

Bronchoalveolar Lavage (BAL)- Standardised

- in Suspected Ventilator Associated Pneumonia (VAP)

Indications

- Ventilated for >48 hours * AND
(* Also consider new pneumonia <48hrs post extubation who are reintubated)
 - New Pneumonic changes on CXR AND one of
 - Purulent tracheal secretions or Temp >38 or WCC >11
- FIRST CONSIDER REFERRAL TO VAP STUDY

CONTACT DETAILS ON NOTICE BOARD IN DRS' ROOM
IF WEEKEND OR UNAVAILABLE PROCEED AS BELOW

Contraindications (Relative)

- Pretreatment with antibiotics- GREATLY reduces microbiological counts and invalidates quantitative cultures
- $FiO_2 \geq 0.7$ or PEEP >10
- Unstable patient eg arrhythmias, high dose inotropes, etc

Preparation

- Review the CXR and decide on segment to be lavaged- choose one from:
 1. Segment involved on CXR
 2. If 1. difficult to predict- segment where pus is seen at bronchoscopy
 3. If pus not seen- choose posterior segment of RLL
 4. If "white out" on CXR- choose posterior segment of RLL
- Anaesthesia/Sedation and Paralyse
- Controlled Ventilation Mode
- FiO_2 1.0 with PIFR <60l/min
- Bronchoscope- at least 1.5mm smaller than internal diameter of ET tube
- Saline –1 litre bottle sterile N Saline
Ideally this should be warmed to 37°C guided by a thermometer.
Decant the saline into a sterile Traysin for the BAL
- 20ml syringes x 2
- 50ml syringes x 2 (luer lock type)



Procedure

- DO NOT use local anaesthetic- it is bactericidal
- Pass scope to area of lung chosen directly AVOIDING USE OF SUCTION
- WEDGE the scope in a subsegment and apply gentle suction- airway should collapse
- INJECT 20ml saline
- ASPIRATE and DISCARD this (bronchial) sample
- Change trap
- INJECT 20-40ml aliquots of saline to a total of 200ml (STOP at 140ml if concerned eg ↓SpO₂)
- GENTLE Suction and collection of BAL fluid into trap- average return is <20%
- VISUALIZE the rest of the bronchial tree and sample as appropriate

Samples- WARN THE LABS THAT SPECIMENS ARE COMING

- BAL fluid urgently to Microbiology via Porter(NOT BY THE TUBE SYSTEM)
- Telephone Microbiology Technician (tel. 26824 or via switchboard) to warn sample is coming and request tests as below.
- Request urgent **Gram Stain** to be telephoned.
- Request **Quantitative Culture** of fluid
- Consider sending fluid to Mycology for culture especially in immunosuppressed. (WGH tel. 31932)
- Consider sending samples to Virology if indicated eg. PCP in immunocompromised or viruses eg RSV, Flu, HSV, CMV if there is a high index of suspicion of atypical infection. (Bleep Virology technician separately via switchboard)

Results

- **Gram Stain** should be telephoned back urgently and MUST be followed up.
- Antibiotics should be guided by a positive result
- **Quantitative Culture** is significant in the presence of bacteria $\geq 10^4$ cfu/ml * of fluid
- **Antibiotics should be reviewed on the basis of this**

*cfu= colony forming units