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NONGYNECOLOGICAL CYTOLOGY PULMONARY SPECIMENS (Sputum, Post-Bronchoscopy Sputum, Bronchial Brushings, Bronchial Washings, Bronchoalveolar Lavage)

I. Purpose

The adequacy of a sputum specimen is determined primarily by the presence of alveolar macrophages indicating that the specimen obtained is a deep cough specimen producing material from the lower airways. In addition, specimen should not be obscured by oral or upper airway contaminants.

Adequate bronchial brushing and washing specimens should contain large numbers of well-preserved bronchial lining cells with a little contaminating oral upper airway material as possible. Bronchoalveolar lavage specimens should contain abundant well-preserved alveolar macrophages with as little contaminating upper airway material as possible.

II. Specimen

General Information for all Specimens

For Specimens Processed for Cytology (Non-Gynecological Specimens):

Add 70% alcohol, as soon as possible, in a volume equal to the specimen collected. Label each container with the patient name, site source and the requisition peel-off number. Submit the specimen along with the completed Heartland Pathology Consultants requisition at room temperature.

For Specimens Processed for Microbiology or Clinical Analysis:

Specimens intended for culture must be collected in a sterile container or in sterile saline (*without 70% alcohol or 10% neutral buffered formalin*) and *split* from the main Non-Gynecological specimen prior to transport with the proper requisition for microbiology culture or clinical testing. Consult the clinical lab test catalog for specific specimen requirements.

A. Sputum

1. Indications

For the detection and characterization of premalignant/malignant pulmonary lesions.

2. **Specimen Required**
5 mL (about one teaspoon) or more if possible, of sputum obtained from a deep cough specimen.
3. **Supplies**
120 mL clean plastic specimen container; fixative (70% alcohol).
4. **Collection Procedure**
 - a. **Patient Preparation:** When clinically feasible, sputum specimens should be obtained as follows. The optimum time for specimen collection is within 15 to 30 minutes after waking and before eating breakfast. Brushing of teeth or rinsing of the mouth thoroughly with water will reduce contamination by saliva. Instruct the patient to inhale and exhale deeply forcing air from the lungs using the diaphragm. Repeat until the patient coughs and is able to produce a sputum specimen.
 - b. Collect the specimen in the container, attempting to obtain at least one teaspoon of sputum. Specimen should be a deep cough specimen and not saliva. Saliva is of no diagnostic value. Greater diagnostic yield may be obtained if specimens are submitted on three to five successive mornings.
 - c. Add 70% alcohol as soon as possible in a volume equal to the specimen collected. Label each container with the patient name, site source and requisition peel-off number.
 - d. **STORAGE:** Submit the specimen at room temperature along with the completed HPC requisition and copies of insurance card(s).

NOTE: *If a good specimen is not obtainable by this method or if the patient is unable to comply, obtain an induced sputum or tracheal aspirate.*

B. Post-Bronchoscopy Sputum

1. Patient Preparation: Collect **one** good deep cough specimen at any time during the 24-hour period following bronchoscopy, as outlined in "Sputum" above.
2. Add 70% alcohol as soon as possible in a volume equal to the specimen collected. Label each container with the patient name, site source and requisition peel-off number.
3. **STORAGE:** Submit the specimen at room temperature along with the completed HPC requisition and copies of insurance card(s).

C. Bronchial Brushings

1. **Indications**
For the detection and characterization of bronchoscopically visible premalignant/malignant pulmonary lesions; for the identification of some microbiologic pathogens (primarily viral and fungal).
2. **Specimen Required**
Bronchoscopically directed brushing of the identified lesion.
3. **Supplies**
Standard bronchoscopy equipment, one (or more if necessary) 5-10 mL vial and fixative of 70% alcohol.
4. **Collection Procedure**
 - a. Using standard bronchoscopy technique, identify the lesion in question and obtain a brushing sample of the lesion. Upon withdrawing the brush, agitate the brush vigorously in a 5-10 ML vial of sterile saline or fixative. **DO NOT APPLY THE BRUSH DIRECTLY TO SLIDES.** If possible, detach the brush and leave it in the vial.
 - b. Add 70% alcohol as soon as possible in a volume equal to the specimen collected. Label each container with the patient name, site source and requisition peel-off number.
 - c. **STORAGE:** Submit the specimen at room temperature along with the completed HPC requisition and copies of insurance card(s).

D. Bronchial Washings**1. Indications**

For the detection and characterization of bronchoscopically ill-defined or invisible premalignant/malignant pulmonary lesions; for the identification of some microbiologic pathogens (primarily viral, *Pneumocystis carinii* and acid fast bacilli).

2. Specimen Required

Bronchoscopically obtained washing (preferably at least 10 mL) of the bronchi in the region of the suspected lesion.

3. Supplies

Standard bronchoscopy equipment, 120 mL clean plastic specimen container(s) and fixative (70% alcohol).

4. Collection Procedure

- a. Using standard bronchoscopy technique, lavage the distribution of the bronchus to be sampled. Collect the wash in a clean container.
- b. Add 70% alcohol as soon as possible in a volume equal to the specimen collected. Label each container with the patient name, site source and requisition peel-off number.
- c. STORAGE: Submit the specimen at room temperature along with the completed HPC requisition and copies of insurance card(s).

E. Bronchoalveolar Lavage**1. Indications**

For the detection and characterization of microbiologic pathogens (primarily *Pneumocystis carinii*, viral, fungal and bacterial) in immunocompromised patients; for detection and characterization of malignancy.

2. Specimen Required

Bronchoscopically obtained lavage (preferably at least 20 mL) of the distal airways and alveoli in the distribution of the suspected lesion.

3. Supplies

Standard bronchoscopy equipment and 120 mL clean plastic specimen containers, 70% alcohol.

4. Collection Procedure

- a. Using standard bronchoscopy BAL (bronchoalveolar lavage) technique, lavage the lung distribution in question with normal saline (or other physiologic solution). Collect the lavage specimen in a clean specimen container.
- b. Add 70% alcohol as soon as possible in a volume equal to the specimen collected. Label each container with the patient name, site source and requisition peel-off number.
- c. **STORAGE:** Submit the specimen at room temperature along with the completed HPC requisition and copies of insurance card(s).

NOTE: *For the interpretation of BAL specimens, relevant clinical information must be provided. The primary diagnosis of P. carinii is made on Pap-stained material. GMS stains, performed on all BAL specimens, are used as confirmatory tests only.*

References

- A. Koss, Leopold G MD: *Diagnostic Cytology and its Histopathologic Basis*, Volume 2, JB Lippincott Company, 1992
- B. Lester, Susan C MD, PhD: *Manual of Surgical Pathology*, Churchill Livingstone, Philadelphia, 2001.