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Section: Respiratory Tract Culture Manual	Subject Title: Bronchoalveolar Lavage (BAL), Bronchoscopy Aspirates/Washings-Routine	
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**BRONCHOALVEOLAR LAVAGE (BAL), BRONCHOSCOPY
ASPIRATES / WASHINGS - ROUTINE**

I. Introduction

Bronchoalveolar lavage (BAL) specimens, including aspirates and washings are collected when sputum specimens fail to identify an etiologic agent of pneumonia or the patient is unable to produce sputum. Lavages are especially suitable for detecting *Pneumocystis carinii* and fungal elements.

II. Specimen Collection and Transport

See [Pre-analytical Procedure - Specimen Collection QPCMI02001](#)

III. Reagents / Materials / Media

See [Analytical Process - Bacteriology Reagents_Materials_Media List QPCMI10001](#)

IV. Procedure

A. Processing of Specimens

See [Specimen Processing Procedure QPCMI06003](#)

Direct Examination: Prepare 3 smears for:

- i) Gram stain
- ii) Fungifluor stain
- iii) Extra smear held in Mycology Section for special stains.

Culture:

Media	Incubation
Blood Agar (BA)	CO ₂ , 35°C x 48 hours
Haemophilus Isolation Medium (HI)	CO ₂ , 35°C x 48 hours
MacConkey Agar (MAC)	CO ₂ , 35°C x 48 hours
Inihibitory Mold Agar (IMA) *	O ₂ , 28°C x 4 weeks
Esculin Base Medium (EBM)*	O ₂ , 28°C x 4 weeks
Blood Egg Albumin Agar (BEAA)*	O ₂ , 28°C x 4 weeks

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Media

Incubation

 If *B. cepacia* is requested or specimen is from a patient with Cystic Fibrosis, **add**:

OF Base, Colistin, Bacitracin & Lactose Agar (OCBL) O₂, 35°C x 5 days

Keep the BA, HI and MAC plates CO₂, 35°C x 5 days

If *Nocardia* is requested, **add**:

Sodium Pyruvate Agar (PYRA) O₂, 35°C x 4 weeks

* Forward inoculated fungal media to Mycology Section for incubation and work-up.

B. Interpretation of cultures:

Examine the plates after 24 and 48 hours incubation.

1. Identify any growth of **Probable** respiratory pathogens.
2. Identify any growth of **Possible** respiratory pathogens if predominant (i.e. amount of pathogen growth greater than that of commensal flora).
3. For yeast grown in culture on bacterial culture plates see [Yeast Identification](#).
4. For filamentous fungus, seal the agar plate and send the culture to Mycology for identification.
5. If there is a question regarding the significance of an isolate, consult the charge technologist or microbiologist.

Probable respiratory pathogens:

Streptococcus pneumoniae

Moraxella catarrhalis

Hemophilus influenzae

Group A streptococcus

Staphylococcus aureus

Pseudomonas aeruginosa

Burkholderia cepacia

Nocardia

Filamentous fungus

Cryptococcus neoformans

Possible respiratory pathogens:

Yeast not *Cryptococcus neoformans*

Group C and G streptococcus

Other gram negative bacilli (not listed above) of single morphological type

For cystic fibrosis patients:

Report any amount of *B. cepacia*. For *B. cepacia* and slow growing mucoid *P. aeruginosa*, identification and sensitivities can be referred to previous specimens processed within the

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preceding 4 weeks.

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C. Susceptibility Testing:

Refer to Susceptibility Testing Manual.

V. Reporting

Direct Examination:

Gram Stain: Report WITHOUT quantitation:
 - presence or absence of pus cells;
 - presence or absence of squamous epithelial cells;
 - presence of predominate respiratory pathogens;
 - presence of "Commensal flora";
 - "No bacteria seen" if no organism is seen.

Fungifluor Stain: Refer to Mycology Manual

Acid-fast stain (if **STAT** request): Refer to Reporting of Acid-fast smears, Appendix IV.

Culture:

Negative Report: "Commensal Flora" (DO NOT quantitate) or "No growth"
 "No *B. cepacia* isolated" if *B. cepacia* culture is requested.
 "No *Nocardia* isolated" if *Nocardia* culture is requested.

Positive Report: DO NOT quantitate.
 Report all significant isolates with appropriate sensitivities.
 Report "Commensal flora" if also present.
 "Filamentous fungus" "isolated" "identification to follow" (DO NOT quantitate).

Telephone all Group A streptococcus to ward/ordering physician.

VI. References

P.R. Murray, E.J. Baron, M.A. Pfaller, R.H. Tenover, R.C. Tenover. 2003. Manual of Clinical Microbiology, 8th ed. ASM Press, Washington, D.C.

H.D. Izenberg. 2003. Respiratory Tract Cultures, 3.11.1.1 – 3.11.3.1 in Clinical Microbiology

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