

Drug Therapy for Respiratory System Disorders

- <https://www.youtube.com/watch?v=kacMYexDgHg>
- <https://www.youtube.com/watch?v=9-ErVE--vjM>

Drugs Respiratory Conditions Drugs (P. 696)

These agents are used with clients who have respiratory disorders and with clients who have respiratory problems caused by non respiratory disorders.

May be used alone or in combination for patients with Asthma and COPD.

Main Categories

1. Bronchodilators: reverses bronchoconstriction
2. Anti-inflammatory Agents: reduce respiratory inflammation
3. Mucokinetic Drugs: promotes elimination of excessive respiratory secretions

1. Bronchodilators (p 697)

- Bronchodilators are a mainstay in the treatment of Asthma, may be used in Chronic Bronchitis to manage airways
- Used on as needed basis in the milder forms of Asthma; a regular basis for more severe Asthma
- Composed of agents that stimulate the CNS or serve as antagonist in the PCNS
- Relaxes the smooth muscles of the tracheobronchial tree.
- a. **Short acting beta agonist** : Albuterol (Oral) (Inhalation); Terbutaline (oral), (IV)
 - rapid onset (few min)
 - <5 min / 3- 8 hrs
 - 1-2 hrs/ 3-6 hrs

- Within 15 min/ 1.5 – 4 hrs

Indication: Reversible Airway obstruction in Asthma and COPD ; Used in more severe asthma attack

- Used as tocolytic for premature labor

b- Long Acting Beta 2 agonists

- Salmeterol
- Isopterenol
- 5 - 15 minutes / 12 hrs
- 2 – 5 min./ 30 min. to 2 hrs

Indication: Maintenance therapy for moderate and severe persistent asthma attacks

- Not useful for treating Acute Asthmatic Attack

Special Considerations

Albuterol is not helpful in the management of Viral Bronchiolitis in infants and children

- Inhaled **epinephrine** may be preferred for Viral Bronchiolitis
- Higher doses are usually required to inhibit **uterine contractions** to delay premature labor.

2. Anti Muscarinic (Anticholinergic)

Ipratropium (Atrovent)

Action: Produces local bronchodilator after inhalation.

Indication: for maintenance therapy) not for acute episodes in client with COPD

Adverse effect: dry mouth (xerostomia) or throat , coughing, headache, anxiety, GI distress

3. Xanthine Derivatives

Caffeine, Theophylline, Theobromine

- **Action:** relaxes smooth muscle (bronchial) , stimulates cardiac muscle and the CNS, produce diuresis
- **Indication:** prevention and treatment of bronchial asthma; treatment of Bronchitis, Pulmonary emphysema and COPD

Adverse Effects of Bronchodilators

MS : Tremors, muscle cramps, sweating, weakness

CV: Palpitation hypertension, tachycardia

CNS: increased anxiety, restlessness, dizziness, sedation, headache, insomnia

GI: Nausea, vomiting, gastric upset, dry mouth or throat , unusual taste in the mouth

Nursing Implications

ASSESSMENT:

1. Previous intolerance to adrenergic bronchodilators
2. Concurrent drug therapy (no medications like Betablockers, parasympathomimetics) that might trigger allergic response
3. Respiratory status (RR and effort, use of accessory muscles, nasal flaring or lip pursing, breath sounds, cyanosis, presence of cough / sputum, activity intolerance , PEF readings, BP, pulse oximetry, signs of impaired gas exchange
4. Detailed allergy history

- **Nursing Implications**

IMPLEMENTATION

- Monitor: resp. status; adverse effects of Bronchodilators (tachycardia, dysrhythmia)
- Assess patient's ability to hold and manipulate a MDI

Patient Education:

1. Use diary to record administration of PRN medications and his response
2. Do not change the dosage or frequency without consulting prescriber
3. Keep a record of the number of inhalation to determine the drug remaining in the canister
4. Ways to control known risk factors, measures to take during an attack

2. Anti-inflammatory Agents (p. 710)

1. **Corticosteroids (Prednisone)** Beclomethasone, Budesonide, Flunisolide
2. **Leukotriene Antagonist** (Zafirlukast , Montelukast)
3. **Mast Cell stabilizers** (Cromolyn, Nedocromil)

1. Corticosteroids

Indication: long term control of mild, moderate, and severe persistent asthma ; management of other pulmonary inflammatory states such as exposure to pulmonary toxins

- Used in Chronic Asthma to decrease airway obstruction; Do not relieve symptoms of acute asthmatic attacks; May take several weeks before full effects are seen

- **2. Leukotriene Antagonists**

What are Leukotrienes?

- Leukotrienes are substances released when inflammatory cells are triggered by irritants (smoke, allergens, virus)
- Leukotrienes cause inflammation, bronchoconstriction, and mucus production.
- **Result:** coughing, wheezing, shortness of breath

2. Leukotriene Antagonists

Indication: Inhibitors of Leukotriene Receptors interfering the formation of substances that cause mucus plugs and constrict bronchial airways

Uses: for prophylactic and chronic treatment of Asthma; mild to moderate persistent asthma

- Not a Bronchodilator and **should not be used to treat Acute episodes** of Asthma
- Not as quite as effective as Corticosteroids in preventing Asthma attacks
- **Nursing Implications**

ASSESSMENT:

1. Pre existing health condition that may contraindication the use of corticosteroids
 - a. Ocular herpes simplex, untreated systemic infection - might be worsened by the use of Corticosteroids
 - b. (+) Mantoux test – TB may be reactivated with long corticosteroid inhalation therapy)

2. Height and weight, respiratory status

IMPLEMENTATION

- **MONITOR** : RR , adverse effects of Corticosteroids , symptoms of overdose, cushingoid syndrome, height and weight , proper use of inhaler

INTERVENTION:

1. Use a separate Bronchodilator inhaler ; **15 minutes** before Corticosteroid Inhalation to open respiratory passages allowing greater penetration of a corticosteroid
2. Notify prescriber if patient's response to Corticosteroid is diminished
3. Use a spacer to decrease the occurrence of Candidiasis and hoarseness

EDUCATION:

- Importance of self management
- Examine his mouth daily for redness and / or white patches
- Rinse mouth after each treatment to prevent infection
- Wash and dry the inhaler thoroughly after each use
- Stress the importance of compliance with daily regimen to prevent asthmatic episodes
- Rescue medicine should always be available even with daily medications

3. Mucolytics/ Mucokinetics (p 717)

- Exerts a disintegrating effect on mucus and promote coughing or spitting and thereby removal of mucus or other exudates from the lungs, bronchi or trachea

Indication: Adjunct treatment for thick or abnormal mucus in bronchopulmonary disease, cystic fibrosis or atelectasis caused by a mucus obstruction

Assessment:

- Skin color
- Baseline vital signs (Respirations (should be <12 or >24 breaths/min))
- Respiratory assessment, including PO₂
- Sputum production
- Allergies
- History of respiratory problems
- Other medications

Encourage patients to take measures that promote a generally good state of health in order to prevent, relieve, or decrease symptoms of COPD.

Avoid exposure to conditions that precipitate bronchospasms (allergens, smoking, stress, air pollutants)

Adequate fluid intake

Compliance with medical treatment

Avoid excessive fatigue, heat, extremes in temperature, caffeine

Encourage patients to :

- Get prompt treatment for flu or other illnesses
- Get vaccinated against pneumonia or flu.
- Always check with their physician before taking any other medication, including OTC.