BRONCHOSCOPY

Policy
- The decision for performing bronchoscopy should be made by a senior staff in ICU
- The procedure should be performed or supervised by a specialist in respiratory medicine, cardiothoracic surgery or anaesthesia/ICU.
- Whenever possible, informed consent should be obtained from patients.
- In this SARS era, please take note of infection control policies and personal protection. Check with the unit’s infection control officer

Indications
- Diagnostic bronchoalveolar lavage (BAL)
- Difficult intubation - skilled personnel only. Not used as aid to failed intubation
- Persistent lobar collapse that is refractory to physiotherapy
- Localization of site of bleeding in massive hemoptysis
- Foreign bodies
- Assessing inhalational injury +/- intubation in burns
- Diagnosis of endobronchial lesions
- Verifying proper endotracheal tube/double lumen tube placement
- Used as adjunct airway management during percutaneous tracheostomy

Contraindications
1. Non-intubated patients
   a. Severe respiratory distress with RR > 30 per minute
   b. Unable to maintain PaO₂ > 8 kPa or SaO₂ > 90% despite supplemental oxygen
   c. Uncooperative patients
   d. Cardiovascular instability
2. Intubated patients
   a. Cardiovascular instability
   b. Unable to maintain PaO₂ > 8 kPa or SaO₂ > 90% FiO₂ of 1
   c. Severe uncorrected electrolyte disturbances

Prophylactic antibiotics
- Should be given to patients with asplenia, prosthetic valve, or history of endocarditis
- Ampicillin 2g IV within 30 minutes before procedure OR
- Cefazolin 1g IV within 30 minutes before procedure OR
- Clindamycin 600 mg IV within 30 minutes before procedure (if allergic to penicillin)
Complications of bronchoscopy

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

Overall mortality reported as 0.1%

Procedure

- Endoscopist should wear protective clothing including plastic aprons, gown, mask and gloves. High grade particulate masks should be worn when patients are suspected to have pulmonary tuberculosis.
- Patients with asthma should received nebulized salbutamol 5 mg within 30 minutes before procedure. Patients with COPD should received nebulized salbutamol 5 mg and ipratropium bromide 0.5 mg within 30 minutes before bronchoscopy.
- Lignocaine used as LA unless patient already intubated. Maximum dose of lignocaine: must not exceed 4 mg/kg.
- IV sedation eg midazolam or propofol can be used if no contraindication.
- Oxygen supplementation must be provided for all patients.
- Monitoring of oxygen saturation during procedure mandatory.
- For non-intubated patients, standby intubation equipment and drugs should be available by the bedside.
- For intubated patients,
  - ETT size at least 8 mm internal diameter pre-procedure
  - Connect swivel connector with perforated diaphragm for insertion of bronchoscope - this will allow continued ventilation and PEEP
  - Bite block
  - Ventilator settings
    - Increase FiO₂ to 100%
    - Mandatory setting. Adjust tidal volume, RR, pressure limit to maintain adequate oxygenation. NB patient triggering unreliable due to air leak.
- Post procedure CXR for all patients.
Reference
British Thoracic Society Bronchoscopy Guidelines Committee: British Thoracic Society guidelines on diagnostic flexible bronchoscopy. Thorax 2001; 56(Suppl 1) i1- i21