

# Bronchoscopy in Critical Care

**Aim** To provide guidance on the preparation for and performance of bronchoscopy in ICU

**Scope** All adult patients in intensive care requiring bronchoscopy

## Indications

- Diagnostic bronchoalveolar lavage (BAL)
- Persistent lobar collapse that is refractory to physiotherapy
- Localization of site of bleeding in massive haemoptysis
- Foreign bodies
- Diagnosis of endobronchial lesions
- Verifying proper endotracheal tube/double lumen tube placement
- Used as adjunct airway management during percutaneous tracheostomy
- Assessing inhalational injury +/- intubation in burns

## Contra-indications

- Cardiovascular instability
- Unable to maintain maintain  $\text{paO}_2 > 8 \text{ kPa}$  or  $\text{SaO}_2 > 90\% \text{ FiO}_2$  of 1
- Severe uncorrected electrolyte disturbances

## Preparation of Equipment

Sample pots x3	Suction may need cut to fit
“popper” angle piece/catheter mount for ET tube.	Ensure ETT is #8 or greater
Sterile aqueous gel	Gloves
5x 20ml syringes	500ml bottle of sterile saline
2 packets sterile swabs	Sterile flat drape
Assemble and prepare bronchoscope	

## Preparation of Patient

Consent if appropriate  
 Sedate +/- paralyse  
 Ensure haemodynamically stable on increased sedation  
 Have emergency drugs available, accidental extubation is possible and be prepared  
 If history of bronchospasm give nebulised salbutamol within 30mins of procedure  
 Ventilate on 100%  $\text{O}_2$  for at least 5 mins before starting  
 Ensure ventilation mandatory mode employed, consider changing to pressure based mode of ventilation

## Broncho-alveolar Lavage

Pass scope to area of suspected infection

If possible, do not suction through the scope prior to lavage (upper airway bacterial contamination)

Wedge scope as far as possible – ideally into subsegmental bronchus

Use sterile saline – should be infused through the working channel of the scope in 20 ml aliquots. The total recommended volume instilled is 100-150 ml

There is no standardized dwell time. However, excessive dwell time may allow BAL fluid to cross the alveolar-capillary membrane.

Low level of suction pressure should be used to avoid collapsing the distal bronchi or traumatizing the mucosa

Aspirate between aliquots and label accordingly. The first aliquot is usually poorly recovered, and often contains a disproportionate amount of bronchial material. Some people may separate the recovery of the first aliquot from the rest of BAL for analysis.

Recovery of fluid is decreased in smokers and patients with COPD.

## Completion of Procedure

Ensure bronchoscope is adequately flushed with remaining saline

Document procedure and findings in the medical notes

Ensure samples are labelled correctly and form states history of patient

Notify microbiology to expect samples

Post-procedure CXR, and document CXR findings in the notes.

## Complications

Hypoxaemia, Hypoventilation, Bronchospasm, Pneumonia, Pneumothorax (1-5% cases), Airway obstruction, Cardiorespiratory arrest, Arrhythmias, Pulmonary oedema, Vasovagal reactions, Fever, Pulmonary haemorrhage (9%)

Overall mortality reported as 0.1%

