Chapter 9
Respiratory Diseases and Disorders

Anatomy and Physiology

- Chest, lungs, and conducting airways
- Two parts:
  - Upper respiratory system consists of nose, mouth, sinuses, pharynx, and larynx
  - Lower respiratory system consists of trachea, bronchi, and bronchioles

Common Signs and Symptoms

- Dyspnea
- Orthopnea
- Apnea
- Wheezing
- Coughing
- Nasal discharge

Diagnostic Tests

- Auscultation: breathing quality and rate
  - Tachypnea - rapid respirations
  - Rales - musical sounds heard on inhalation and often called “crackles”
  - Rhonchi - rattling sounds in bronchi due to obstruction
Diagnostic Tests

• Chest X-ray
• Sputum culture
• Tissue biopsy
• Bronchoscopy
• Arterial blood gases
• Pulmonary function tests

Common Diseases of the Respiratory System

• Most disorders of upper respiratory system are not life threatening
• Upper Respiratory Infection (URI)
  – Most commonly caused by the rhinovirus

Common Diseases of the Respiratory System

• Upper Respiratory Infection (URI)
  – Treatment:
    • Rest
    • Fluids
    • Antipyretics and analgesics
    • Antibiotics for secondary infections

Common Diseases of the Respiratory System

• Common Cold (acute rhinitis)
• Hay Fever (allergic rhinitis)
• Sinusitis
• Pharyngitis
• Laryngitis

Diseases of the Bronchi and Lungs

• Diseases usually more severe than URIs
• Many can be life threatening

Diseases of the Bronchi and Lungs

• Acute Bronchitis - inflammation of lining of the bronchus
  – Short term following URI
  – Symptoms include fever, tight feeling behind sternum, productive cough
Diseases of the Bronchi and Lungs

• Acute Bronchitis
  – Treatment:
    • Rest
    • Increased fluids
    • Cough syrup
    • Antipyretics
    • Analgesics and antibiotics for secondary infections

Diseases of the Bronchi and Lungs

• Influenza - highly contagious respiratory infection
  – Symptoms:
    • Onset of fever, chills, headache
    • Back and muscle pain
    • Cough, runny nose, sore throat, sneezing
    • Hoarseness, nausea, vomiting, and diarrhea

Diseases of the Bronchi and Lungs

• Influenza
  – Viral and spread by coughing of respiratory secretions

Diseases of the Bronchi and Lungs

• Chronic Obstructive Pulmonary Disease (COPD)
• Diagnosis:
  – History and physical (Chest x-rays)
  – Pulmonary function tests
  – Arterial blood gases
  • No cure
Diseases of the Bronchi and Lungs

• Symptomatic treatment:
  – Bronchodilator medications
  – Inhalers
  – Mucolytics
  – Cough medications

Diseases of the Bronchi and Lungs

• Symptomatic treatment:
  – Avoid people with URIs
  – Flu shots
  – Prognosis is poor

Diseases of the Bronchi and Lungs

• Atelectasis
  – Collapse or airless state of all or part of lung
  – Causes:
    • Surgical pain
    • Fractured ribs
    • Blockage of airway by mucus plug

Diseases of the Bronchi and Lungs

• Atelectasis
  – Treatment:
    • Analgesics for pain
    • Ambulation
    • Frequent deep breathing and coughing

Diseases of the Bronchi and Lungs

• Pneumonia
  – Inflammation of bronchioles and alveoli due to infection by bacteria, virus, or other pathogens
  – Pneumonitis is inflammation without infection
  – Symptoms related to area and tissue involved

Diseases of the Bronchi and Lungs

• Pneumonia
  – Diagnosis is made after chest X-ray, history and physical, and sputum culture
  – Treatment depends on cause
Diseases of the Bronchi and Lungs

- Pulmonary Abscess
  - Collection of infectious material within a capsule
  - May be complication of bacterial pneumonia, aspiration of food, or a foreign body

- Pulmonary Tuberculosis (TB)
  - Infection caused by *Mycobacterium tuberculosis*
  - Acquired by breathing air infected with bacteria or by coughing and sneezing
  - Diagnosed by skin testing, chest X-ray, sputum culture
  - Extended antibiotic therapy

- Adult Respiratory Distress Syndrome (ARDS)
  - Follows episode of severe trauma
  - Causes acute respiratory failure needing mechanical ventilation
  - High mortality rate even with proper treatment

- Lung Cancer
  - Leading cause of cancer deaths in United States
  - Often asymptomatic until it metastasizes to brain, bone, and liver
  - Most often caused by cigarette smoking
  - Symptoms are dyspnea, coughing, hemoptysis
  - Diagnosis: X-ray and tissue biopsy
  - Treatment: chemotherapy, radiation, surgery

Diseases of the Bronchi and Lungs

- Pulmonary Abscess
  - Symptoms: chills, fever, chest pain, cough
  - Treatment includes long-term antibiotic therapy
  - Surgical resection if area is large or antibiotic therapy is unsuccessful

Diseases of Pleura and Chest

- May be caused by infection, trauma, other diseases
- Common symptoms: pain and shortness of breath
Diseases of Pleura and Chest

- Common diseases:
  - Pleurisy (pleuritis)
  - Pneumothorax - air in pleural cavity
  - Hemothorax - blood in chest cavity
  - Pleural Effusion (Hydrothorax) - fluid in chest
  - Empyema - pus in chest cavity

Diseases of Cardiovascular and Respiratory Systems

- Pulmonary Embolism (PE) - sudden blockage of an artery by an embolism
- Suffocation - not breathing to the point that the individual loses consciousness and eventually dies

Diseases of Cardiovascular and Respiratory Systems

- Suffocation
- Possible causes:
  - Aspiration
  - Strangulation
  - Drowning

Rare Diseases

- Pneumoconiosis - environmentally induced diseases causing progressive, chronic inflammation and infection
- Causes include:
  - Asbestosis
  - Anthracosis - Coal miner’s disease; black lung
  - Silicosis

Rare Diseases

- Fungal Diseases
  - Caused by inhaling an airborne fungus
  - Two forms
    - Histoplasmosis
    - Coccidioidomycosis - Desert fever and valley fever

Rare Diseases

- Legionnaire’s Disease
  - Bacterial pulmonary infection
  - Not limited to pulmonary system
  - May cause liver damage and renal dysfunction