19.5: Sputum Specimen Collection

Sputum specimens collected by expectoration are commonly used for cytology, culture and sensitivity, and acid-fast bacilli (AFB) testing. Cytologic examination identifies abnormal cells such as cancer. Culture and sensitivity testing identifies specific infectious microorganisms and their sensitivity to antibiotics. Optimally, sputum samples used for culture and sensitivity testing should be collected before initiating antibiotic therapy because antibiotics affect the results. AFB testing, along with culture and sensitivity testing, is used to diagnose tuberculosis (TB). When testing for TB, at least three consecutive samples are collected, with at least one being an early morning sample.

Prior to implementing the procedure, it is helpful to ensure the patient is well-hydrated. Hydration helps thin and loosen sputum and increases the likelihood of obtaining an adequate sample. If the patient is prescribed nebulizer treatments, it is helpful to administer this treatment prior to the procedure to help mobilize secretions. It is also important to assess if the patient is experiencing pain related to coughing. For example, pain following chest or abdominal surgery can inhibit the patient from taking deep breaths and expectorating. In this case, pain medication should be provided prior to performing the procedure. Patients can also be encouraged to support surgical wounds with a pillow while coughing to provide additional support and comfort.

It is best to obtain sputum samples in the early morning because secretions accumulate overnight. The patient can rinse their mouth with water prior to the procedure, but avoid mouthwash or toothpaste because these products can affect the microorganisms in the sample. Remove dentures if they are present.

Be aware that droplets and aerosols may be generated when collecting sputum specimens, so use appropriate personal protective equipment when entering the room and during the procedure based on the patient’s condition. Explain the procedure to the patient, the type of specimen required, and the difference between oral secretions and sputum. Position the patient in a seated position in a chair or at the side of the bed, or place them in high Fowler’s position.

Instruct the patient to take three slow, deep breaths and then cough deeply. Repeat this process until the patient has
produced sputum, with rest periods between each maneuver.

When the patient has mobilized sputum, instruct them to expectorate directly into a sterile specimen container without touching the inside or rim of the container. The specimen should be at least 5 mL (one teaspoon); ask the patient to continue producing and expectorating sputum until this amount is achieved. Assess the sputum specimen to ensure it is sputum and not saliva. Sputum appears thick and opaque, whereas saliva appears thin, clear, and watery.

Cap the specimen container tightly and ensure it is labeled with the patient’s name. Place the specimen in a transport bag and send it to the laboratory for analysis. Document the time and date the sputum specimen was collected and the characteristics of the sputum, including amount and color.

If a patient is unable to expectorate a sputum sample, other interventions may be required to mobilize secretions. It is often helpful to collaborate with a respiratory therapist for assistance in this situation. Interventions may include nebulizers, hydration, deep-breathing exercises, chest percussion, and postural drainage. If these interventions are not successful, a sputum sample may be obtained via oropharyngeal or endotracheal suctioning; these methods are used to obtain sputum samples for patients who are intubated.  

Note

Read South Dakota Department of Health’s PDF with instructions for collecting a sputum sample:
Sputum Collection Instructions

