Upper and Lower Respiratory Disorders

Upper Respiratory Infection (URI)

URI

- Common cold
  - Etiology: rhinovirus
  - Affects nasopharyngeal tract
- Rhinitis
  - Inflammation of nasal mucous membranes
  - Acute or Allergic
- Sinusitis
  - Inflammation of mucous membranes of sinuses
- Acute pharyngitis
  - Inflammation of throat

Common Cold

- Contagious period
  - 1-4 days before onset of symptoms
  - During first 3-5 days of cold
- Transmission
  - Touching contaminated surfaces then touching nose or mouth
  - Viral droplets from sneezing
- Symptoms
  - Nasal congestion, nasal discharge, cough, increased mucosal secretions
- Treatment
  - OTC meds for comfort & symptom relief
  - Antibiotics if prolonged and accompanied by purulent yellow/green discharge

URI Inflammation

- Allergic Rhinitis
  - Symptoms
    - Sneezing, rhinorrhea, nasal congestion
  - Treatment
    - Remove allergen, antihistamine
- Sinusitis
  - Symptoms
    - Congestion, pain, dizziness, post nasal drainage
  - Treatment
    - Decongestant, acetaminophen, fluids, irrigation, antibiotics
- Acute pharyngitis
- Symptoms
  - Difficulty swallowing, pain, pharyngeal/laryngeal edema
- Treatment
  - Gargle, lozenges, fluid, acetaminophen
  - Antibiotics with bacterial infection

### Antihistamines
- **H₁-blockers (antagonists)**
  - First-generation antihistamines
    - Diphenhydramine (Benadryl)
  - Second-generation antihistamines
    - Cetirizine (Zyrtec), fexofenadine (Allegra), loratadine (Claritin)
    - **BENEFIT** = Nonsedating; little to no effect on sedation
- **Diphenhydramine (Benadryl)**
  - 1st generation
  - **Action**
    - Reduces nasopharyngeal secretions, itching, sneezing
    - Anticholinergic activity
    - Competes with histamine for receptor sites preventing a histamine response (allergic reaction)
  - **Contraindications**
    - Narrow-angle glaucoma, urinary retention, BPH
  - **Administration**
    - oral, IM, IV
  - **Interactions**
    - CNS depression
    - Increased CNS depression with alcohol and other CNS depressant medications
  - **Side effects**
    - Anticholinergic
      - Dry mucous membranes
      - Urinary retention
      - Constipation
    - Drowsiness, dizziness

- **Nursing Interventions**
  - Obtain list of environmental exposures, drugs, recent foods eaten
  - Avoid operating motor vehicles/machinery
  - Avoid alcohol and other CNS depressants
  - Use sugarless candy, gum, and ice chips for temporary relief of mouth dryness
  - Discuss use of other OTC “cold remedies” with health care provider prior to use
- **Second-generation antihistamines**
  - Treatment for seasonal allergic rhinitis
  - Reduces symptoms of nasopharyngeal secretions, itching, sneezing
o Administration is Oral
o Available “OTC”
o Differences
  ▪ Less sedation
  ▪ Fewer anticholinergic effects

Decongestants (Sympathomimetics)
- Nasal congestion
  o Dilation of nasal blood vessels
    ▪ Due to infection, inflammation, allergy
  o Transudation of fluid into tissue spaces
    ▪ Leads to swelling nasal cavity
- Nasal decongestants
  o Stimulate alpha1 adrenergic receptors
    ▪ Produces nasal vascular vasoconstriction
    ▪ Shrinks nasal mucous membranes
    ▪ Reduces nasal secretion
- Pseudoephedrine (Sudafed), oxymetazoline (Afrin), naphazoline (Allerest)
  o Administration
    ▪ Nasal spray, nasal drops, tablet, capsule, liquid
  o Nasal versus Oral
    ▪ Oral results in systemic effect
  o Frequent use =
    ▪ Potential drug tolerance
    ▪ Rebound nasal congestion
  o *Not recommended longer than five days*
- Side Effects
  o May decrease effect of beta-blockers
  o May increase HTN
  o Tachycardia, palpitations, dysrhythmias
    ▪ May increase with caffeine or other stimulants
  o May increase or cause nervousness, restlessness, or jittery feelings
  o Hyperglycemia
  o *Caution: Patients with history of hypertension, cardiac disease, hyperthyroidism, diabetes mellitus*

Intranasal Glucocorticoids (Nasal Steroids)
- Fluticasone (Flonase), triamcinolone (Nasacort), beclomethasone (Vanceril)
- Action
- Anti-inflammatory
- Indications/Use
- Treat allergic rhinitis
• May be used alone or in combination with H₁ antihistamines
• Should not be used longer than 30 days to avoid systemic effects

**Antitussives**
• Dextromethorphan (Benylin)
  o **Action**
    ▪ Suppress cough reflex by acting on cough center in the medulla
    ▪ Reduce viscosity of tenacious secretions
  o **Use**
    ▪ Non-narcotic or combined with narcotic (codeine)
    ▪ Nonproductive, irritating cough
    ▪ Enhance symptom relief when combined with other agents
  o **Side effects**
    ▪ Drowsiness, dizziness, nausea

**Expectorants**
• Guaifenesin (Robitussin)
  o **Action**
    ▪ Loosen bronchial secretions by reducing surface tension of secretions
  o **Use**
    ▪ Dry, nonproductive cough
  o **Side effects**
    ▪ Drowsiness, nausea
  o *Special note: Hydration is best natural expectorant*

**Lower Respiratory Disorders**
• Two Major Categories
  o 1. Restrictive lung disease
  o 2. Chronic obstructive pulmonary disorder (COPD)

**Chronic Obstructive Pulmonary Disease (COPD)**
• Pathophysioligic changes
  o Airway obstruction with increased airway resistance to airflow
• Major disorders
  o Asthma
  o Chronic bronchitis
  o Bronchiectasis
  o Emphysema
• Etiology
  o Cigarette smoking - #1
  o Chronic lung infections
  o Allergens, pollutants
  o Lack of alpha₁-antitrypsin protein
Characteristic symptoms
- Dyspnea, wheezing, coughing
- Excess mucus secretions, airway obstruction
- Inflammation, bronchospasm
- Permanent irreversible damage to the lung tissue and/or alveoli

**Bronchodilators**

- **Sympathomimetics**
  - Epinephrine (Adrenaline), Racemic Epinephrine (Given as a nebulizer)
    - **Action**
      - First line treatment in severe acute asthma attack or anaphylaxis, given subQ, nebulizer
      - Promotes bronchodilation
      - Increases airway patency
    - **Side effects**
      - Palpitations, dizziness, nervousness, tremors, tachycardia, dysrhythmias, hypertension

- **Selective beta₂-adrenergic agonists**
  - Albuterol (Proventil), Salmeterol (Serevent), Terbutaline (Brethine), Metaproterenol (Alupent)
    - **Action**: relaxes smooth muscle of bronchi
      - Rapid onset and long duration
      - Administration: inhalation
      - Side effects: tremors, restlessness, anxiety, irritability, headaches, nervousness, tachycardia, angina, palpitations, dysrhythmias

- **Anticholinergics**
  - Ipratropium bromide (Atrovent), ipratropium bromide & albuterol (Combivent)
    - **Action**: dilates bronchioles
      - Atrovent — lowers side effects
      - Combivent — increases duration of action and effect
    - **Administration**: inhalation
    - **Caution**
      - Anticholinergic contraindications

- **Methylxanthine (Xanthine) derivatives**
  - Aminophylline (Somophyllin), theophylline (Theo-Dur), caffeine
    - **Action**: relaxes smooth muscle of bronchi
    - Promotes bronchodilation
    - **Use**:
      - Oral theophylline for chronic stable asthma
      - Intravenous aminophylline for asthma exacerbations
    - **Therapeutic range**: 10-20 mcg/ml (toxicity greater than 20)
Dosing adjustments, raise for:
- Smokers
- Children

Common Side effects
- Tachycardia, palpitations, dysrhythmias
- Nervousness, irritability, insomnia

Avoid
- Caffeine or chocolate

Major Contraindications
- Cardiac or seizure disorders
  - Special Note: Use of this medication has declined!

Administration
- Nebulized air
  - Air versus oxygen
- Metered-dose inhaler (MDI)
- Dry powdered inhaler (DPI)
  - Advair & Spiriva

Teaching
- Care and use of equipment
- Oral Care

**Leukotriene Receptor Antagonists**
- Montelukast (Singulair)
  - Action
    - Reduce inflammation
    - Decrease bronchoconstriction
  - Use
    - Prophylactic/maintenance for chronic asthma
  - Dosing
    - Evening or bedtime
  - Side effects
    - Fever, sore throat, cough, nasal congestion
    - GI distress

**Glucocorticoids (Steroids)**
- Glucocorticoids
  - Administration = MDI, oral, IV
    - MDI: Beclomethasone (beclovent)
      - Preferred over oral
    - Tablet: prednisone
    - IV: hydrocortisone (Solu-Cortef)
- Action & Indication
  - Anti-inflammatory
  - Synergistic effect with beta2 agonist
    - Advair (fluticasone & salmeterol)
  - Asthma unresponsive to bronchodilator therapy
- Side effects
  - Throat irritation, hoarseness, fungal infections
  - Hyperglycemia

**Mucolytics**
- Acetylcysteine (Mucomyst)
  - Action/Indications
    - Liquefy and loosen thick mucus secretions
    - Antidote for acetaminophen overdose
    - Renal protection pre-angiography contrast
  - Administration
    - Nebulizer for respiratory Tx
    - Administer 5 minutes after a bronchodilator
    - Should not be mixed with other drugs
  - Side Effects
    - Nausea, vomiting (give with food/soft drink)

**Oxygen Therapy**
- Colorless, odorless, tasteless gas
- Indication
  - Maintain/restore necessary blood oxygen levels
- Side Effects
  - O₂ toxicity, CO₂ narcosis, infection, absorption atelectasis
- Nursing Interventions
  - Assure right delivery system
  - Assure “No smoking”
  - Analyze SpO₂, ABG’s
  - Clean and care for equipment
  - Teach clients “Effective coughing” techniques
  - Perform ordered therapies such as: chest physiotherapy, postural drainage, or percussion therapy
  - Teach client about medication therapy and need for compliance

**Generalized Nursing Care**
- Evaluate respiratory status and vital signs
- Evaluate signs and symptoms related to disease process or medication side effects
- Teach patient rationale for compliance
• Teach patient difference between long-term control and short-term response
• Teach patient to check with physician before using OTC medications and how to read labels
• Teach patient correct use of inhalation devices and care of equipment

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