

Title	Haemoptysis
Version	2.0

1	Background
2	Definitions
3	Management
4	Bronchial Artery Embolisation

1. Background

- Established bronchiectasis is associated with hypertrophy of the bronchial circulation predisposing to airway bleeding.
- Episodes of minor haemoptysis are relatively common. It involves small volumes of blood (<30mls) often mixed with sputum. They are often associated with an infective exacerbation and can usually be managed conservatively.
- Episodes of major haemoptysis are life threatening and can occur spontaneously. They involve several hundred millilitres of fresh blood and can cause a sensation of choking or suffocating. As such, they are often profoundly unpleasant.

2. Definitions

There are no universally agreed volumes to classify haemoptysis, and smaller volumes are clearly of greater significance to children. The rate as well as the volume of bleeding is of significance. Any bleed that causes shock or breathing difficulty/hypoxia should clearly be considered large and life-threatening. The below are a guide:

	Small	Moderate	Large
Child	Streaks of blood <5mls /24hrs	Approx. 10-50mls/24hrs	> 100-250 mls/24 hours >30-50mls/single bleed
Adult	Streaks of blood <30 mls/24hrs	Approx. 50-100mls/24hrs	> 100-250 mls/24 hours >50mls/single bleed

Estimating volume of haemoptysis is difficult. Anything over an approximate cupful should be taken seriously at all ages and requires hospitalisation. A guide to volumes is as follows:

- White universal container 30mls
- Teacup 150mls
- White Plastic Sputum pot 250mls
- Mug 300mls

3. Management

3.1. Small Haemoptysis

- Most of these episodes are best managed by simply treating the associated infective exacerbation.
- Hospitalisation: unlikely unless other concerns
- Antibiotics: Refer to previous respiratory culture results but ensure *Staphylococcus aureus* is covered by antibiotics prescribed. Oral unless other concern.
- Other medications: Oral tranexamic acid (25mg/kg TDS, max 1.5g per dose) can be considered if persistent/recurrent
- Nebulised mucolytics: continue
- Airway clearance: continue

3.2. Moderate Haemoptysis

- Hospitalisation: required
- Antibiotics: as above for minor but IV route
- Bleeding control:

- Positioning: “bleeding lung” side down during active bleeding
- Oral tranexamic acid (25mg/kg TDS, max 1.5g per dose) can be considered
- Nebulised mucolytics: continue Pulmozyme. Stop Hypertonic Saline or Mannitol if causing coughing
- Airway Clearance: may require temporary stop with graded re-introduction and avoidance of positive pressure

3.3. Large Haemoptysis

- Hospitalisation: required – treat as a medical emergency (children: discussion with KIDS team)
- In severe uncontrolled haemorrhage, intubation will be required = urgent anaesthetic support required
- Resuscitation: Replace blood loss (use group specific blood or ORh-ve if not cross-matched)
- Investigations: Send urgent FBC, clotting and cross-match
- Bleeding control:
 - IV tranexamic acid (10mg/kg TDS, max 1g per dose).
 - Correct clotting abnormalities if present. Therefore consider:
 - IV vitamin K (250 mcg/kg, max dose 10mg) for one dose
 - Fresh frozen plasma (10-20ml/kg)
 - Cryoprecipitate (1unit/5kg)
 - Consider IV vasopressin in children (discussion with KIDS)
 - If able/considered safe, ask the patient to consume an ice cold drink to reduce bronchial blood flow.
 - Positioning: “bleeding lung” side down during active bleeding
- Antibiotics: IV antibiotics that include Staphylococcus aureus cover
- Nebulised mucolytics: temporarily stop and restart as for moderate above when haemoptysis has settled
- Physiotherapy: temporary stop; graded re-introduction as above

4. Bronchial Artery Embolisation

- If bleeding persists despite the above management, the patient should be considered for emergency bronchial artery embolization.
- This is often very technically challenging and frequently requires more than procedure to occlude all the bleeding vessels.