SUPPLIES
- Sterile sputum container, specimen cup, or mucus trap
- Mouth care supplies
- Sterile suction kit, if necessary
- Gloves

BEFORE THE PROCEDURE
If the sputum specimen is to establish the initial diagnosis, obtain the specimen before starting oxygen and/or antibiotic therapy. Antibiotics reduce the bacterial count, making it difficult to identify the infecting organism. Oxygen therapy dries mucous membranes, making it more difficult to obtain a specimen. Unless otherwise instructed, obtain the specimen early in the morning, just after awakening. Respiratory secretions tend to pool during sleep; it is easier to obtain a specimen before normal coughing and daily activity has cleared them.

Provide for privacy, and explain the procedure. Emphasize the importance of coughing deeply to obtain sputum from the lower respiratory tract, avoiding expectoration of saliva. Increasing fluid intake prior to obtaining the specimen can help liquefy secretions, making them easier to expectorate.

DURING THE PROCEDURE
1. Use standard precautions.
2. Provide for mouth care prior to obtaining the specimen to reduce contamination by oral flora.
3. Instruct to cough deeply several times, expectorating mucus into the container.
4. Close the container securely using aseptic technique.
5. Label the container with name and other identifying data, time and date, and any special conditions, such as antibiotic or oxygen therapy. Enclose specimen container in a clean plastic bag, and take to the laboratory or refrigerate as ordered to preserve the specimen.
6. To obtain a specimen by suctioning:
   - Provide mouth care as indicated above.
   - Obtain a sterile mucus trap. Using aseptic technique, attach the trap to the suction apparatus between the suction catheter and tubing.
   - Preoxygenate for suctioning as needed.
   - Perform tracheal suctioning using aseptic technique via either the nasotracheal route, endotracheal tube, or tracheostomy. Lubricate the catheter with sterile normal saline. Apply no suction as the catheter is being inserted into the trachea; apply suction for no longer than 10 seconds while withdrawing the catheter.
   - Detach the mucus trap; close and label. Clear the suction catheter and tubing with normal saline after removing the mucus trap. Dispose of equipment appropriately.
7. A sputum specimen also may be obtained during bronchoscopy procedure.

AFTER THE PROCEDURE
Provide mouth care as needed. Teach the importance of completing all ordered antibiotic prescriptions to ensure complete eradication of microorganisms. Document the time and date that the specimen was obtained; and note color, consistency, and odor of sputum.

Obtaining a Sputum Specimen with increased circulating immature leukocytes (a left shift) in response to the infectious process. White blood cell changes are minimal in viral and other pneumonias.

- Arterial blood gases (ABGs) may be ordered to evaluate gas exchange. Alveolar inflammation can interfere with gas exchange across the alveolar-capillary membrane, especially if exudate or consolidation is present. Respiratory secretions or pleuritic pain also can interfere with alveolar ventilation. An arterial oxygen tension (PO2) of less than 75 to 80 mmHg indicates impaired gas exchange or alveolar ventilation.
- Pulse oximetry, a noninvasive method of measuring arterial oxygen saturation, is ordered to continuously monitor gas exchange. The SaO2 is the percentage of arterial hemoglobin that is saturated or combined with oxygen; it normally is 95% or higher. An SaO2 of less than 95% may indicate impaired alveolar gas exchange.
- Chest X-ray is obtained to determine the extent and pattern of lung involvement. Fluid, infiltrates, consolidated lung tissue, and atelectasis (areas of alveolar collapse) appear as densities on the film.
- Fiberoptic bronchoscopy may be done to obtain a sputum specimen or remove secretions from the bronchial tree (Figure 36–2). In this procedure, a flexible bronchoscope is inserted through the mouth or nose and passed down the trachea to the bronchi, where secretions can be suctioned or removed.