Chapter 38
Drugs for Allergic Rhinitis and the Common Cold

Upper Respiratory Tract
- Warms, humidifies, and cleans incoming air
- Nasal mucosa richly supplied with vascular tissue
  - Controlled by autonomic nervous system

Upper Respiratory Tract (continued)
- Is first line of immunological defense
  - Ciliated epithelium
  - Nasal mucus
  - Mast cells that line nasal mucosa

Allergic Rhinitis
- Disorder characterized by sneezing, watery eyes, and nasal congestion
- Caused by exposure to antigen (allergen)
  - Causes histamine release

Allergic Rhinitis (continued)
- Pharmacotherapy targeted at
  - Preventing disorder
  - Relieving symptoms
Histamine

• Chemical mediator of inflammatory response
• Interacts with two receptors
  – Histamine 1 (H1)
    • Found in smooth muscle of vascular system and bronchial tree
    • Causes many of symptoms of allergic rhinitis

Histamine (continued)

• Histamine 2 (H2)
  – Found in stomach
  – Responsible for peptic ulcers

Intranasal Glucocorticoids

• Drugs of choice in treating allergic rhinitis
• High efficacy and wide margin of safety
• Must be administered 2–3 weeks prior to allergen exposure
• Decrease secretion of inflammatory mediators
• Reduce tissue edema
• Cause mild vasoconstriction

Intranasal Glucocorticoids (continued)

• Alternative therapy is with mast-cell stabilizers
  – Intranasal cromolyn (Nasalcrom)

Intranasal and Oral Sympathomimetics

• Most commonly used decongestants
• Alleviate nasal congestion of allergic rhinitis and common cold
Intranasal Preparations

- More efficacious
- Only use for 3 to 5 days due to rebound congestion
- Available in OTC sprays and drops
- Affect local action within minutes
- Have few systemic effects

Oral Preparation Decongestants

- Have more systemic effects
- Response time is slower
- Less effective at relieving severe congestion
- Often combined with antihistamine preparations

Pharmacotherapy of Cough

- Common colds and allergies create coughs.
- Antitussives effective at relieving cough
- Opioids used for severe cough
- Nonopioids used for mild or moderate cough
  - Example: dextromethorphan

Expectorants

- Promote mucus secretion
  - Make it thinner, easier to remove by coughing
- Mucolytics
  - Directly break down mucous molecule

H1 Receptor Antagonists (Antihistamines)

- Prototype drug: diphenhydramine (Benadryl)
- Mechanism of action: histamine (H1) receptor blocker (1st generation)
- Primary use: to treat minor symptoms of allergy and common cold

H1 Receptor Antagonists (Antihistamines) (continued)

- Adverse effects: drowsiness; occasionally, paradoxical CNS stimulation and excitability
  - Anticholinergic effects: dry mouth, tachycardia, mild hypotension
  - May cause photosensitivity
H1 Receptor Antagonists (Antihistamines)

- **Prototype drug**: fexofenadine (Allegra)
- **Mechanism of action**: histamine (H1) receptor blocker (2nd generation)
- **Primary use**: reduces severity of nasal congestion, sneezing, tearing of eyes
  - Most effective when taken before symptoms develop
- **Adverse effects**: drowsiness (less than 1st generation H1 blockers), headache, upset stomach

Intranasal Glucocorticoids

- **Prototype drug**: fluticasone (Flonase)
- **Mechanism of action**: decreases local inflammation in nasal passages, thus reducing nasal stuffiness
- **Primary use**: to treat seasonal allergic rhinitis
- **Adverse effects**: nasal irritation, epistaxis

Decongestants

- **Prototype drug**: oxymetazoline (Afrin)
- **Mechanism of action**: stimulates alpha-adrenergic receptors in sympathetic nervous system
  - Causes arterioles in nasal passages to constrict
  - Dries mucous membranes

Decongestants (continued)

- **Primary use**: to treat nasal congestion
- **Adverse effects**: rebound congestion when oxymetazoline is used for longer than 3 to 5 days
  - Minor stinging and dryness in nasal mucosa may be experienced

Antitussives

- **Prototype drug**: dextromethorphan (Benylin)
- **Mechanism of action**: acts in medulla to inhibit cough reflex
- **Primary use**: as component in most OTC severe cold and flu preparations
- **Adverse effects**: dizziness, drowsiness, GI upset

H1 Receptor Antagonists

- Also known as antihistamines
- Block actions of histamine at H1 receptor
- Used as OTC remedies for relief of allergy symptoms, motion sickness, insomnia
**Selected Antihistamine Combinations Available OTC for Allergic Rhinitis**

- Most frequent use is for treatment of allergies
- Provide symptomatic relief from sneezing; runny nose; itching of eyes, nose, throat
- Used in OTC cold and sinus medicines
  - Often combined with decongestants and antitussives

**Selected Antihistamines**

- Most effective when taken prophylactically to prevent allergic symptoms
- Effectiveness in reversing allergic symptoms is limited
- Effectiveness may diminish with long-term use

**Intranasal Glucocorticoids**

- Also known as corticosteroids
- Applied directly to nasal mucosa to prevent symptoms of allergic rhinitis
- Replacing antihistamines as drugs of choice for treatment of perennial allergic rhinitis

**Nasal Decongestants**

- Affect autonomic nervous system
- Commonly used agents for relieving nasal congestion
- Administered orally or intranasally to dry nasal mucosa

**Sympathomimetics**

- Alpha-adrenergic activity
- Effective at relieving nasal congestion
- Given by oral or intranasal routes
- Intranasal preparations such as oxymetazoline (Afrin, others) available OTC as sprays or drops
  - Produce effective response within minutes

**Selected Antitussives and Expectorants**

- Used to dampen cough reflex
- Valuable in treating coughs due to allergies or common cold
- Sometimes not appropriate to inhibit cough reflex
Selected Antitussives and Expectorants (continued)

- Coughs irritating to throat or that deprive client of rest need to be treated
- Antitussives classified as opioid or nonopioid

Opioid Combination Drugs for Severe Cold Symptoms

- Most efficacious antitussives
- Act by raising cough threshold in CNS
- Codeine and hydrocodone most frequently used opioid antitussives
- Doses needed to suppress cough reflex are very low
  - Minimal potential for dependence

Opioid Combination Drugs for Severe Cold Symptoms (continued)

- Most opioid cough mixtures classified as Schedule III, IV, or V drugs
  - Reserved for more serious cough conditions
  - Overdose may cause significant respiratory depression
  - Use with caution in clients with asthma because bronchoconstriction may occur
- Opioids may be combined with other agents

Assessment

- Obtain complete health history
- Obtain ECG and vital signs
- Assess respiratory status: breathing pattern
- Assess neurologic status and level of consciousness

Nursing Diagnoses

- Ineffective airway clearance
- Ineffective breathing pattern
- Disturbed sleep pattern, related to somnolence or agitation

Planning—client will

- Report relief from allergic symptoms
- Demonstrate understanding of drug’s action
Implementation

- Auscultate breath sounds before administering
  - Use with extreme caution in clients with asthma or COPD
  - Keep resuscitative equipment accessible.
- Monitor vital signs (including ECG) before administering
  - Use with extreme caution in clients with history of cardiovascular disease

Implementation (continued)

- Monitor thyroid function
  - Use with caution in clients with history of hyperthyroidism
- Monitor for vision changes
  - Use with caution in clients with narrow-angle glaucoma

Implementation (continued)

- Monitor neurologic status
  - Use with caution in clients with history of seizure disorder
- Observe for signs of renal toxicity
  - Measure intake and output
  - Use with caution in clients with history of kidney or urinary-tract disease
  - Use with caution in clients with diabetes mellitus
  - Monitor serum-glucose levels

Implementation (continued)

- Monitor GI side effects
  - Use with caution in clients with history of GI disorders

Evaluation

- Client reports relief of allergic symptoms
- Client accurately describes side effects and precautions

H₁-receptor Antagonists

Table 38.1 H₁-receptor Antagonists
### Intranasal Glucocorticoids

**Table 38.3 Intranasal Glucocorticoids**

### Nasal Decongestants

**Table 38.4 Nasal Decongestants**

### Selected Antitussives and Expectorants

**Table 38.5 Selected Antitussives and Expectorants**