Ipratropium (i-pra-tro-pee-um)  
Atrovent, Atrovent HFA

**Classification**  
Therapeutic: Allergy, cold, and cough remedies, bronchodilators  
Pharmacologic: Anticholinergics

**Pregnancy Category:** B

**Indications**  
*Inhalation:* Maintenance therapy of reversible airway obstruction due to COPD, including chronic bronchitis and emphysema.

*Intranasal:* Rhinorrhea associated with allergic and nonallergic perennial rhinitis (0.03% solution) or the common cold (0.06% solution).  
*Unlabeled Use:* Inhalation: Adjunctive management of broncho spasms caused by asthma.

**Action**  
Inhalation: Inhibits cholinergic receptors in bronchial smooth muscle, resulting in decreased concentrations of cyclic guanosine monophosphate (cGMP). Decreased levels of cGMP produce local bronchodilation.

Intranasal: Local application inhibits secretions from glands lining the nasal mucosa.

**Therapeutic Effects**  
*Inhalation:* Bronchodilation without systemic anticholinergic effects.

*Intranasal:* Decreased rhinorrhea.

**Pharmacokinetics**  
**Absorption:** Minimal systemic absorption (2% for inhalation solution; 20% for inhalation aerosol; 20% following nasal use).

**Distribution:** 15% of dose reaches lower airways after inhalation.

**Metabolism and Excretion:** Small amounts absorbed are metabolized by the liver.

**Half-life:** 2 hr.

**TIME/ACTION PROFILE (bronchodilation)**  
**ROUTE**  
**ONSET**  
**PEAK**  
**DURATION**

**Inhalation**  
Intensol 15 min unknown 6–12 hr

**Contraindications/Precautions**  
Contraindicated in: 
- Hypersensitivity to ipratropium, atropine, belladonna alkaloids, or bromide; avoid use during acute bronchospasm.  
- Note: Atrovent HFA has replaced the discontinued Atrovent CFC (chlorofluorocarbons). Soy and CFC-allergic patients can now safely use the Atrovent HFA formulation. However, Combivent (ipratropium/albuterol combination) MDI does contain soya lecithin and is contraindicated in patients with a history of hypersensitivity to soy and peanuts.

Use Cautiously in:  
- Patients with bladder neck obstruction, prostatic hyperplasia, glaucoma, or urinary retention.  
- Geri: May be more sensitive to effects.

**Adverse Reactions/Side Effects**  
**CNS:** Dizziness, headache, nervousness.

**EENT:** Blurred vision, sore throat (nasal only), epistaxis, nasal dryness/irritation.

**Resp:** Bronchospasm, cough.

**CV:** Hypotension, palpitations.

**GI:** GI irritation, nausea.

**Derm:** Rash.

**Misc:** Allergic reactions.

**Interactions**  
**Drug-Drug:**  
Additive anticholinergic effects with other drugs having anticholinergic properties (antihistamines, phenothiazines, disopyramide).

**Route/Dosage**  
**Inhalation (Adults and Children ≥12 yr):** Metered-dose inhaler (nonacute) — 2 inhalations 4 times daily (not to exceed 12 inhalations/24 hr or more frequently than q 4 hr).  
Acute exacerbations — 4–8 puffs using a spacer device as needed.  
Via nebulization (nonacute) — 500 mcg 3–4 times daily.  
For nebulization (acute exacerbations) — 0.5–1 mg q 30 min for 3 doses then q 2–4 hr as needed.

**Inhalation (Children 5–12 yr):** Metered-dose inhaler (nonacute) — 2 inhalations 4 times daily (not to exceed 6 inhalations/24 hr or more frequently than q 4 hr).  
Acute exacerbations — 0.5–1 mg q 30 min for 3 doses then q 2–4 hr as needed.

**Inhalation (Children ≤5 yr):** Metered-dose inhaler (nonacute) — 1–2 inhalations 3–4 times daily.  
Via nebulization (nonacute) — 0.25–0.5 mg q 4–6 hr as needed.  
For nebulization (acute exacerbations) — 0.25–0.5 mg 4–6 times daily given q 4–6 hr.  
Acute exacerbations — 0.25–0.5 mg q 30 min for 4 doses then q 2–4 hr as needed.

**Inhalation (Infants):** Nebulization — 0.125–0.25 mg 3 times a day.

**Inhalation (Neonates):** Nebulization — 0.125 mg/kg/dose 3 times a day.

**Intranasal (Adults and Children ≥6 yr):**  
0.03% solution — 2 sprays in each nostril 2–3 times daily (21 mcg/spray).  
**Contraindications:**  
- Hypersensitivity to ipratropium, atropine, belladonna alkaloids, or bromide;  
- Avoid use during acute bronchospasm.

**Intranasal (Adults and Children ≤5 yr):**  
0.06% solution — 2 sprays in each nostril 2–3 times daily (42 mcg/spray).
NURSING IMPLICATIONS

Assessment

- Assess for allergy to atropine and belladonna alkaloids; patients with these allergies may also be sensitive to ipratropium. Atrovent HFA MDI does not contain CFC or soy and may be used safely in patients with these allergies. However, Combivent MDI should be avoided in soy or peanut allergic patients.

- Inhalation: Assess respiratory status (rate, breath sounds, degree of dyspnea, sputum) before administration and at peak of medication. Consult health care professional about alternative medication if severe bronchospasm is present. Cough and increased mucus is slow for patient in acute distress. If paradoxical bronchospasm (wheezing) occurs, withhold medication and notify health care professional immediately.

- Nasal Spray: Assess patient for rhinorrhea.

Potential Nursing Diagnoses

Ineffective Airway Clearance (Indications)

Activity Intolerance (Indications)

Implementation

- Inhalation: When ipratropium is administered concurrently with other inhalation medications, administer adrenergic bronchodilators first, followed by ipratropium, then corticosteroids. Wait 5 min between medications.

- Solution for nebulization can be diluted with preservative-free 0.9% NaCl. Diluted solution should be used within 24 hr at room temperature or 48 hr if refrigerated. Solution can be mixed with preservative-free albuterol, cromolyn, or metaproterenol if used within 1 hr of mixing.

Patient/Family Teaching

- Instruct patient in proper use of inhaler, nebulizer, or nasal spray and to take medication as directed. Take missed doses as soon as remembered unless almost time for next dose. Do not double doses.

- Advise patient to rinse mouth after using inhaler, good oral hygiene, and use sugarless gum or candy may minimize dry mouth. Health care professional should be notified if symptoms do not improve or if dry mouth persists for more than 2 wk.

- Inhalation: Caution patient not to exceed 12 doses within 24 hr. Patient should notify health care professional if symptoms do not improve within 30 min after administration of medication or if condition worsens.

- Explain need for pulmonary function tests prior to and periodically during therapy to determine effectiveness of medication.

- Caution patient to avoid sprays/mist in eyes, as may cause burning of vision or irritation.

- Advise patient to inform health care professional of cough, nervousness, headache, dizziness, nausea, or GI distress occurs.

- Nasal Spray: Instruct patient in proper use of nasal spray. Clear nasal passages gently before administration. Do not inhale during administration; no medication remains in nasal passages. Prime pump initially with 5 actuations. If used regularly, no further priming is needed. If not used in 24 hr, prime with 2 actuations. If not used for >7 days, prime with 7 actuations.

- Advise patient to contact health care professional if symptoms do not improve within 1–2 wk or if condition worsens.

Evaluation/Desired Outcomes

- Decreased dyspnea.

- Improved breath sounds.

- Decrease in rhinorrhea from perennial rhinitis or the common cold.

Why was this drug prescribed for your patient?