Nursing Management: Lower Respiratory Problems
Part II of Respiratory Unit

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Lower Respiratory Tract Infections

- Acute Bronchitis
  - Supportive measures: rest, fluids, anti-inflammatory agents
  - Cough suppressants
  - Bronchodilators prn wheezing
  - Broad spectrum ABX if COPD
  - Antivirals if due to influenza
- Pertussis – re-emergence
  - Highly contagious
  - Respiratory dropules
  - Thick, tenacious secretions

Pneumonia: Sub-types

- Community-acquired
- Hospital-acquired: 90 days of IV, chemotherapy, dialysis clinic
- Ventilator-associated with intubation
- Aspiration pneumonia - CVA, swallowing difficulty
- Opportunistic pneumonia - immunosuppression
- Fungal
Medications for Pneumonia

- Macrolides: erythomycin, Zithromax, Biaxin
- Respiratory fluorquinolones: Tequin, Levaquin
- Amoxicillin
- Piperacillin/tazobactam (Zosyn)
- Alone or in conjunction
- Co-morbid COPD, DM, renal disease, heart failure, malignant disease
- Aspiration
- Influenza with bacterial superinfection

Pneumonia

• Clinical Manifestations
• Diagnostic Studies: x-ray, sputum for C&S before antibiotics started
• Collaborative Care
  • Drug therapy: specific to infection
  • Nutritional therapy: high protein/calorie small frequent feedings
  • IV for hydration and antibiotics
  • Manage pluralic pain

Fig 28-1. Pathophysiology course of pneumococcal pneumonia.
### Nursing Interventions
- Teach role of diet
- Encourage hydration
- Maintain activity to facilitate resistance to organisms
- Elevate HOB, 30-45 degrees for VAP
- Strict asepsis
  - Hand washing
  - Suctioning
  - Nebulizer treatments
- Position with good lung down if unilateral infection
- Incentive spirometers

### Bronchial Hygiene Techniques
- Large volume of sputum (30 ml or more)
- Postural drainage
- Percussion
- Drainage
- Vibration: vests, mechanical

### Nursing Management: Pneumonia
- Nursing Assessment
- Co-morbidities
- Lung sounds, location of alteration
- VS, fatigue, mental status
- ADLs
- Nursing Diagnoses
Nursing Management: Pneumonia

• Nursing Implementation
  • Acute intervention
  • Oxygen therapy per nasal cannula
  • Energy conservation
  • Turn, deep breathing & cough
  • Respiratory treatments

• Evaluation: resolution in 3-21 days
  • VS improvement, lungs clearing, x-ray improvement, temp below 100, HR below 100.

Pneumococcal Vaccine

• Indicated for high risk individuals
  • Chronic heart, lung or DM
  • 65 years or older
  • reside in long-term care facility
  • Prevents 50-80% bacterial disease
  • May be co-administered in different arms with influenza vaccination

Tuberculosis

• Etiology and Pathophysiology
• Classification
• Clinical Manifestations
• Complications
  • Miliary TB
  • Pleural effusion and empyema
  • Tuberculous pneumonia
  • Other organ involvement
TB Complications

- Miliary TB: invades bloodstream
- Acute illness: fever, dyspnea, cyanosis
- Chronic: weight loss, fever, GI disturbance, spleen & liver involvement
- Pleural effusion and empyema
- Tuberculous pneumonia
- Other organ involvement: bone, joint, lymph nodes, reproductive tracts

Tuberculosis

- Diagnostic Studies
  - TB skin testing: PPD, TST (induration)
  - Chest x-ray: upper lobe infiltrates, lymph node involvement
  - Bacteriologic and other studies
    - Sputum smear
    - Blood cultures
    - Quanti-FERON-TB (rapid diagnostic blood test)

Tuberculosis

- Collaborative Care
- Drug therapy
  - Active TB disease
  - Latent tuberculosis infection
- Vaccine: focus of research
**Tuberculosis**

**TABLE 28-10 COLLABORATIVE CARE**

<table>
<thead>
<tr>
<th>Pulmonary Tuberculosis</th>
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</thead>
<tbody>
<tr>
<td><strong>Diagnoses:</strong></td>
</tr>
<tr>
<td>History and physical examination</td>
</tr>
<tr>
<td>Tuberculin skin test (TST)</td>
</tr>
<tr>
<td>Quantiferon-TB test</td>
</tr>
<tr>
<td>Chest x-ray</td>
</tr>
<tr>
<td>Bacteriologic studies</td>
</tr>
<tr>
<td>Sputum smear for acid-fast bacilli (AFB)</td>
</tr>
<tr>
<td>Sputum culture</td>
</tr>
</tbody>
</table>

**Collaborative Therapy**
- Long-term treatment with antimicrobial drugs (see Tables 28-11 and 28-12)
- Follow-up bacteriologic studies and chest x-rays

**Nursing Management: Tuberculosis**

- **Nursing Assessment**
- **Nursing Diagnoses** - especially medication adherence
- **Planning** - long-term follow-up, public health
- **Nursing Implementation**
  - Health promotion
  - Acute intervention
  - Ambulatory and home care
- **Evaluation**

**TABLE 28-13 DRUG THERAPY**

<table>
<thead>
<tr>
<th>DRUGS</th>
<th>DURATION</th>
<th>INTERVAL</th>
<th>MINIMUM DOSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isoniazid</td>
<td>9 mo</td>
<td>Daily, weekly</td>
<td>750</td>
</tr>
<tr>
<td>Isoniazid</td>
<td>6 mo</td>
<td>Daily, weekly</td>
<td>150</td>
</tr>
<tr>
<td>Rifampin</td>
<td>4 mo</td>
<td>Daily</td>
<td>120</td>
</tr>
<tr>
<td>Rifampin</td>
<td>Due to severe liver injury and death, isoniazide/ rifampin should generally not be offered for treatment of LTBI.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 28-10. Collaborative Care.**
Pulmonary Fungal Infections

- Common in chronic illness: AIDS, cystic fibrosis
- Not transmitted person to person
- Aspergillosis, cryptococcosis, candidiasis
- Diagnosis by skin tests, serology, biopsy

Lung Abscess

- Etiology and Pathophysiology
- Clinical Manifestations and Complications
- Diagnostic Studies
  - X-ray
  - CT scan
  - Blood cultures

Nursing and Collaborative Management: Lung Abscess

- Assessment: purulent brown sputum, foul smell
- Decreased breath sound locally
- X-ray
- Obtain routine sputum culture
- Prepare for bronchoscopy if required
- Cleocin for this anaerobic organism
- Surgery rare: lobectomy, pneumonectomy
Environmental Lung Diseases

• Clinical Manifestations
• Collaborative Care

Lung Cancer

Fig. 28-2. Lung cancer (peripheral adenocarcinoma). The tumor shows prominent black pigmentation, suggestive of having evolved in an anthracotic scar.

Lung Cancer

• Etiology
• Pathophysiology
• Paraneoplastic syndrome
• Clinical Manifestations
• Diagnostic Studies
  • Staging
  • Screening for lung cancer
Fig. 28.3 Lung carcinoma. The gray-white tumor tissue is infiltrating the lung. Histologically this tumor was identified as a squamous cell carcinoma.

Table 28.18 Staging of Non-Small Cell Lung Cancer

<table>
<thead>
<tr>
<th>STAGES</th>
<th>CHARACTERISTICS</th>
</tr>
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<tbody>
<tr>
<td>I</td>
<td>Tumor present and limited to lung, no lymph node involvement</td>
</tr>
<tr>
<td>A</td>
<td>Tumor ≤ 3 cm and invading surrounding local areas</td>
</tr>
<tr>
<td>B</td>
<td>Tumor &gt; 3 cm with invasion of lymph nodes or tumor on same side of chest</td>
</tr>
<tr>
<td>C</td>
<td>Tumor invading the bronchi and lymph nodes on same side of chest and tissue of other local organs</td>
</tr>
<tr>
<td>D</td>
<td>Tumor spread to the mediastinum (thoracic, aortic, esophageal, mediastinum, malignant pleural effusion, contralateral lung nodules, ormediastinal/lymph nodes</td>
</tr>
</tbody>
</table>

Table 28.19 Staging of Non-Small Cell Lung Cancer: Collaborative Care

- Collaborative therapy
- Surgical therapy
- Radiation therapy
- Stereotactic radiotherapy
- Chemotherapy
- Biologic and targeted therapy
Lung Cancer

• Collaborative Care, continued
  • Other therapies
    • Prophylactic cranial radiation
    • Bronchoscopic laser therapy
    • Photodynamic therapy
    • Airway stenting
    • Cryotherapy

Nursing Management: Lung Cancer

• Nursing Assessment
• Nursing Diagnoses
• Planning
• Nursing Implementation
  • Health promotion
  • Acute intervention
  • Ambulatory and home care
  • Evaluation

Pneumothorax

• Types of Pneumothorax
  • Closed pneumothorax
    • Tension
    • Hemothorax
  • Open pneumothorax
Fig. 28-4. Disorders of the pleura. A, Open pneumothorax resulting from collapse of lung due to disruption of chest wall and outside air entering.

Fig. 28-5. Tension pneumothorax. As pleural pressure on the affected side increases, mediastinal displacement ensues with resultant respiratory and cardiovascular compromise.
Severe Rib Fx: Flail Chest

Fig. 28-6. Flail chest produces paradoxic respiration. On inspiration, the flail section sinks in with mediastinal shift to the uninjured side. On expiration, the flail section bulges outward with mediastinal shift to the injured side.


Chest Tubes and Pleural Drainage

• Chest Tube Insertion

Chest Tubes and Pleural Drainage

Fig. 28-8. Chest drainage unit. Both units have three chambers: (1) collection chamber; (2) water-seal chamber; and (3) suction control chamber. Suction control chamber requires a connection to a wall suction source that is dialed up higher than the prescribed suction for the suction to work.

A. Water suction. This unit uses water in the suction control chamber to control the wall suction pressure.

B. Dry suction. This unit controls wall suction by using a pressure control unit.

Fig. 28-6, A, Heimlich chest drain valve is a specially designed flutter valve that is used in place of a chest drainage unit for small uncomplicated pneumothorax with little or no drainage and no need for suction. The valve allows for exudation of air but prevents the entry of air into the pleural space. B, Placement of valve between chest tube and drainage bag.
Nursing Management: Chest Drainage

- Chest Tube Removal
- Verified lung expansion
- Lack of drainage
- Instruct to exhale
- Gently / quickly pulled
- Occlusive dressing applied
- Monitor for recurrence

Chest Surgery

- Preoperative Care
- Surgical Therapy
  - Video-assisted thoracic surgery (VATS)
- Postoperative Care

Fig. 30-4: Disorders of the pleura. A, Fibrothorax resulting from an organization of inflammatory exudate, and pleural effusion.
**Pleural Effusion**

- Clinical Manifestations
- Thoracentesis
- Collaborative Care

**Pleurisy**

- Pleural “rub” on auscultation
- Associated with pneumonia
- Extremely painful
- Interventions:
  - rest, pain relief measures
  - hydration, treat underlying infection