial doses (paradoxical bronchospasm risk)

🟦 8. PATIENT EDUCATION

📚 PATIENT MUST KNOW:

- **"This drug PREVENTS attacks — it does NOT stop one in progress."**
- **"Use it EVERY DAY, even when you feel fine."**
- "You may not feel better for 2–4 weeks. Keep using it!"
- **"Always carry your RESCUE inhaler (albuterol) separately."**
- "Use 15–20 minutes BEFORE exercise or known triggers."
- "Rinse your mouth after each inhaled dose."
- "Keep a symptom and PEFR diary."
- "Do NOT stop suddenly — taper with your provider."

🆘 SEEK HELP IMMEDIATELY IF:

- **Wheezing WORSENS after a dose** (paradoxical bronchospasm)
- **Swelling of face, lips, tongue, or throat**
- **Difficulty breathing, chest tightness, hives**

- PEFR drops into yellow or red zone
- Fever, chills, cough with bloody sputum (eosinophilic pneumonia)

🚦 SAFETY TEACHING:

- Clean spacer/nebulizer weekly to prevent infection
- Identify and avoid triggers (pollen, dust, pets, smoke)
- Get annual flu vaccine + pneumococcal vaccine
- Safe in pregnancy (Category B) — discuss with provider

9. NCLEX TEST TRAPS

⚠️ CLASSIC NCLEX TRAPS:

- **TRAP #1:** Patient in acute asthma attack → *WRONG answer: "Give cromolyn."* **CORRECT: "Give albuterol (SABA) first!"**
- **TRAP #2:** Patient says "I only use it when wheezing starts." → **MISUSE! Teach daily scheduled use.**
- **TRAP #3:** Patient expects immediate relief → **TAKES 2–4 WEEKS — set expectations!**
- **TRAP #4:** Confusing with corticosteroids → cromolyn is **NOT a steroid** — no oral candidiasis risk, no mouth rinse required for steroid reasons (but still rinse for taste/throat).
- **TRAP #5:** Confusing with leukotriene modifiers (montelukast) → different mechanism, different indication.
- **TRAP #6:** Exercise-induced asthma → **give 15–20 min BEFORE exercise** (NOT during or after)
- **TRAP #7:** Gastrocrom capsule given with food → **give 30 min BEFORE meals!**

🎯 PRIORITY vs NON-PRIORITY:

- **PRIORITY:** Respiratory status, paradoxical bronchospasm, anaphylaxis
- **NON-PRIORITY:** Bad taste, mild throat irritation, transient eye stinging

10. MEMORY BOOSTERS

🧠 MNEMONICS:

💡 **"CROMO = CHRONIC, not CRISIS!"**

💡 **"MAST = Membrane stabilizer, Asthma prophylaxis, Slow onset, Takes weeks"**

💡 **"STABILIZER = STAYS put so histamine STAYS in"**

🔑 PATTERNS ACROSS CLASS:

- All mast cell stabilizers end in varied suffixes — learn by brand:
- **Cromolyn (Intal, NasalCrom, Gastrocrom, Crolom) → most tested!**

- Nedocromil (Tilade) → inhaled, similar to cromolyn
- Lodoxamide (Alomide) → ophthalmic only
- Ketotifen (Zaditor) → OTC eye drops + oral antihistamine effect

⚡ QUICK RECALL TRICKS:

- **ALBUTEROL = rescue (FAST) | CROMOLYN = prevent (SLOW)**
- **3 P's of Mast Cell Stabilizers:** PROPHYLAXIS, PREGNANCY-safe, PEDIATRIC-friendly
- Think "SHIELD" → drug shields the mast cell from degranulating

💊 MOST TESTED DRUGS IN THIS CLASS 💊

Drug (Generic / Brand)	Route	Primary Use	Key NCLEX Pearl
Cromolyn sodium (Intal®, NasalCrom®, Gastrocrom®, Crolom®)	Inhaled, nasal, oral, ophthalmic	Asthma prophylaxis, allergic rhinitis, conjunctivitis, mastocytosis	MOST TESTED — prototype drug. 4x daily. Not for acute attacks.
Nedocromil (Tilade®)	Inhaled (MDI)	Asthma prophylaxis (adjunct)	Similar to cromolyn; bad taste is MORE common.
Lodoxamide (Alomide®)	Ophthalmic only	Vernal keratoconjunctivitis	Eye drops only — transient stinging is normal.
Ketotifen (Zaditor®, Alaway®)	Ophthalmic (OTC); oral (outside US)	Allergic conjunctivitis; pediatric asthma (oral)	Dual action: mast cell stabilizer + H_1 blocker. Causes drowsiness orally.

🚨 CLINICAL JUDGMENT SNAPSHOT 🚨

NCJMM Priority Thinking (Recognize → Analyze → Prioritize → Act → Evaluate)

❓ #1 PRIORITY RISK:

→ Paradoxical bronchospasm & anaphylaxis — a drug meant to PREVENT wheezing can CAUSE it.

⚡ WHAT HARMS THE PATIENT FIRST:

→ Using cromolyn instead of a rescue inhaler during an acute asthma attack = respiratory failure.

🎯 FIRST NURSING ACTION (Acute Scenario):

1. **STOP the cromolyn immediately**
2. **Administer SABA (albuterol) — the RESCUE drug**
3. **Position: High-Fowler's, O_2 per protocol, SpO_2 monitor**

4. **Auscultate breath sounds; assess for angioedema/hives**
5. **Notify HCP; prepare epinephrine if anaphylaxis suspected**
6. **Document event + evaluate response**