Whittington Health NHS

Bronchiectasis

Guidelines for Management

Subject:	Guidelines for the management of Bronchiectasis
Policy Number	N/A
Ratified By:	Clinical Guidelines Committee
Date Ratified:	Oringinal 2007 & 2009. Minor amendment s July 2012. Reviewed November 2015
Version:	4
Policy Executive Owner:	Clinical Director, Medicine, Frailty and Networked Service ICSU
Designation of Author:	Dr Myra Stern and Dr Julie Andrews
Name of Assurance Committee:	As above
Date Issued:	November 2015
Review Date:	November 2016
Target Audience:	All clinical staff involved in assessing and treating patients with bronchiectasis
Key Words:	Bronchiectasis

Version Control Sheet

Version	Date	Author	Status	Comment
1	October 2007	Drs M Stern and J Andrews	Reviewed and updated 2009	
2	October 2009	Drs M Stern & J Andrews	Reviewed and updated July 2012	Minor amendment predominantly around duration of dosing (14 days rather than 10-14 days).
3	August 2012	Drs M Stern * J Andrews	Off line	
4	Nov 2015	Dr M Stern	Current	Reviewed. Assigned current for one year.

➢ Criteria for use

These guidelines are for the management of patients with bronchiectasis confirmed on high resolution CT scan

➢ Background/ introduction

Bronchiectasis refers to the anatomical widening of conducting airways caused by inflammatory and necrotizing effects, most commonly from severe and/or repeated pulmonary infections. In turn, this leads to a vicious cycle of further repeated infections, inflammation, excessive mucus production, reduced mucociliary clearance and bronchial wall destruction. Associated damage to blood vessels may lead to haemoptysis. Bronchiectasis affects ~ 1 in 1,000 adults in the UK, which may be localised to one area, or be more widespread. Reduced lung function, poor quality of life, respiratory failure and premature death may result and can be ameliorated by vigorous medical intervention, including early diagnosis, physiotherapy and appropriate antibiotic treatment of infective exacerbations.

➢ Diagnosis

PATIENTS WITH SUSPECTED BRONCHIECTASIS SHOULD BE SEEN BY A RESPIRATORY PHYSICIAN FOR DIAGNOSIS, INVESTIGATION OF CAUSE AND PLANNING OF MANAGEMENT. THE MAJORITY OF PATIENTS CAN THEN BE MANAGED IN THE COMMUNITY. SPECIALIST INTERVENTION RECOMMENDED FOR FREQUENT (>3/YR) EXACERBATIONS, DECLINING LUNG FUNCTION OR HYPOXIA.

HISTORY	SIGNS and BEDSIDE INVESTIGATIONS
Productive cough – often large volumes sputum Purulent sputum Recurrent chest infections Haemoptysis Wheeze Breathlessness Co-existing sinusitis Past history TB with chronic cough History childhood 'pneumonias' History of infertility (men) Dextrocardia (rarely)	Clubbing (rare) Localised coarse crackles Wheeze Spirometry obstructive defect (decreased FEV1/FVC ratio) Decreased PEF

INVESTIGATIONS

A. Confirm Diagnosis

High resolution CT scan

Note: only 50% have plain CXR signs of bronchiectasis

B. Look for Cause/Mechanism

General: Sputum MC+S (NB *Staphylococcus*, *H. influenzae*, *P. aeruginosa*)

FBC, ESR, CRP, Renal, Liver & Bone Biochemistry, Glucose

Lung function: initially spirometry and S_aO_2,
Exclude co-existing asthma with either home peak flow charting and/or post-bronchodilator spirometry
(400 μg salbutamol MDI via volumatic, wait 15 mintues and retest. An increase in FEV1 of ≥400 ml or 20% of baseline is suggestive of asthma)

Allergic Bronchopulmonary Pulmonary Aspergillosis (ABPA):
Raised eosinophil count/Aspergillus precipitin /Total IgE/ 'flitting' opacities on repeated CXR's

Hypogammaglobulinemia: Immunoglobulins

Tuberculosis - including Non-Tuberculous Mycobacteria (NTM):
3 x early morning sputa

Cystic Fibrosis: (Consider in in patients ≤ 40 yrs, upper lobe bronchiectasis on CT, persistent isolation of *Staphylococcus aureus*, male infertility)
Genotyping for CFTR mutations
Regional Genetics Molecular Laboratory, Great Ormond Street Hospital - http://www.labs.gosh.nhs.uk/laboratory-services/genetics and go to SEND A SAMPLE for details of the referral forms. Once referral form completed, sample and form need to go to Dr Lucy Harbin (ext 3712) in Histopathology for sending. (Details of request are also on the Respiratory Shared Drive).
All patients suspected of having CF must be referred to either The Royal Brompton Hospital* or London Chest Hospital**
* Dr K Gyi: Royal Brompton Hospital, London SW3 6NP. Tel 0207 3518041 Fax 0207 351 8052
MUST USE Tertiary Referral Form
http://www.rbht.nhs.uk/about/locations/contact/tertiary-referral-form
** Dr L Kuitert, London Chest Hospital, Bonner Road, London E2 9JX Tel: 0207 377 7000

➢ Clinical management

A. PHYSIOTHERAPY [1,2,3]
Clearance techniques including: postural drainage, active cycle of breathing, chest percussion, forced expiration 'huffing'

All
1 –2 times daily
In-patients : Refer to ward physiotherapist
Out-patients: Refer to Suzanne Roberts (Department of Physiotherapy ext **5489**)
Indicate sites affected (as per HRCT)
If reversible airways obstruction present, may require bronchodilators before each session

B. ANTIBIOTICS

General Principles:

1. **Antibiotics are only PART of the management, which must also include:**
   - Physiotherapy Referral to learn targeted airway clearance techniques
   - Pulmonary Rehabilitation if symptomatically breathless with MRC Dyspnoea Score≥3
   - Management of underlying cause if present
   - Smoking Cessation if smoker of tobacco and/or cannabis
   - Asthma/COPD treatment
   - Upper respiratory tract management – ENT review to exclude/manage rhinitis/sinusitis
   - Reflux treatment if relevant
   - Vaccination (annual) for *influenza* and *pneumococcus* (23-valent vaccine) (once only unless asplenic or immunocompromised)

2. Send sputum for culture and sensitivity before starting antibiotics [4]
SPECIFY BRONCHIECTASIS UNDER CLINICAL DETAILS AND ASK FOR 'CULTURE OF *PSEUDOMONAS*' ON THE FORM [5,6]

3. Sputum and Clinical state influence antibiotic prescription

Mucoid Sputum: No antibiotic
Purulent Sputum but patient stable and well : No antibiotic

Purulent with change in production (↑ volume +/- ↑ purulent +/- ↑ viscosity) **and/or Unwell** (pyrexia +/- breathless +/- chest pain +/- malaise)

Requires Antibiotic Treatment for 14 days [7]

Oral Antibiotics

No previous *P aeruginosa*

Amoxycillin 500 mg tds for 14 days (unless already treated with this antibiotic in community)
Or
Doxycycline 200 mg STAT then 100 mg od for 14 d
Or
Clarithromycin 500 mg bd for 14 d
Or
Co-amoxiclav 625mg tds for 14 d

First isolation of *P aeruginosa*
Ciprofloxacin 750 mg bd 14 days

Previous *P aeruginosa*

Ciprofloxacin 750 mg bd 14 d (NB Aim to use < 3 times per year. If required > 3 times in one year, consider treatment with IV antibiotics – see page 5)

Staphylococcus Aureus

Flucloxacillin 500 mg QDS for 14 days
Or
Clarythromycin 500 mg bd for 14 days

***Non-tuberculous Mycobacteria* (NTM)** [8]
Treatment of opportunist mycobacterium should be considered if organism is isolated on ≥2 occasions OR where there is clinical indication **with** associated radiographic changes. Specialist Respiratory supervision is recommended

		<50Kg	>50Kg	Duration
M kansasii	Rifampicin +	450mg	600mg	9 months
	Ethambutol +	15mg/Kg	15mg/Kg	
	Consider Clarithromycin or Ciprofloxacin or Moxifloxacin	 500mg bd 500mg bd 400mg od	 500mg bd 500mg bd 400mg od	
M avium* complex** Most common NTM in non-CF bronchiectasis ***M Malmoense ***M Xenopi***	Rifampicin +	450mg	600mg	2 years
	Ethambutol +	15mg/Kg	15mg/Kg	
	Consider Clarithromycin or Ciprofloxacin or Moxifloxacin	 500mg bd 500mg bd 400mg od	 500mg bd 500mg bd 400mg od	

Intravenous Antibiotics
When prescribing, indicate on drug chart
'Bronchiectasis Exacerbation' and Duration of Treatment (10-14 d)

Indications:
Still unwell after one or repeated course(s) of appropriate oral antibiotics
+/- sputum positive on culture
+/- raised inflammatory markers
+/- weight loss and/or low BMI

- **Choice guided by Sputum Culture where possible.**
- **Minimum duration 10 – (usually) 14 d** [7]
- **Must have daily physiotherapy**

Non *P. Aeruginosa*

Co-amoxiclav 1.2 g IV tds

OR if recently used co-amoxicav

10-14 d

Piperacillin-tazobactam 4.5 g IV tds

OR

If penicillin allergy (history of delayed rash, nausea or vomiting with penicillin):
Consider Ceftriaxone 2g IV od

Other penicillin allergy or cephalosporin allergy:
Discuss with a respiratory consultant or microbiology consultant for consideration of meropenem or ciprofloxacin

P. Aeruginosa

Piperacillin-tazobactam 4.5 g IV tds
Or
If penicillin allergy (as above)

10-14 d

Consider Ceftazidime 2 g IV tds
=/- Aminoglycoside (eg. **Gentamicin** 7 mg/kg od with 6 – 14 h post dose level
*see gentamicin guidelines - if no contraindications

S. Maltophilia

Discuss with chest consultant and/or microbiology consultant for case by case advice

MRSA

Vancomycin 1 g IV bd (refer to vancomycin guidelines)

Prophylactic Antibiotics

Indications

Frequent oral antibiotic courses > 4/year OR
> 2 admissions to hospital for iv antibiotics/year

Rapid relapse (< 1 month) after IV antibiotics without an explanation
(e.g. new viral infection, untreated resistant species)
particularly if this occurs on two occasions in close proximity

3 negative sputa for AFBs

P. aeruginosa

Nebulised **colomycin** [9] *****
1mu bd (given after physio)

↓

No benefit

↓

nebulised **colomycin 2 mU bd**

↓

Cannot tolerate nebuliser

↓

Azithromycin [10,11] ******
500mg od 6 days

then 250mg od 6 days

then 250mg od 3 x wk (Mon, Wed, Fri)

***** Patient must have colomycin trial + spirometry with Claire Ward (Respiratory Nurse Specialist. Ext: 3231 or blp 2960)

****** -Ensure NTM has been excluded
-Stop treatment if tinnitus or reduced hearing
-Check routine bloods including liver function at 4 weeks

Non *P.aeruginosa*

Azithromycin **
500mg od 6 days

then 250mg od 6 days

then 250mg od Monday, Wednesday, Friday

****** stop treatment if tinnitus or reduced hearing
and check routine bloods at 4 weeks

C. INHALED CORTICOSTEROIDS [12]

Indications:
Co-existent asthma and/or ABPA.

Co-existent COPD with FEV_1<50% predicted and >2 exacerbations/year.

Colonisation with *P. aeruginosa* and producing large volumes of sputum despite maximal anti-microbial treatment (IV antibiotics, nebulised colomycin ± azithromycin).

Ulcerative colitis-associated bronchiectasis producing large volumes of culture-negative sputum.

D. Management of ABPA [13, 14, 15]

Consider the following components of the disease:

(a) Airways obstruction

A formal trial of oral prednisolone (30 mg od for 14 days) with before and after treatment spirometry – if positive treat with maintenance high dose inhaled corticosteroids +/- long acting beta-agonists (LABA) and consider long term oral prednisolone.

(b) Infective exacerbations of bronchiectasis (a major feature for many patients)
- require treatment with antibiotics as described above
- may require long term azithromycin, or nebulised colomycin (as above)

(c) *Aspergillus* infection

Consider antifungal therapy for patients with significant disease e.g.:
- Moderate or severe airways obstruction
- Significant chronic daily sputum production
- Long term oral prednisolone treatment
- Marked variation in symptoms / >3 exacerbations per year

1st line	Itraconazole liquid 200mg PO bd for at least 3 months (if tolerated) NB – The liquid formulation has better oral bioavailability. Requires therapeutic level monitoring. Repeat LFTs 2 to 4 weeks after starting and intermittently during long-term therapy.
Alternative	For those unable to tolerate itraconazole (e.g. due to fluid retention, GI upset, or abnormal LFTs), discuss alternative treatments with Microbiology.
Duration of therapy	If successful, therapy is given for 3 months and then consideration given to stopping until clinical deterioration requires restarting antifungals. However, given the ubiquitous nature of exposure to *Aspergillus* many patients will require long term open ended treatment.

Response to treatment is assessed by monitoring total serum IgE levels, spirometry, reported symptoms of cough, wheeze, sputum, dyspnoea, long term prednisolone dose required to stabilize disease

➢ References

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	Please see Whittington Hospital NHS Trust Guideline: ***'Antibiotics in Bacterial Infections in Adults- Guidelines For Management'***

- **Compliance with this guideline (how and when the guideline will be monitored e.g. audit and which committee the results will be reported to)**

Inpatient management of bronchiectasis will be audited as deemed clinically appropriate with a view to presenting it at the Medical Audit meetings.

To be completed and attached to any procedural document when submitted to the appropriate committee for consideration and approval

		Yes/No	Comments
1.	**Does the procedural document affect one group less or more favourably than another on the basis of:**		
	• Race	No	
	• Ethnic origins (including gypsies and travellers)	No	
	• Nationality	No	
	• Gender	No	
	• Culture	No	
	• Religion or belief	No	
	• Sexual orientation including lesbian, gay and bisexual people	No	
	• Age	No	
	• Disability - learning disabilities, physical disability, sensory impairment and mental health problems	No	
2.	**Is there any evidence that some groups are affected differently?**	No	
3.	**If you have identified potential discrimination, are any exceptions valid, legal and/or justifiable?**	No	
4.	**Is the impact of the procedural document likely to be negative?**	No	
5.	**If so can the impact be avoided?**	N/A	
6.	**What alternatives are there to achieving the procedural document without the impact?**	N/A	
7.	**Can we reduce the impact by taking different action?**	N/A	

If you have identified a potential discriminatory impact of this procedural document, please refer it to the Director of Human Resources, together with any suggestions as to the action required to avoid/reduce this impact.

For advice in respect of answering the above questions, please contact the Director of Human Resources.

Checklist for the Review and Approval of Procedural Document

To be completed and attached to any procedural document when submitted to the relevant committee for consideration and approval.

	Title of document being reviewed:	Yes/No	Comments
1.	**Title**		
	Is the title clear and unambiguous?	Yes	
	Is it clear whether the document is a guideline, policy, protocol or standard?	Yes	
2.	**Rationale**		
	Are reasons for development of the document stated?	Yes	
3.	**Development Process**		
	Is it clear that the relevant people/groups have been involved in the development of the document?	Yes	
	Are people involved in the development?	Yes	
	Is there evidence of consultation with stakeholders and users?	Yes	
4.	**Content**		
	Is the objective of the document clear?	Yes	
	Is the target population clear and unambiguous?	Yes	
	Are the intended outcomes described?	Yes	
5.	**Evidence Base**		
	Are key references cited in full?	N/A	
	Are supporting documents referenced?	N/A	
6.	**Approval**		
	Does the document identify which committee/ group will approve it?	Yes	
7.	**Dissemination and Implementation**		
	Is there an outline/plan to identify how this will be done?	Yes	
8.	**Document Control**		
	Does the document identify where it will be held?	Yes	
9.	**Process to Monitor Compliance and Effectiveness**		
	Are there measurable standards or KPIs to support the monitoring of compliance with and	Yes	

	Title of document being reviewed:	Yes/No	Comments
	effectiveness of the document?		
	Is there a plan to review or audit compliance with the document?	Yes	
10.	**Review Date**		
	Is the review date identified?	Yes	
	Is the frequency of review identified? If so is it acceptable?	Yes	
11.	**Overall Responsibility for the Document**		
	Is it clear who will be responsible for co-ordinating the dissemination, implementation and review of the document?	Yes	

Executive Sponsor Approval			
If you approve the document, please sign and date it and forward to the author. Procedural documents will not be forwarded for ratification without Executive Sponsor Approval			
Name		Date	
Signature			
Relevant Committee Approval			
The Director of Nursing and Patient Experience's signature below confirms that this procedural document was ratified by the appropriate Governance Committee.			
Name		Date	
Signature			
Responsible Committee Approval – only applies to reviewed procedural documents with minor changes			
The Committee Chair's signature below confirms that this procedural document was ratified by the responsible Committee			
Name	Dr Ihuoma Wamuo	Date	August 2012
Name of Committee	Clinical Governance Committee	Name & role of Committee Chair	Dr Ihuoma Wamuo
Signature			