mMRC Breathlessness Scale

Grade	Description of Breathlessness
0	I only get breathless with strenuous exercise
1	I get short of breath when hurrying on level ground or walking up a slight hill
2	On level ground, I walk slower than people of the same age because of breathlessness, or have to stop for breath when walking at my own pace
3	I stop for breath after walking about 100 yards or after a few minutes on level ground
4	I am too breathless to leave the house or I am breathless when dressing

A mMRC score of 2 or more suggests significant symptoms.

Chris Stenton. The mMRC breathlessness scale. Occup Med (Lond)(2008)58(3): 226-227. DOI:10.1093/occmed/kqm162, Table 1. By permission of Oxford University Press on behalf of the Society of Occupational Medicine.

Bronchiectasis Severity Index BSI

					SCORE
1	Age	☐ <50 (+0 pts)	☐ 50-69 (+2 pts)	☐ 70-79 (+4 pts)	☐ >80 (+6 pts)	
2	BMI	☐ <18.5 (+2 pts)	☐ 18.5-25 (+0 pts)	☐ 26-29 (+0pts)	☐ ≥30 (+0 pts)	
3	FEV_1 % Predicted	☐ >80 (+0 pts)	☐ 50-80 (+1 pts)	☐ 30-49 (+2pts)	☐ <30 (+3 pts)	
4	Bronchiectasis hospitalizations over last two years			☐ No (+0pts)	☐ Yes (+5 pts)	
5	Number of exacerbations in previous year		☐ 0 (+0 pts)	☐ 1-2 (+0pts)	☐ ≥3 (+2 pts)	
6	mMRC Breathlessness Score		☐ 0-2 (+0 pts)	☐ 3 (+2pts)	☐ 4 (+3 pts)	
7	Pseudomonas Colonization			☐ No (+0pts)	☐ Yes (+3 pts)	
8	Colonization with other organisms			☐ No (+0pts)	☐ Yes (+1 pts)	
9	Radiological Severity	☐ <3 lobes involved (+0 pts)		☐ ≥3 lobes involved or cystic bronchiectasis (+1 pts)		

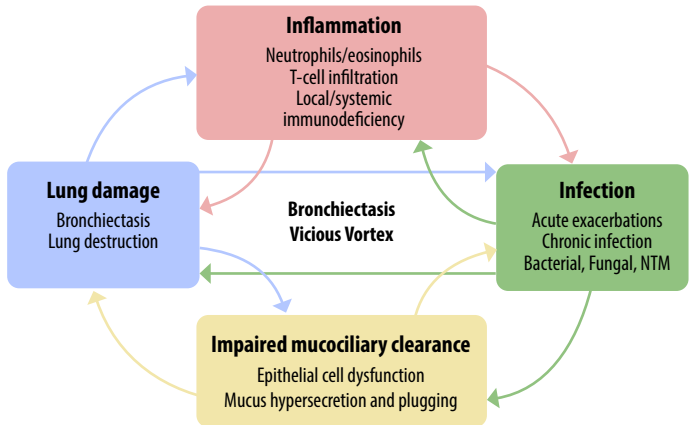
Score-4-year risk of:		Mortality	Hospitalization
Mild	0-4	0-5.3%	0-9.2%
Moderate	5-8	4-11.3%	9.9-19.4%
Severe	≥9	9.9-29.2%	41.2-80.4%

TOTAL SCORE

Chalmers JD, Goeminne P, Aliberti S, McDonnell MJ, Lonni S, Davidson J, Poppelwell L, Salih W, Pesci A, Dupont LJ, Fardon TC, De Soyza A, Hill AT. The bronchiectasis severity index. An international derivation and validation study. *Am J Respir Crit Care Med.* 2014 Mar 1;189(5):576-85. DOI: 10.1164/rccm.201309-1575OC. PMID: 24328736; PMCID: PMC3977711.

Bronchiectasis

Bronchiectasis is a condition defined radiologically by abnormal dilatation and thickening of bronchial airways AND clinically by some combination of cough, sputum, exacerbations, dyspnea. Its course is often characterized by ongoing inflammation, infection, impaired mucociliary clearance and structural lung damage.



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Activity – Severity Relationship

Sputum purulence Severity of daily symptoms (mMRC, CAAT scores) Frequency of exacerbations	Disease Activity	Control of disease best addressed by recognition of activity as well as severity Earlier identification of disease may provide opportunity to address activity and slow progression of disease	Disease Severity	Extent of bronchial dilatation and/or cystic bronchiectasis FEV_1 % predicted Pseudomonas

For more educational support, connection, and resources, please contact us at:
www.BronchandNTM.org, 833-411-LUNG (5864), or contactus@bronchandntm.org.

Download the free app with the QR codes or search:
"Care Central: Bronch and NTM" in Google Play or app store.

Download on the App Store | GET IT ON Google Play

Date of Publication: May 2026

Bronchiectasis & NTM ASSOCIATION

Bronchiectasis Pathway

STEP 1: Diagnostic Evaluation

Imaging: HRCT | Symptoms: mMRC, CAAT, Exacerbations

STEP 2: Data Collection

PFTs	Lab tests: CBC with diff, Immunoglobulins, CRP, A1AT, ABPA	Microbiology: Sputum cultures (bacterial, fungal, mycobacterial)	Assess comorbidities and etiologies including CF variants and PCD

STEP 3: Determine Disease Severity, Disease Activity

High Disease Severity:	High Disease Activity:	Determine infection status:
• HRCT ≥3 lobes and/or cystic bronchiectasis • FEV_1 <50% predicted	• ≥2 exacerbations/year or • Bronchiectasis hospitalization or • Symptoms: mMRC ≥4, CAAT ≥10	• Pseudomonas • NTM • Aspergillus

STEP 4: Establish Core Treatment Program

Airway Clearance:	Treat Comorbidities:	Supportive Care:
• Bronchodilator if indicated • Oscillatory PEP • Hypertonic saline, ACB/AD • Exercise/ Pulmonary Rehab • HFCWO	• COPD/Asthma • Chronic rhinosinusitis • GERD / aspiration • Autoimmune / rheumatologic • Immunodeficiency	• Nutrition • Psychosocial support • Supplemental oxygen if needed • Vaccination • Smoking cessation

Infection Management:	Consider Anti-inflammatory/immunomodulatory therapy:
• Treat symptomatic infections • Pseudomonas, other bacterial/ fungal pathogens • NTM	• Macrolide (if no NTM and no prolongation of QTc) or DPP1 inhibitor If problem tolerating a drug consider switching to other agent. If tolerating but limited response consider adding other agent. • Inhaled corticosteroids only in selected patients

STEP 5: Follow-up and Monitoring

Frequency of visits:	Assess:	Adjust therapy based on response, tolerance, new symptoms, or exacerbations
• Unstable: every 3–6 months • Stable: every 6–12 months • or as clinically indicated	• Symptoms • Exacerbations • Adherence to airway clearance • Sputum cultures/ PFTs • Followup imaging	

Suggested Considerations:
- Referral to clinical trials/ registries
- Surgical intervention for localized disease or hemoptysis
- Lung transplant evaluation
- Palliative care

HRCT=high resolution chest CT scan; A1AT=alpha-1 antitrypsin; ABPA=allergic bronchopulmonary aspergillosis; NTM=nontuberculous mycobacteria; CF=cystic fibrosis; PCD=primary ciliary dyskinesia; PEP=positive expiratory pressure; HFCWO=hi frequency chest wall oscillation; CAAT=Chronic Airway Assessment Test; ACB=Active Cycle of Breathing; AD=Autogenic Drainage; DPP1=Dipeptidyl Peptidase 1 inhibitor

Airway Clearance

A typical airway clearance routine may use one or more of the following:

Medications for Airway Clearance
- Bronchodilators
- Hypertonic Saline (3% or 7%)
- Guaifenesin*
- Osmotics*

Devices for Airway Clearance
- **Oscillatory** Positive Expiratory Pressure (PEP)
- High Frequency Chest Wall Oscillation
- Cough Assisting Device

Manual Techniques
- Deep Cough
- Huff Cough
- Active Cycle of Breathing
- Autogenic drainage
- Chest Physical Therapy

Other Therapy
- Hydration
- Exercise
- Pulmonary rehab
- Postural Drainage

*There is limited data for the role of these medicines in airway clearance. Osmotics include mannitol and N-acetylcysteine (NAC).

Exacerbation

Diagnosis

Worsening symptoms that exceeds day-to-day variability and requiring a change in management. Symptoms include cough, sputum volume and/or consistency, sputum purulence, dyspnea and/or exercise tolerance, fatigue and/or malaise, hemoptysis.

Evaluation

Sputum for microbiology at onset of exacerbation before antibiotics started if possible.

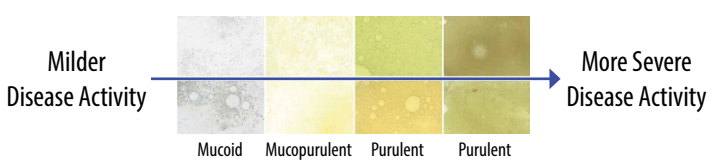
Treatment

Antibiotics guided by previous microbiology results, generally 14-day course with shorter course for mild bronchiectasis, rapid clinical response, or pathogens more sensitive to antibiotics.
Airway clearance may need to be adjusted in frequency, intensity, and technique.

Frequent exacerbating or refractory patient

Comprehensive reassessment: microbiology including for bacteria, NTM, and fungal; imaging (e.g. CT scan); and review of potential "treatable traits" including comorbidities; airway clearance; mucoactive treatments; long-term (inhaled) antibiotics; anti-inflammatory options; long-term oxygen; pulmonary rehabilitation; and referral to specialty center if not already done.

Sputum Color Chart



Cite this article as: Murray MP, Pentland JL, Turnbull K, et al. Sputum colour: a usefulclinical tool in non-cystic fi brosis bronchiectasis. *Eur Respir J.* 2009; 34: 361-364. DOI: 10.1183/09031936.00163208

Chronic Airways Assessment Test (CAAT)

I never cough	0 1 2 3 4 5	I cough all the time
I have no phlegm (mucus) in my chest	0 1 2 3 4 5	My chest is completely full of phlegm (mucus)
My chest does not feel tight at all	0 1 2 3 4 5	My chest feels very tight
When I walk up a hill or one flight of stairs I am not breathless	0 1 2 3 4 5	When I walk up a hill or one flight of stairs I am very breathless
I am not limited doing any activities at home	0 1 2 3 4 5	I am very limited doing any activities at home
I am confident leaving my home despite my condition	0 1 2 3 4 5	I am not at all confident leaving my home because of my lung condition
I sleep soundly	0 1 2 3 4 5	I don't sleep soundly because of my lung condition
I have lots of energy	0 1 2 3 4 5	I have no energy at all
		TOTAL SCORE

CAAT
Chronic Airways Assessment Test

- A CAAT score of 10 or more suggests significant symptoms.
- A change in CAAT score of at least 3-4 suggests a possible change in health status.
- A worsening CAAT score could be explained by an exacerbation, poor medication adherence, poor airway clearance techniques, or progression of bronchiectasis, COPD or other comorbid conditions.
- Download the form at https://gaapp.org/caat-cat

The COPD assessment test (CAT) and the Chronic Airways Test (CAAT) were developed by an interdisciplinary group of international experts with support from GSK. CAT and CAAT activities are monitored by a supervisory council that includes independent experts, one of which is chair of the council. CAT, COPD Assessment Test, CAAT, Chronic Airways Assessment Test and the CAT logo are trademarks of the GSK group of companies.

Nontuberculous Mycobacteria (NTM)

Diagnosis

- Most patients with NTM pulmonary disease (NTMPD) have bronchiectasis and should also be subject to the components of the bronchiectasis pathway

(*Specific to NTM PD: Diagnosis is based on all 3 criteria*)
Clinical: compatible symptoms and exclusion of other diagnoses
Microbiologic: At least 2 positive sputum cultures with the same species/subspecies
Radiologic: compatible radiologic abnormalities

Microbiology

- Culture with solid and liquid media recommended
- Species identification with molecular identification preferred

MAC and *M. abscessus* most common
***M avium* complex (MAC)**–10 species, most common are *M avium* and *M intracellulare*
M abscessus–3 subspecies: *M abscessus, M bolletii, M massiliense*

Drug susceptibility testing

MAC–test for macrolide and amikacin susceptibility

M abscessus–test for CLSI recommended antibiotics and inducible macrolide resistance

Treatment

- Initiation of treatment or "watchful waiting" dependent on benefit-risk assessment
- Goals of care: Culture conversion versus improving symptoms versus slowing progression
- Shared decision making is essential: acceptance, burden of treatment, goals of care
- Early treatment may favor less intense medications and better tolerance
- Risk factors for progression: fibrocavitary (**FC**) versu nodular bronchiectatic (**NB**), age, low BMI(<18.5), increased inflammatory markers (**CRP, ESR**), low albumin, male sex
- Severity factors: FC versus NB disease, multi-lobar, AFB smear positivity, presence of co-morbidities

Treatment of MAC (dosing available on app)

- Azithromycin, ethambutol, rifampin • Nodular bronchiectatic: T.I.W. dosing versus fibrocavitary: Q.D. dosing plus T.I.W. IV amikacin

Refractory or Recurrent MAC NTMPD

- Refractory defined as remaining sputum culture positive after at least 6 months of guideline-based therapy
- Treatment: Assess adherence to the treatment regimen, obtain repeat drug susceptibility test results, consider determination of serum drug concentrations, add amikacin liposome inhalation (ALIS) suspension to regimen, consider addition of another drug, and consider surgical resection
- Referral: Consider referral to specialized center of NTMPD care

Macrolide Resistant MAC NTMPD

Referral to a specialed center of NTMPD care

Treatment of *M abscessus* (dosing available on app)

IV medications: amikacin, imipenem or cefoxitin, tigecycline
Oral: azithromycin, bedaquiline, clofazimine, linezolid or tedizolid, omadacycline

Macrolide resistant: Initial Phase: 2–3IV drugs, 2–3 oral drugs
Continuation Phase: 2–3 oral drugs
Macrolide susceptible: Initial Phase: 1–2 IV drugs, 2 oral drugs
Continuation Phase: 2–3 oral drugs

Monitoring on Treatment

- Treatment response: Sputum cultures every 1-2 months, low dose chest CT or other imaging at 3 - 6 months and then every 6–12 months and end of treatment , CRP/ESR if elevated at baseline
- Adverse drug reactions: CBC, CMP at baseline and every 1-3 months, visual acuity and red/green color discrimination at baseline and every 2-3 months, audiogram at baseline and every 2-3 months in people receiving an aminoglycoside, EKG at baseline and every 3-6 months in people receiving a macrolide, clofazimine, or bedaquiline
- Monitoring to be done sooner in event of new symptoms or concerns

Duration of Treatment

Dependent on goals of care, generally 12 months after sputum culture conversion

Referral

Consider referral to a specialized center for: refractory MAC, recurrent MAC, macrolide resistant MAC, M abscessus (especially if macrolide resistant), consideration of surgical intervention, development of medication intolerance, uncertain goals of care, refractory co-morbidities.