pulmonary function tests. Abnormal breathing patterns (eg, rate below 12 or above 24 per minute, dyspnea, cough, orthopnea, wheezing, "noisy" respirations) may indicate respiratory distress. Severe respiratory distress is characterized by tachypnea, dyspnea, use of accessory muscles of respiration, and hypoxia. Early signs of hypoxia include mental confusion, restlessness, anxiety, and increased blood pressure and pulse rate. Late signs include cyanosis and decreased blood pressure and pulse. Hypoxemia is confirmed if arterial blood gas analysis shows decreased partial pressure of oxygen (P_{O_2}).

- In acute bronchospasm, a medical emergency, the client is in obvious and severe respiratory distress. A characteristic feature of bronchospasm is forceful expiration or wheezing.
- If the client has chronic asthma, try to determine the frequency and severity of acute attacks, factors that precipitate or relieve acute attacks, antiasthmatic medications taken occasionally or regularly, allergies, and condition between acute attacks, such as restrictions in activities of daily living due to asthma.
- If the client has chronic bronchitis or emphysema, assess for signs of respiratory distress, hypoxia, cough, amount and character of sputum, exercise tolerance (eg, dyspnea on exertion, dyspnea at rest), medications, and nondrug treatment measures (eg, breathing exercises, chest physiotherapy).

Nursing Diagnoses

- Impaired Gas Exchange related to bronchoconstriction and excessive mucus production
- Activity Intolerance related to impaired gas exchange and fatigue
- Risk for Injury: Severe bronchospasm with asthma and adverse effects with antiasthmatic drugs
- Noncompliance: Overuse of adrenergic bronchodilators
- Deficient Knowledge: Factors precipitating bronchoconstriction and strategies to avoid precipitating factors.
- Deficient Knowledge: Accurate self-administration of drugs, including use of inhalers

Planning/Goals

The client will:

- Self-administer bronchodilating and other drugs accurately
- Experience relief of symptoms
- Avoid preventable adverse drug effects
- Avoid overusing bronchodilating drugs
- Avoid exposure to stimuli that cause bronchospasm when possible
- Avoid respiratory infections when possible

Interventions

Use measures to prevent or relieve bronchoconstriction when possible. General measures include those to prevent respiratory disease or promote an adequate airway. Some specific measures include the following:

- Use mechanical measures for removing excessive respiratory tract secretions and preventing their retention. Effective measures include coughing, deep breathing, percussion, and postural drainage.
- Help the client identify and avoid exposure to conditions that precipitate bronchoconstriction. For example, allergens may be removed from the home, school, or work environment; cigarette smoke should be avoided when possible. When bronchospasm is precipitated by exercise, prophylaxis by prior inhalation of bronchodilating agents is better than avoiding exercise, especially in children.
- Assist clients with asthma to identify early signs of difficulty, including increased need for beta-adrenergic agonists, activity limitations, and waking at night with asthma symptoms.
- Monitor peak expiratory flow rate (PEFR) when indicated. Portable meters are available for use in clinics, physicians' offices, and clients' homes. This is an objective measure of airflow/airway obstruction and helps to evaluate the client's treatment regimen.
- Assist clients with moderate to severe asthma in obtaining meters and learning to measure PEFR. Clients with a decreased PEFR may need treatment to prevent acute, severe respiratory distress.
- Assist clients and at least one family member in managing acute attacks of bronchoconstriction, including when to seek emergency care.
- Try to prevent or reduce anxiety, which may aggravate bronchospasm. Stay with the client during an acute asthma attack if feasible. Clients experiencing severe and prolonged bronchospasm (status asthmaticus) should be admitted or transferred to a hospital intensive care unit.
- With any clients who smoke cigarettes, encourage cessation of smoking and provide information, resources, and assistance in doing so. Emphasize the health benefits of improved respiratory function.

Evaluation

- Observe for relief of symptoms and improved arterial blood gas values.
- Interview and observe for correct drug administration, including use of inhalers.
- Interview and observe for tachydysrhythmias, nervousness, insomnia, and other adverse drug effects.
- Interview about and observe behaviors to avoid stimuli that cause bronchoconstriction and respiratory infections.

PRINCIPLES OF THERAPY

Drug Selection and Administration

Choice of drug and route of administration are determined largely by the severity of the disease process and the client's response to therapy. Some guidelines include the following: