



Pathology User Manual

Microbiology Investigations

Sputum

[PD-PAT-UMSputum]

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Sputum

Indications

Diagnosis of lower respiratory tract infections

Optimal time and Method of collection

Where possible, specimens should be fresh (ideally, <4 hours) and collected before antimicrobial therapy is started. Specimens are best obtained early in the morning.

The material required is from the lower respiratory tract, expectorated by deep coughing. When the cough is dry, physiotherapy may be helpful. Saliva and pernasal secretions are not suitable.

Specimens should be collected into a sterile plastic specimen container.

Induced sputum, sputum or bronchoalveolar lavage is required for *Pneumocystis jirovecii* investigation (referred test).

Adequate quantity and appropriate number of specimens

Ideally, a minimum volume of 1.0 mL of sputum is required.

Numbers and frequency of specimens collected are dependent on clinical condition of patient.

Optimal transport and storage conditions

Specimens should be transported and processed as soon as possible
Sputum samples should be processed promptly to give the best opportunity to culture pathogenic organisms and reduce the risk of overgrowth with contaminants.

Cough swab

Cystic fibrosis (CF) screen culture

A cough swab should only be used if a patient cannot expectorate.

Use charcoal transport swab

Hold the swab as far back in the throat as possible while the patient coughs

Place swab into transport medium and transport to the laboratory in sealed plastic bags.

Transport without delay, if transport is delayed store at ambient temperature

Limitations of laboratory examination

The aetiology of pneumonia varies according to whether it has been acquired in the community or in hospital and the risk factors present. Many of the bacteria found as colonisers of the upper respiratory tract have been implicated in pneumonia. Antibiotic treatment and hospitalisation affect the colonising flora, leading to an increase in numbers of aerobic Gram-negative bacilli. These factors affect the sensitivity and specificity of sputum culture as a diagnostic test and results must always be interpreted in the light of the clinical information. Sputum culture results are often unreliable and sensitivity of culture is poor for many pathogens, although in sputum specimens from patients with severe exacerbation of COPD culture and antibiotic sensitivities may be of value.

Recovery and recognition of organisms responsible for pneumonia depends on:

- The adequacy of the lower respiratory tract specimen;
- Avoidance of contamination by upper respiratory tract flora;
- Current and recent antimicrobial treatment.

Distinction between tracheobronchial colonisation and true pulmonary infection can prove difficult.