Web Appendix 3
BTS Bronchiectasis Guideline Evidence tables
11/12/2018

Biblio no	Bibliographic citation	Study type	Ev lev	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures	Effect size	Source of funding
12	Currie, D. C.;Pavia, D.;Agnew, J. E.;Lopez-Vidriero, M. T.;Diamond, P. D.;Cole, P. J.;Clarke, S. W.Impaired tracheobronchial clearance in bronchiectasis	no check list required, cross sectional study	2-	12 Bx (mod severe based on no of lobes), 7 COPD with mucoid sputum, 8 COPD no sputum. 10	see previous	observational study evaluating radio-labelled clearance.	between group comparison	6 hours	radiolabelled aerosol clearance to measure tracheobronchal clearance (complex evaluation of particles, see article)	TBC sig greater in Bx group, and the COPD groups than in HC. TBC wasa greater in Bx group. Results ore of a narrative, see below.no other correlations found (age, severity, no of coughs)	
14	Nicotra et al. Clinical, pathophysiologic, and microbiologic characterization of bronchiectasis in an aging cohort. Chest 1995;108:955-961	observational study - cross-sectional	3	123	70% female, most white. Very high NTM rate. Aetiologies included CF (small numbers).	n/a	n/a	unclear: cases 1985 onwards - published 1995	no outcomes - just given data	n/a	
15	King et al. Outcome in adult bronchiectasis. J COPD 2005; 2:27-34	observational cohort	2-	101	clinic attendees with CT confirmed Bx; excluded current or recent smokers; assessed aetiology where thought	n/a	n/a	At least 2 years and 3 visits; mean FU between sputum cultures 6.5+/- 3.4 years	lung function, clinical condition	No effect found associating organism in sputum with clinical or spirometric outcomes	academic institution
23	A.Shoemark, L. Ozerovitch, R. Wilson Aetiology in adult patients with bronchiectasis Respiratory Medicine	Observational cohort study	2++	165	From a total of 240 adult patients referred with a history suggestive of	No intervention	No comparison	N/A	In a robust study of the aetiology of patients with brochiectasis a cause can be identified in just	N/A	Not identified
23	Shoemark A, Ozerovitch L, Wilson R. Aetiology in adult patients with bronchiectasis. Respiratory medicine	Cohort Observation study	3 Bias - change in study	165	CT Scan Bronchiectasis Single Centre Tertiary Care	Investigations for causes of Bx - Congenital - ABPA - Immune Deficiecny - Autoimmune	Laboratory reference intervals for healthy control	5 year	% aetiology of Bx: % of patients in whom knowledge of aetiology aeteology changed management	PIB 32%, IB 26%, PCD 10%, ABPA 8%, Immune Def 7%, 27% change in management	Not stated
62	Pasteur MC, Helliwell SM, Houghton SJ, et al. An investigation into causative factors in patients with bronchiectasis. Am J Respir Crit Care Med 2000;162:1277e84.	Prospective cohort study	2++	193	One hundred ninety-three consecutive patients, in whom the diagno- sis of bronchiectasis was known or suspected on the basis of chronic mucopurulent sputum production, were referred for investigation	No intervention	N/A	N/A	The aim of this study was to determine causative factors in 150 adults with bronchiectasis (56 male, 94 female) identified using high-resolution computerized tomography. Relevant factors were identified in the clinical his- tory; cystic	Intensive investi- gation of this population of patients with bronchiectasis led to identification of one or more causative factor in 47% of cases. In 22 patients (15%), the cause identified had implications for prog- nosis and treatment.	
62	Pasteur MC, Helliwell SM, Houghton SJ, et al. An investigation into causative factors in patients with bronchiectasis. Am J Respir Crit Care Med 2000;162:1277e84.	Prospective Cohort	2+ bias - definition normal pneumovax vaccine reponse and criteria for pneumovax	150	Bronchiechtasis on CT scan, single centre, tertiary care	Investigation for cause of Bx. Genetic - CF/ - AT\PCD, -Ig's GSUB, Pneumovax antibody & , test vaccine IgE to aspergillus and secondary tests , neutrophil function	Laboratory reference Interval fro most analytes: literature review for assessment vaccine response	3 years	% patient with aetiology for bronchiectasis, % patientin whom knowledge aetiology resulted in change of management.	IB 53%, PIB 29% ABPA 7%, Immune deficiency (SPAD mainly) 7%, Aspiration 6%, CF 3% GSUB <1%	Not stated
63	Lonni S, Chalmers JD, Goeminne PC, et al. Etiology of Non-Cystic Fibrosis Bronchiectasis in Adults and Its Correlation to Disease Severity. Annals of the American Thoracic Society 2015;12(12):1764-70	Retrospective cohort database analysis of causes of bronchiectasis	2- bias microbiology work , no definition for aetiology immune deficiency, unclaear	1258	multi-centre European mainly tertiary centr	Standardised investigation for cause of Bx BTS 2010 Guidelines, Ig's , Asprgillus IgE and pp clinical history to guide inv't for PCD. CF autoimmuen disease	Standardised diagnostic criteria for ABPA, PIB, COPD, Asthma, IBD, Autoimmune disease: comparison between individula European centres : aetology according to severity of Bx	2009-2013	% patient with known aetiology bronchiectasis, % patient in whom knowledge of aetiology leads to change I n management	IB 40%, PIB 20%, COPD 15%, CTD 10%, Immune Def 5.8%, ABPA 4.5%, Asthma 3.3%, 13% patient aetiology -resulted in change of management (ABPA, immune def, aspiration, ciliary disease)	
63	Lonni S, Chalmers JD, Goeminne PC, et al. Etiology of Non-Cystic Fibrosis Bronchiectasis in Adults and Its Correlation to Disease Severity. Annals of the American Thoracic Society 2015;12(12):1764-70	Retrospective observational cohort study	2++	1258	adult outpatients with bronchiectasis prospectively enrolled at the bronchiectasis clinics of university teaching hospitals in Monza, Italy; Dundee and Newcastle, United Kingdom; Leuven,	No intervention	No comparison. Attempts were made to estabish the etiology of bronchiectasis.	N/A	The cause of bronchiectasis was determined in 60%, including postinfective (20%), chronic obstructive pulmonary disease related (15%), connective tissue disease related (10%), immunodeficiency related (5.8%), and asthma related (3.3%). An	No significant differences in the etiology of bronchiectasis were present across different levels of disease severity, with the exception of a higher prevalence of chronic obstructive pulmonary disease-related bronchiectasis (P < 0.001) and a lower prevalence of idiopathic bronchiectasis (P = 0.029) in patients with severe disease	Academic (EMBARC)
64	Anwar GA, McDonnell MJ, Worthy SA, et al. Phenotyping adults with non-cystic fibrosis bronchiectasis: a prospective observational cohort study. Respiratory medicine 2013;107(7):1001-7	Cohort Prospective Observation	2- Little/no data on laboratroy reference intervals, - number of immune deficiency do	189	CT Scan Bronchiectasis 2 Centres Secondary Care	Investigations Ig's , IgE and IgG to aspergillus, RF and CCP, Sputum x 3 AFB anfd fungal, test vaccination . 2nd line tests CF/PCD/Aspiratiin high risk clinical groups	Laboratory reference interval for healthy controls for most analytes	October 2006 to August 2008	% aetiology of bronchiechtasis, % of patients in whom knowledge of aetiology changed management in whom knowledge of aetiology changed management	IB 43%, PIB 24%, COPD 12%, RA 5%, ABPA 4%, Immune Def 2%, CF < 1%, PCD 1%: 5% of patients (ABPA and immune deficiency) change in maangement	Not stated

Biblio no	Bibliographic citation	Study type	Ev lev	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures	Effect size	Source of funding
65	McShane PJ, Naureckas ET, Strek ME. Bronchiectasis in a diverse US population: effects of ethnicity on etiology and sputum culture. Chest 2012;142(1):159-67	Observational retrospective case series	3 no data on abnormal Ig's or GSUB levels, - failure to distinguish between autoimmunity (ie antibody positive) and autoimmune disease. Definction of Apha1 AT def and diagnostic label of recurrent pneumonia	112	Bronchiectasis - CT scan, - single centre, - tertiary care, US transplant centre, - diverse ethnic background	Investigation for aetiology bronchiectasis Ig's GSUB pneumovax RF/ANA/DsDNAAsthma + Bx + Rasied IgE Aspergillus ige and pp	Not clearly defined, for most analytes. Expert opinion for pneumovax vaccine responses		% patient with known aetiology. % aetiology defined by ethnic group	Autoimmunity 33.1%, immune deficiency 17%, Haematologic cancer 14.2%, ABPA 1%, Aspiration 11.3%, NTM 9.4%, alpha 1-AT 11.3%, - recurrent pneumonia 10%	Not stated
67	Gao-Yn, Respirology, 2016, ePub, Anord of Pvint	Systematic literature review, medline embase 01.01.1966 to 21.10.2015. 8216 records, quantitive synthesis of 56 articles. Substantial study XXXX, Lit review: Retrospective 19; prospective 24; XXXX 6, Case XXX 7.	1+	8608	Bronchiectasis	Estimation / aetiology	N/A	N/A	Estimation aetiology, Idiopathic 44.8%,Post infective 29.9%, immune deficiency 5%, COPD 39%, CTD 38%, Ciliam dysfunction 2.5%, ABPA 26%. In 1577 patients 18.3% identification. Aetiology limited…..XXXX Idiopathic bronchiectasis, significantly XXX Asia/Oceana v Europe. Little studies: Africa and North America.	Identified aetiology [8 -95%. Differences influenced geopgraphy diagnostic work up	National Natural Science Foundation China and Guanzhou University
69	Bahous J, Malo JL, Paquin R, et al. Allergic bronchopulmonary aspergillosis and sensitization to Aspergillus fumigatus in chronic bronchiectasis in adults. Clin Allergy 1985;15:571e9	Observational cohort study	2++	50	Patients with a confirmed diagnosis of idiopathic bronchiectasis	No intervention	No comparison	N/A	blood eosinophil count; sputum culture for Aspergillus fumigatus and eosinophil count; chest radiography; skin-prick tests with several aeroallergens and four preparations of A. fumigatus, including a reference extract; measurement of specific IgE antibodies; precipitin testing and self-crossed immunoelectrophoresis with A. fumigatus	Five subjects were possible cases of allergic bronchopulmonary aspergillosis in whom the condition had been previously misdiagnosed or in whom sensitization to A. fumigatus had occurred after the onset of bronchiectasis. These five subjects had positive immediate skin reactions to A. fumigatus and a history of recurrent pneumonias. Four had a previous history of asthma and the others showed increased bronchial responsiveness to inhaled methacholine. At the time of the survey, A. fumigatus grew in the sputum of one out of five subjects. These subjects had increased levels of specific IgE. Two had precipitins by double diffusion and three subjects were positive on self-crossed immunoelectrophoresis. It is concluded that allergic bronchopulmonary aspergillosis or evidence of sensitization to A. fumigatus can be identified in a significant proportion of adult subjects with so-called idiopathic bronchiectasis.	? Academic institute.

Biblio no	Bibliographic citation	Study type	Ev lev	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures	Effect size	Source of funding
76	Qi, Q. Respirology, 2015 20 917-924	Prospective	3	476	Chinese Han, ethnic and bronchiectasis	Investigation aetiology, post TB, post infective, immunodeficiency, ABPA, PCD CTD			1. Estimation aetiology. 2. Comparison ????, sputum, aetiology, from different causes????	Idiopathic 66%; post TB 16%; post infective/un??? - 3.8%; Immune deficiency 3.8% (17 AB ACF, ISG less than 10, ISA less than 6, ISM less than 6, size ABDA STD); ABPA - 4%; CTD - 4.4% PLD - 69% (decimal?). Post TB - upper lobe disease, varicose bronchiectasis; ABPA - varicose bronchiectasis. No differences lung function / microbiology (??)	Not stated
77	Agrawal R et al . Int J Tubercle Lung Dis 2009	Metanalysis 21 reviews, 17 prospective, 4 retrospective - Limitations - few studies from Europe/USA, - clinical Heterogeneity - Different methods for to detect AH and different diagnostic criteria for ABPA - time span 50 year - statistical heterogeneity posiitve I Cochran Q test for all outcomes, - little data or direct comparison between skin prick and Intradermal cutaneous tests	2+	5092 + 452 patient + 650	Multicentre Tertiary Care,	Skin prick and intradermal test for Aspergillus Hypersensitivity, I		Not stated	1) 20 studies % Aspergillus hypersensitivity (AH)in patient with asthma 5092, 2) 12 studies % ABPA in Asthma, 24523) 9 studies % ABPA with AH 650	Pooled prevalance aspergillus hypersensitivity in asthma 28% 95% CI 24-34: Pooled prevalance ABPA in in asthma 12.9% 95 95% CI 7.9-18.9: prevalance of ABPA in Aspergillus Hypersensitive Patient 40% 95% CI 27-53, prevaleance Aspergillus Hypersensitivity higher with Intradermal rather than SPT 28.7% v 24.8%	Not stated
78	Agarwal R et al PloS One 2013	Propsective observational	2+	518 patients screened 372 analysed	Asthma: single centre, tertiary care , asthama analysed by control, uncontrolled , combined, no oral steriods within previous 4 weeks	Investigations for ABPA	Use of Latent Class Analysis (LCA) surrogate stat marker for assay with no gold standard to estmaite diagnostic test perforamnce of individual ABPA tests and different diagnsotic criteria	1 YEAR	LCA to estimate individual test performance and diagnostic criteria for ABPA	Most senstive test to screen for ABPA is blood IgE to Aspergillus fumigatus. Most specific test for ABPA is chest CT scan finding of high attentuatin mucus. Use of 6 Patterson crireria has best accuracy ofr daignosis of ABPA with a significant fall off in diagnostic performance if more or fewer components are used. Ige E Asp > 0.35 100% senstive 69% specific Total IgE > 1000U/L 97% senstive, 58% specific : Aspergillus pp 43% senstive 97% specific Eos count > 1000 30% senstive 93% sepcific Positive Asp skin test (IDT) 95% sensitive 80% specific CxR opacities 36% sensitive 92.5% specific Bronchiectasis 92% senstive, 81% specific HAM 40% specific 100% 6 patterson criteria 100% senstive , 100% specific Agrawl criteria 96.4% senstive , 100% specific	No support or funding for this study

Biblio no	Bibliographic citation	Study type	Ev lev	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures	Effect size	Source of funding
79	Agarwal R, Aggarwal AN, Sehgal IS, Dhooria S, Behera D, Chakrabarti A. Utility of IgE (total and Aspergillus fumigatus specific) in monitoring for response and exacerbations in allergic bronchopulmonary aspergillosis. Mycoses. 2015 Nov 2. doi: 10.1111/myc.12423. [Epub ahead of print]	Observational cohort study	2+	81	Eighty-one consecutive treatment-naive patients of ABPA (acute stage) with pulmonary infiltrates and bronchiectasis underwent measurement of total and A. fumigatusspecific IgE at baseline, after 8 weeks of glucocorticoid therapy, and during exacerba-tions.	No intervention	No comparison	1 yr	Total IgE. Aspergillus specific IgE. Radiological improvement.	after 8 weeks of glucocorticoid therapy, and during exacerba-tions. There was clinical and radiological improvement after treatment with mediandecline of total IgE by 51.9%. The total IgE declined by at least 35%, 25% and 20%in 69 (85.2%), 76 (93.6%) and 78 (96.3%) patients, respectively. On the otherhand, the A. fumigatus specific IgE increased in 42 (51.9%) subjects, and the meanincrease was 1.4%, after 8 weeks. Among 13 patients with exacerbation, 12(92.3%) had a rise of total IgE by >50%. The A. fumigatus specific IgE increased inonly five (38.5%) subjects during exacerbation. Thus, the total IgE is a useful test inmonitoring treatment responses in ABPA while A. fumigatus specific IgE has limited utility	Academic institution
80	Agrawal R et al Journal of Infection and Public Health 2011	Retrospective Case Series	3 Limitation manual eosinohil counts	209	Single centre, Tertiary carer India oral steriod naïve ABPA patients	Epsinophil Count < 500, 500 - 1000, >1000	APBA serology , radiology spirometyr fordifferent eosinophil counts	Jan 2002 - June 2003	Aspergillus IgE and pp, ABPA chest CT	Eosinophil <500, Toal IgE > 1000 IU/L = 100%, Asp Fum IgE + > 100% CB 64%, HAM 6%, Eosinphil count 500-1000, CB 74%, HAM 17.8, Eosinphil count > 1000, CB 88.4%, HAM 29.1, P Only 40% ABPA, patients have Eusinophil >1000	Not stated
81	Agrawal R et al Chest 2006	Prospective Cohort	2+	564 - ABPA Diagnostic criteria 1) Asthma, 2) IgE >1000Iu/L 3) Asp fumigatus RAST +ve 4) Asp pp 5) Fixed/transient pulmonary inflitrates 6) Ce**ntral**	Single Centre Tertiary Care India Asthma	Screen Asthma patient for ABPA	Different Aspergillus subgroup: Aspergillus sensitisation AS, AS + Cental Bronchiectasis (CB) , AS+ CB + Other Radiological Findings (ORF)	2 years	Aspergillus Senitisation only, AS + CB, AS + CB +ORF (AS abd CB and AS + CB + ORF = ABPA)	223 AS posiitve : 126 ABPA positive No significant difference in IgE, Asp IgE pp and ABPA stages	Not stated
83	Chakrabarti A, Sethi S, Raman DS, et al. Eight-year study of allergic bronchopulmonary aspergillosis in an Indian teaching hospital. Mycoses 2002;45(8):295-	Retrospective Case Series	3	651	Single Centre Tertiary Care India ABPA Rosenberg Diagnostic Criteria	Investigation for ABPA with suspected clinical diagnosis	NONE	8 years	ABPA Diagnosis using Rosendale Criteria	89 Cases ABPA, 82% IDT posiitve : CB 69% eosinophilia 100%, Asp pp 72%, Pul infiltrates 43%: Positive Aspergillus culture 63%, 69% Aspergillusflavus 44% Asp fumigatus	Not stated
84	Baxter CG, Denning DW, Jones AM, et al. Performance of two Aspergillus IgG EIA assays compared with the precipitin test in chronic and allergic aspergillosis. Clinical microbiology and infection : the official publication of the European Society of Clinical Microbiology and Infectious Diseases 2013;19(4):E197-204	Prospective Cohort 1 Bias.Many patients on anti-fungal therapy. No control group. Little clinical information. Lack of known diagnostic cut off levles for ABPA diagnosis. Assay selection. Small no of ABPA	3	ABPA = 41 +5 with Asp sensitiisation CPA=116	Single centre tertiary care Greenberger ABPA diagnostic criteria	Detection of Aspergillus IgG in patients with aspergillus related lung disease	Comparison of Phadia Immunocap. Platelia ELISA with CIE for detection of Aspergillus fumigatus IgG	Not applicable	% Aspergillus IgG ABPA and CPA using immunocap, ELISA and CIE technology. Effect of anti-fungal treatment on Aspergillus IgG levels	ABPA Data Immunocap 19/46: Platelia 21/46 CIE 7/46 CV Immunocap = 5%, CV Platelia = 33%	National Commissioning group, National Aspergillus Centre, University Hospital of South Manchester, UK

Biblio no	Bibliographic citation	Study type	Ev lev	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures	Effect size	Source of funding
85	Pashley CH, Fairs A, Morley JP, et al. Routine processing procedures for isolating filamentous fungi from respiratory sputum samples may underestimate fungal prevalence. Medical mycology 2012;50(4):433-8	Prospective Observational	3	41	COPD, 55 sputum sample from 41 patients	Isolation sputum plug and innocculation onto potato dextrose agar solution	Standard Health Protection Agency test to detect fungal growth in sputum culutures versus in house methods	Not stated	Isolation of Aspergillus fumigatus in sputum cultures	Significant increase in Aspergillus fumigatus isolated in sputum cultures using in house v HPA protocol	Midlands Asthma, Allergy Research Association, Wellcome Trust Senior Fellowship. European Regional Development Fund
93	Vendrell M, de Gracia J, Rodrigo MJ, et al. Antibody production deficiency with normal IgG levels in bronchiectasis of unknown etiology.[Erratum appears in Chest. 2006 Jan;129(1):216]. Chest 2005;127(1):197-204	Cohort Prospective Observational	2- Bias 1. Definition of Criteria for succession vaccine response, 2. Applicability of assay used to assess Hib and	107. Screened 173 patients: studies 107	Idiopathic Bronchiectasis - as defined on CT and clinically, - single centre, tertiary care,	Investigation immune function in idiopathic bronchiectasis Ig's, GSUB, HiB and pneumovax antibody levels and test immunisation	Vaccine reponses in healthy controls and in patietns with defective antibody protection.	Jan 1994 to October 2001	% patient with IB who have antibody deficiency	11% failed both HiB and pneumovax immunisation (SPAD), 14% HiB only, 20% pneumo only, GSUB 43% including 20% with G4 def	Not stated
120	Chalmers et al; The bronchiectasis severity index. An international derivation and validation study. 2014 AJRCCM	observational cohort	2+	1310	Adult non-CF Bx; consecutive recruits to clinic; excluded HIV, nTM, malignancy, tractional due to IPF	n/a	n/a	4 years in derivation cohort	mortality	HR (95%) for mortality in chronic colonization 1.66 (1.12-2.44) or PA 2.16 (1.36-3.43)	MRC etc.
124	Murray, M. P.;Pentland, J. L.;Hill, A. T. A randomised crossover trial of chest physiotherapy in non-cystic fibrosis bronchiectasis	Randomised crossover	1-	20	Bronchiectasis as confirmed by HRCT, chronic sputum production, clinically stable disease (no Abx in last 4 weeks,) not performing physio. Complete exclusion list (emphysema, CF, sarcoid, TB, asthma)	Acapella (trained by physio). Three sets of 10 breaths and 2 x FET.	no physiotherapy	3 months, I month wash out, 3 months	primary end point was LCQ. Also 24 sputum, FEV, FVC,FEV 25-75, MIP, ex capacity (6MWT), SGRQ, Exacerbation were also measured	stable between different study time points. All patiente completed study. No adverse effects of acapella. 12 exacerbations affecting 11 patients during the study period. Sig improvements in all domains of all LCQ domains and total score at MCID. 24 sputum vol increased with regular chest physio compared with no physiotherapy. Total SGRQ improved but only sig in domain of activity. Exercise capacity improved. No diff in bacteriology, sprio or exac frequency.Diiff were small but impact on QoL perhaps more significnat in a population of patients with a chronic disease.	
128	Mutalithas, K.;Watkin, G.;Willig, B.;Wardlaw, A.;Pavord, I. D.;Birring, S. S Improvement in health status following bronchopulmonary hygiene physical therapy in patients with bronchiectasis.	no checklist	3	53	bx clincally stable no sig change in Sx in preceeding four weeks. No patient had had BHPT (bronchial hygiene PT) previously.n=39 idiopathic, n=2 pre TB, n=ABPA, n=immune def	BHPT two sessions 2 weeks apart.1) General Ax, Education physio disease and slef mx. Selection of app ACT (ACBT, flutter, AD, MPD, Breathign retraining, Cough control. 2) progress review, refine strategies, reinforce aims	nil, before/after	2 weeks	LCQ, cough symptoms severity on VAS	53, no withdrawals. All patients compained of cough. Sig reduction in Cough VAS after BHPT mean diff 16 (10-22)p=0.001. HRQoL at baseline LCQ= 14.3 (0.6). Reductions in physical, psychological and social. Sig improvement In LCQ post BHPT 14.3 v 17.4 (md 3.0 (2.3-3.7) p=0.0001. 48 patients had an improvement greater than MCID.No relationship of these results in terms of FEV1.	

Biblio no	Bibliographic citation	Study type	Ev lev	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures	Effect size	Source of funding
129	McCullough, Amanda R.;Tunney, Michael M.;Stuart Elborn, J.;Bradley, Judy M.;Hughes, Carmel M.	Observational non comparitive. Primary Aim:To determine if baseline beliefs about treatment, clinical factors and QoL predicted adherence	3	75 (wanted 100 participants for power to show difference in pulmonary exacerbations) but still sufficiently powered even with 75	HRCT confirmed Bx. All taking inhaled colistin or tobramycin. All had positive sputum culture for PSA	None	None	1 year study	Qol-B, Beliefs about medicines quesionnaire BMQ-specific (necessity and concerns)BMQ-specific concerns and BMQ-general (harm and overuse)	Classed as adherent to ACT if you scored more than 80%. 41% were adherent to ACT (31/75). Age and belief about necessity were indpendent predictors or adherence. Older you were more liekly to adhere.	
133	Thompson, Harrison, Ashley, Day and Smith (2002) 'Randomised crossover study of the Flutter device and the ACBT in non-CF Bx'	Randomised crossover	1-???	22 (5 dropped out so only 17 in final analysis)	Stable (4/52), productive outpatients with non-CF Bx. All patients had previously been trained in the ACBT and PD.	4/52 Flutter unassisted at home. Use twice daily. PD used as necessary throughout. **Included FET.**	4/52 ACBT unassisted at home. Use twice daily. PD used as necessary throughout.	Immediately post 4 weeks of each intervention. No washout period described.	Daily sputum weight, duration of PT (told to do until nil expectorated), Borg score pre and post PT sessions. Spirometry, CRDQ measured at baseline and after each arm. Questionnaire at end of study to find preferred technique.	No difference between ACBT or Flutter in any outcome. Mean total time spent each day performing the ACTs was not significantly different. 11/17 patients preferred the Flutter (may have been the novelty factor).	Funded by Frenchay Hospital Respiratory Research Fund. No conflict of interest.
135	Eaton, T.;Young, P.;Zeng, I.;Kolbe, J. A randomized evaluation of the acute efficacy, acceptability and tolerability of flutter and active cycle of breathing with and without postural drainage in non-cystic fibrosis bronchiectasi	RCT crossover	1-	36 1 withdrew due to exacerbation	Bx with chronic productive cough. For which ACT has been advised. HRCT confirmation. And clinical stability. Defined as no worsening of symtpoms in previous four weeks.	three visits over 7 days (1,4,7). Withhold Act 24 hours prior to intervention. Flutter, ACBT or ACBT-PD)	see previous	single intervention	Primary: sputum wet weight, spiro, sp02, acceptibility and tolerability. Secondary OM prefeerence.	powered to sputum wet weight difference of 15%. Mean(sd) diff in sputum weights and volumes were sig greater in ACBT-PD (11.2 (13.3)g) compared to ACBT (5.6 (6.7)g) and flutter (5.6(7.5)g). Mean diff in total wet weight Flutter v ACBT= 0.0(3.7), Fluuter v ACBT-PD =-5.6(8.5) p=0.001 and ACBT v ACBT-PD = -5.6 (9.2) p=0.001. The difference between ACBT and flutter were not sig. BORG and Sp02 did not change b/w groups. ACBT-PD percieved to be sig more useful than ACBT. All three techniques were tolerated and accpeted, but ACBT-PD was assoicated with most discomfort and greatest interference with life. 44% preferred flutter, 22% ACBT, 33%	
136	Patterson, J. E.;Bradley, J. M.;Elborn, J. S. Airway clearance in bronchiectasis: a randomized crossover trial of active cycle of breathing techniques (incorporating postural drainage and vibration) versus test of incremental respiratory endurance	RCT single intervention	1-	20 with stable productive bronchiectasis.	stable (no change in FEV1 3 months prior to study), productive of sputum (egg cup full)	Test of Incremental Respiratory Endurance (TIRE)	ACBT (PD and vibration)	2 day intervention (supervised X1/7 intervention session and their normal ACT session at home)	sputum weight during and 30 mins, spiro, sp02 and patient preferences	ACBT sig greater than TIRE (2.4g (0.43-4.45). No diff in LFTs of other measurements. 4 patients thought TIRE more effective. 11 thought ACBT more effective. Equal preference.	
136	Patterson, J. E.;Hewitt, O.;Kent, L.;Bradbury, I.;Elborn, J. S.;Bradley, J. M.Acapella versus 'usual airway clearance' during acute exacerbation in bronchiectasis: a randomized crossover trial	RCT Crossover	1+	n=20 (n=4 did not consent)	all had an exacerbation of Bx as defines by CF definition (4 or more symptoms incuding temp, icreased sputum, change in a colour, aching)	Acapella device with formal breathing exercises	usual technique performed at home	10 (2 x patients in group one were 14 days	Patients recorded duration of each treatment session, volume of sputum produced and perception of breathlessness. An independent assessor performed outcome measures of spirometric lung function, pulse oximetry and breathlessness at the beginning and end of the study period	vol of sputum expectorated in acapella group was increased compared to control. Not sig (2.16ml (1.62-6.84). No diff b/t group 1 D1 to final day in terms of sputum vol -1.16ml (-2.36-0.04). Acapella sessions were longer (4.02mins (-0.22-8.26). No dif in LFTs, sp02, SOB D1 to final day in Group 1. 7 patients preferred acapella, 1 month 9 patients were still using.(NB: Similar oscillations (0-30hz) to flutter, but more stable.	
137	AbdelHalim, H. A.;AboElNaga, H. H.;Fathy, K. A.	non randomised controlled trial as interventions not randomised, only individuals	-1	30 with infective exacerbation of Bx	Exacerbation defined as a clinical deterioration of all of the following: increased cough, increased sputum vol, worsening purelence. Relevant exclusions	Group 1 (n=15); ACBT and PD	Group 2 n=15: Conventional Chest PT (PD and percussion for 15-20 mins twice daily)	14 day IVABx	LCQ, MRC, sputum vol daily, MC and S daily, HRCT, Spiro, ABGs, PA gradient	groups were not sig different qt the end of treatment...not Bx, Spiro etc. Sig diff in ACBT group with FVC and MMEF before and after. Sig diff in CCPT group in FEV1, MMEF, only. Diff seen in ABGs. No diff in LCQ. No differences between groups. So yo could conclude they are equally effective/ineffective. results ACBT v CCPT= LCQ physical domain was sig improved in the ACBT PD group (6 v 4 (p=0.023), total LCQ (14 v 12 p=0.019). Total wet volume 14.67 v 19 (p=0.023). Pao2 80.86 v 69.13 p=0.043 and PA gradient 10.1 v 18.52 p=0.014)	

Biblio no	Bibliographic citation	Study type	Ev lev	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures	Effect size	Source of funding
142	Tsang and Jones 'Postural drainage or Flutter device in conjunction with breathing and coughing comparted to breathing and coughing alone in improving secretion removal and lung function in patients with acute exacerbation of bronchiectasis: a pilot study' 2003	Pilot study, randomised controlled trial	1-	15 (subsequent power analysis after this pilot study shown need 30 per group i.e. 90 subjects)	Patients admitted with an acute exacerbation of Bx	Flutter plus breathing and coughing	PD plus breathing and coughing and another group which was breathing and coughing alone	Immediately post, Day 2 of admission, Day 4 of admission and on day of discharge	Wet weight sputum, PFTs, subjective ease and effectiveness scores (participants did this).	No difference between the 3 groups at any of the measurement points. Patients reported all techniques were equally easy to use but the flutter (plus breathing and coughing) was perceived as being the most effective in clearing secretions (trhis may have been because a PT was present for these sessions). In conclusion, PD and Flutter do not appear to facilitate secretion removal beyond breathing and coughing alone. Pre-post no difference in PFTs after any of the individual treatment sessions or between groups.Possible that improvement in lung function was masked by antobiotic use (as an acute exacerbation)	No conflicts of interest declared.
144	Lee Annemarie, L.;Burge, Angela;Holland Anne, E.	Cochrane review	1++	4 studies on adults, 1 x child. 51 participants	Adults with bronchiectasis	3 x studies single intervention. 2 x long term studies.	Some SHAM some were no treatment	3 x single intervention. 2 x longer term	varied, hence narrative. Exac freq, HRQoL, sputum expec, FEV1	no diff in exac freq with acapella compared to no treatment. Improvements in HRQoL and sputum amount	
144	Lee AL, Williamson HC, Lorensini S, Spencer LM. The effects of oscillating positive expiratory pressure therapy in adults with stable non-cystic fibrosis bronchiectasis: a systematic review. Chron Respir Dis 2014	Systematic Review	1+	146	All non CF Bx Adults	OPEP, v's ACBT or other ACT		single intervention x	sputum weight, gas exchange, Spiro, preference, Exacerbation,	see detail in paper	
146	Naraparaju, Vaiishali, Venkatesan, Acharya (2009) 'A comparison of the Acapella and a threshold inspiratory muscle trainer for sputum clearance in bronchiectasis – a pilot study'.	Randomised crossover trial, consecutive days	1+??	30	Bx, recruited from hospital setting but unsure if outpatients or inpatients, all expectorate >30mls daily. Not used either the Acapella or IMT previously.	Acapella in sitting. Huff included.	Threshold inspiratory muscle trainer in sitting, 80% of MIP. Huff included	Immediately post	Patient preference scale. Volume of sputum expectorated (during treatment and for up to 2 hours post-treatment).Used a volumetric jar.	A statistically sig difference was found in the sputum volume expectorated with Acapella treatment compared to IMTwith a mean difference of 0.7mls. Patients felt the Acapella was of more use in terms of usefulness of clearing secretions: however there was no sig diff in the convenience, comfort and overall performance of either device.	
147	Paneroni, M.;Clini, E.;Simonelli, C.;Bianchi, L.;Degli Antoni, F.;Vitacca, M.Safety and efficacy of short-term intrapulmonary percussive ventilation in patients with bronchiectasis	RCT	1-	18	Bx confirmed by CT. secs but no exac in 4 weeks	4/52 of treatment with flutter, 1/52 washout	Flutter with no ball.	1/52 only	Relative transport velocity, Displacement in stim cough and contact angle	no sequential effect of treatment. RTV no diff b/w Rx. SCM: increaed displacment for vlaues in 4th week. (12.44+-10.5cm) compared to first week (9.6+-3.4cm) for flutter p,0.05. CAM: decreae in values in first week (29.39+-5.7) compared to 4th week (23.28+-6.2) with flutter p>0.05.	
149	Su Chang, Lin, Lee, Lee, Chiang (2012) 'Randomised crossover study of lung expansion therapy using negative pressure and positive pressure in bronchiectasis'	Randomised crossover trial,	1-	18 (26 initially recruited but 8 withdrawn because of infective exacerbation). 14 completed the crossover trial, 4 only completed 1 therapy.	Bx, stable (2/12) outpatients, productive of at least 30mls sputum per day	Negative pressure ventilation (porta-lung) (NEV-100 ventilator) Negative pressure between 10-15cmH2O. Treatment was 1 hour long. Perform ACBT and PD immediately post. NPV once per week for four weeks.	IPPB in sitting. Positive pressure between 15-20cmH2O. 1 hour treatment time. Perform PD and ACBT immediately post. IPPB once per week for four weeks	4 weeks of one intervention, then 4 weeks of the other intervention	FVC, FEV1, cough efficacy, 6MWT, physical clinical signs (accessory mm use)	IPPB patients had a significantly lower pulse rate (p=0.034) and appeared to cough more easily after treatment (p=0.02) (pre-post). NPV group – significantly lower pulse rate (p=0.006) as well as less apparent breathlessness (p=0.019) and decreased use of access mm's (p=0.006) (pre-post). No sig differences in 6 MWT between groups (apart from HR sig lower in NPV group post 6MWT). Sig increase in walking distance in the NPV group. No change in FEV1 or FVC with either intervention.	Research Review Committee of the Shuang Ho Hospital.

Biblio no	Bibliographic citation	Study type	Ev lev	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures	Effect size	Source of funding
150	Lee, A. L.;Hill, C. J.;Cecins, N.;Jenkins, S.;McDonald, C. F.;Burge, A. T.;Rautela, L.;Stirling, R. G.;Thompson, P. J.;Holland, A. E. Resp Research 2014 15 44	RCT	1+ (after discussion with guideline group, reduced to a 1+)	85	Non-CF Bx confirmed by HRCT	X2 weekly supervised ex program for 8/52. Individually prescribed. Included treadmill or land-based walking, stationary cycling and UL and LL strength training. Plus 3-5 unsupervised sessions per week.	No intervention but informed at baseline that undertaking 30 mins of mod intensity physical activity most days of the week was associated with health benefits.	Baseline, immediately post (9/52), 6/12 and 12/12	Primary were ISWD and self-reported CRDQ. Secondary were 6MWT,LCQ and HADS.	ISWT Mean diff (CI) 62m p<0.05 (24 to 101), 6MWT 41m (19 to 63) p<0.05, LCQ no sig diffs at 9/52 or longer. No sig diffs in HADS at 9/52 or longer term. Longer median time to first exacerbation in ex group of 8 months (95%CI 7 to 9 months) compared to control group of 6 months (95% CI 5 to 7 months). Improvements in ex not maintained at 6/12. Ex training decreased no of exacerbations over 12/12.	No competing interests.
151	Wills, P. J.;Wodehouse, T.;Corkery, K.;Mallon, K.;Wilson, R.;Cole, P. J. 1996	RCT	1+	61, 3 did not complete	bx	2.5 mg of DNASE or 5mg dnase	placebo	14 days 61 participants	FEV/FVC. QOL questionaires, hospitalisations and exac. Reivew of sputum transportability in vitro	no adverse event analysis. No sig differences b/w groups. No one hospitalised.	
152	O'Donnell, A. E.;Barker, A. F.;Ilowite, J. S.;Fick, R. B.	RCT	1+	349 multi centre	idiopathic bronchiectasis	rDNase 2.5mg	placebo	24 weeks	spiro, QoL, Dys score VAS, log of adverse events, 24 hr sputum, 24 hr sputum, Chest Xray, CT	inc rate of exac in DNASE group 0.66 v 0.56 exac freq, Dnase -ve effect on FEV1 (clinical rel minimal 3.1%), inc hospital rate in DNASE,	Greentech maker of DNASE
153	Sutton et al	randomised crossover	1-	8	stable bx producing sputum more 10ml	1) patient upright, 2)chest physio, 3) chest physio post normal saline, 4) chest physio post terbutaline	crossover	single intervention	radiolabelled clearance and fev1/fvc		There was an increase in sputum yield (p< 001) between the control (treatment1) and chest physiotherapy alone (treatment2). Nebulised saline (treatment 3) and terbutaline (treatment4) both caused a further increase in sputum yield above that achieved by physiotherapy alone (p< 001 and p < 002 respectively). Terbutaline caused a significantly more whole lung radioaerosol clearance (p<0.01) than did physiotherapy alone

Biblio no	Bibliographic citation	Study type	Ev lev	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures	Effect size	Source of funding
154	Conway et al,1992	Randomised crossover single blind study	1-	9 (7 completed)	Bronchiectasis and chronic sputum production. No reversible airflow limitation.	30 mins of cold water jet nebulising humidification as an adjunct to chest PT	Chest PT alone (PD plus FET)	Immediately post-intervention only	Tracheobronchial clearance - radioaerosol technique and gamma camera ? whether valid and reliable (no references provided), wet weight of sputum	26% increase in median sputum yield above that with no humidification ($p<0.05$). Increase in total clarance of radio-aerosol - median increase was 8.7% with humidification ($p<0.05$).	No detail given.
155	Kellett, F.;Robert, N. M. (2011)	RCT, crossover	1-	32 patients	Clinical diagnosis of Bx by HRCT	7% HTS	Isontonic saline	3 months	QoL, Healthcare utlisation, sprio, sputum viscosity (subjective pouribility), Ease of Clearance VAS	FEV increased by 15% (% predicted), SRGQ increased by 4 points, reduction in healthcare utilsation and Abx use	not disclosed. Funding for lecture fees for main author
156	Bradley et al 2011	RCT crossover	1-	19 13 completed both arms	Bx as confirmed by HRCT	HTS (7%)	0.9% saline	4 week treatment. 2 weeks washout between treatments	Sputum weight, FEV, LCQ, QoLB	HTS had a small to large effect side (0.10-0.14) on sputum, FEV1/LCQ and QoL-B. Overall benefit was HTS over ITS. LCQ domains sig improved (0.8-0.9, p=0.01) and resp Sx QoL B (-11.6(17.7), p-0.03). No adverse events	
157	Nicolson, C. H.;Stirling, R. G.;Borg, B. M.;Button, B. M.;Wilson, J. W.;Holland, A. E.	RCT, parallel group trial	1+	40	clearly defined with diag of NCFBx	HS 6%	IS	1 year	Sprio, SGRQ, LCQ, micro, exac rate,	no diff between groups, dec adherence in both groups post 6/12. 73% wanted to remain on saline and a greater number of these were in the HS group	
158	Kellett, F.;Redfern, J.;Niven, R. M. (2005)	crossover	1-	24	Bronchiectasis, stable Bx no other detail	1) ACBT alone, 2) Terbutaline and then ACBT, 3) IS and ACBT, 4) HS and ACBT	see previous	single Rx of 10-20 mins, over a four week period due to 1 week wash out	wet weight, viscosity, spiro, ease of clearance	sig diff in sputum wet weight p>0.0001, VAS P>0.0001. Small but sig diff in FEV1.	Forest

Biblio no	Bibliographic citation	Study type	Ev lev	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures	Effect size	Source of funding
159	(Chest 2013) Bilton, D.;Daviskas, E.;Anderson, S. D.;Kolbe, J.;King, G.;Stirling, R. G.;Thompson, B. R.;Milne, D.;Charlton, B.;B. Investigators	RCT, placebo controlled, double blind study	1+	231 mannitol, 112 placebo	Bx HRCT confirmed	Mannitol 400mg 12/52. Then a subset (n=123) received mannitol for a total of 52 weeks	Mannitol 50mg	12 weeks for RCT, further 52 weeks for a subset for safety	12/52 sputum weight and SRGQ (primary), BSQ, LCQ, Antimicrobial use, Time to first exac, HRCT, LFTs, Ex capcaity	There was a significant difference of 4.3 g in sputum weight over 12 weeks (95% CI, 1.64-7.00; p= .002) between mannitol and placebo; however, this was largely driven by a decrease in sputum weight in the placebo group. This was associated, in turn, with more antibiotic use in the placebo group (50 of 112 [45%]) than in the inhaled mannitol group (85 of 231 [37%]). There was no statistical difference between the groups (P=.304) in total SGRQ score (mannitol, 23.4 points [95% CI, 24.81 to 21.94] vs placebo, 22.1 points [95% CI, 24.12 to 20.09]). In a subgroup study (n=82), patients receiving	Pharmaxis
160	Bilton et al. 2014 Thorax	RCT	1+ (type 2 error)	461 multi centred study	Bx HRCT confirmed	Mannitol 400mg	Mannitol 50mg	52 weeks	Exac freq, time to exac, SRGQ, Adverse events,	The exacerbation rate was not significantly reduced on mannitol (rate ratio 0.92, p=0.31). However, time to first exacerbation was increased on mannitol (HR 0.78,p=0.022). SGRQ score was improved on mannitol compared with low-	Pharmaxis
161	Crisafulli, E.;Coletti, O.;Costi, S.;Zanasi, E.;Lorenzi, C.;Lucic, S.;Fabbri, L. M.;Bertini, M.;Clini, E. M.	RCT	1-	15 each group	Bx all +/- chronic airflow limitation	Erdosteine plus chest PT	Chest PT	15 days	Sputum characteristics, VAS, spiro, 6MWT, MIP and MEP, ABGs	Between groups sig diff MP and MVP. Also sig diff between grps in FEV1 and FVC.	Research grant from Laboratori Baldacci
163	Hasani, A.;Chapman, T. H.;McCool, D.;Smith, R. E.;Dilworth, J. P.;Agnew, J. E.	Before-After	3	10 (14 recruited 4 dropped out)	Bronchiectasis diagnosed by HRCT	warm air humidification 3 hours per day for 7 days	nil	none	radiolabelled clearance, tracheobronchoclearance, sprio, sputum weight	Sig increased in AUC tracheobronchial clearance, also sign improvement in TBC. Some reduction in coughs, no sig diff in sprio,	Fischer and Paekal healthcare
164	Briffa, P. J.;Anderson, S. D.;Burton, D. L.;Young, I. H.	Randomised crossover study, double blind (72 hour washout period between visits, randomised order)	1- (well-conducted but only 9 subjects)	9	Stable bronchiectasis (14 days) who had >15% fall in FEV1 in response to inhaled mannitol, never smoked	Inhaled sodium cromoglycate pre-mannitol or inhaled eformoterol pre-mannitol	Placebo - no details of what this was pre-mannitol. Control - just mannitol (initial screening).	Immediately post.	FEV1, SpO2	Sif reduced fall in FEV1 post-mannitol after either SCG or eformoterol. No sig difference between eformoterol and SCG so both equally effective	No details provided
165	Elkins et al 2014	Non-interventional, exploratory, single visit.	3	17	Non-CF Bx diagnosed with HRCT, adults, chronic cough and sputum production, stable state	Assessing insp flows and inspiratory volumes of subjects using the Hres RS01 DP1 device (dry powder inhaler for mannitol). High resistance dry powder inhaler.	None	Single visit	Inspiratory flows and inspiratory volumes	Subjects were able to generate the inspiratory flows and volumes necessary to successfully operate the RS01 DP1 designed for the inhalation of mannitol.	Pharmaxis Ltd.

Biblio no	Bibliographic citation	Study type	Ev lev	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures	Effect size	Source of funding
168	4909. Chalmers, J. D.;Smith, M. P.;McHugh, B. J.;Doherty, C.;Govan, J. R.;Hill, A. T. AJRCCM, 2012	Case control	2-	n=34	adult CT proven bx, acute exacerbation	IV antibiotics based on previous miccobiology results	Control group: n=11 stable patients with bx who received no antibiotics and provided sputum and serum at day 0 and 14	2 weeks (sputum & serum collected at start of treatment and after 14 days therapy)	Markers of airway and systemic inflammation, sputum culture	All patients culture positive at day 0 but only 4/34 had significant growth of bacteria at day 4 (all P. aeruginosa). Significant reduction in all markers of airway inflammation (P <0.0001 for all comparisons) and ICAM-1 (P <0.05) after 14 days antibiotic treatment.	Medical Research Council, United Kingdom, and the Chief Scientists Office, Scotland,
168	Chalmers, Am J Respir Crit Care Med Vol 186, Iss. 7, pp 657–665, Oct 1, 2012	Cohort study	++	385	385 consecutive HRCT confirmed Bronchiectasis patients, excludes NTM, current smokers, CF and HIV plus long term antibiotics	Bronchiectasis patients	n/a	1 year	MPO, elastase, TNF-a, IL-1b, IL-8, by ELISA/chromogenic assay. Follow-up data for exacerbations and hospital admissions	Patients with bacterial colonisation have higher levels of airway and systemic inflammation. Reversed by IV or nebulised antibiotic therapy. Pseudomonas associated with more inflammation independent on bacterial load. Bacterial load predicts future exacerbation risk.	Medical Research Council and Chief Scientist Office
187	2347; MRC study 1957: Prolonged antibiotic treatment of severe bronchiectasis	RCT (double blind)	1+	122 patients from seven centres	15-55 years. Symptoms for at least 3 months. Bronchogram evidence of bronchiectasis in at least 2 lung segments. Evidence of mucopurulent or purulent sputum production over four weeks observation. Off antibiotics for at least four weeks.	Penicillin 500mg QDS for two days per week for 1 year (n=38) or Oxytetracyline 500mg QDS for two days per week for 1 year (n=44)	Placebo (lactose in identical capsules)2 QDS for two days per week for 1 year (n=40)	Not beyond the one year intervention period	Sputum volume & purulence & fraction; cough; haemoptysis; dyspnoea; disability; weight; clubbing; patient & physician overall response to treatment, exacerbation antibiotics and toxicity monitoring.	No formal statistical analysis was performed. Oxytetracycline appeared most efficacious with least exacerbations requiring rescue antibiotics, largest reduction (50%) in purulent fraction of sputum, markedly less days confined to bed and less days off work. Also less cough, less haemoptysis and more weight gain in oxytetracycline treated patients. The data suggest a marginal treatment response in penicillin treated patients compared to placebo.	MRC
188	2318; Cherniack et al. 1959. Long-term treatment of bronchiectasis and chronic bronchitis.	RCT (but some problems with randomisation). Double blind.	1-	45 with bronchiectasis (67 in total)	Mean age 43.5-47.8 years. Bronchography revealed one or more areas of bronchiectasis or had a history of chronic productive cough for one or more years and a history of repeated LRTI. 45 with bronchiectasis, 14 with chronic bronchitis, 8 undetermined.	Tetracycline 2g /day in four divided doses (n=17) or Penicillin G 1,600,000 units /day in four divided doses (n=17) or Oleandomycin + penicillin (1.3 g of oleandomycin-penicillin and 0.7g penicillin) / day in four divided doses (n=16)	Placebo (identical) 2 capsules four times per day (n=17)	Treatment varied between 3 – 22 months	Infection frequency, weight, sputum volume and colour, antibiotic treatment, hospitalisation, days confined to bed, death, microbiology, CRP, PFTs, side effects.	Tetracycline treated patients had significantly fewer episodes of LRTI and significantly fewer days of respiratory illness compared to placebo in all patients (subgroup analysis of patients with bronchiectasis not significant); Also significantly reduced the frequency of isolation of Pneumococcus and Staph. Non significant reduction in isolation of Haemophilus. Oleandomycin + penicillin treated patients had significantly fewer days of respiratory illness compared to placebo (subgroup analysis of patients with bronchiectasis not significant); Also significantly reduced the frequency of isolation of Staph. Penicillin treated patients: no treatment effect.	

Biblio no	Bibliographic citation	Study type	Ev lev	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures	Effect size	Source of funding
189	Currie	RCT	1-	38 (19 each group)	daily sputum, Bx on bronchogram of cxr	amoxycillin po 3g bd	placebo	32 weeks active then 20 f/u	exacerbation number, haemophilus number, 24 voulume, fev1		
190	426 Wong et al Lancet 2012	RCT	1+	141, 4 Az and 10 placebo withdrew	stable bx by CT, at least one exac in last yr, excl CF, hypogamma, abpa,ntm, unstable ht rhythm	az 500mg 3 times weekly	placebo	6 month treatment, 6 month Fup	3 primary end points: exac freq, FEV1, QoL SGRQ	0.59 az cf 1.57 plac in 6 month period p<0.001. FEV1 and QoL NS	HRC NZ and Aukland DHRC Trust
191	363 Altenburg et al JAMA 2013	RCT	1+	83, 1 in each gp discontinued	stable bx by CT or bronchogram, minimum 3 exac last yr req oral or iv, at least one sputum with pathogen	Az 250mg od	placebo	1 yr, 90 days Fup at end	exac freq - abiotic requirement	Az median exac 0 (0-1) cf placebo 2 (1-3) p<0.001. 32 (80%) placebo cf 20 (46%) Az had at least one exac	Forrest Medical School and unrestr grant from GSK
192	362 Serisier et al JAMA 2013	RCT	1+	117, 110 completed	stable bx by HRCT, 2 exac req abiotic in last yr, excl afb, abpa, cf; stratified for PA at screening	Ery 250mg bd	placebo	1y	exac freq - protocol defined exac	1.97 exac/yr to 1.29 p=0.003	Mater adult Resp Res Trust Fund
193	30 Shi et al Pulm Pharmac Therap 2014	meta analysis of studies	1-	n=409 7 trials	bx 6 adult 1 paediatric	macrolide az, ery, rox	placebo or standard care	up to 1 yr	exac number	decreased number who had at least one exac RR=0.55 sig diff only at 6 months	not given
194	29 Gao et al PLoS ONE 2014	meta analysis of studies	1+	559, 9 trials	bx on CT, 6 adult trials and 3 paeds	macrolide (azi, ery, rox)	placebo or standard care	2 months to 1yr	number patients having one or more exac, and exac freq	RR0.59 p=0.006 6 trials n=414; RR 0.42 p<0.001 3 trials n=341	not given

Biblio no	Bibliographic citation	Study type	Ev lev	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures	Effect size	Source of funding
195	31 Guang-Ying et al Pulm Pharmac Therap 2014	meta analysis restricted to RCT of long term treatment, placebo controlled	1+	365	adults with bx diagnosed radiol and symptoms	macrolide az or ery	placebo	8 weeks to one year	number of patients having had at least one exacerbation	reduced number of patients having had at least one exacerbation OR 0.39	no funding
196	76 Wu et al Respirology 2014	meta analysis of studies	1+	n=530 9 trials	bx 7 adult and 2 paediatric	macrolide az, ery, roxi, clari	placebo or standard care	up to 1 yr	number of patients who had an exac	decreased number of participants who had an exacerbation RR 0.7 p<0.00001	science and technology development fund
196	32. Wu, Q.;Shen, W.;Cheng, H.;Zhou, X. Respirology, 2014	Metaanalysis of studies	1+	530 (9 trials)	bx 7 adult and 2 paediatric	macrolides: azithromycin erythromycin, roxithromycin, clarithromycin	placebo or standard care	up to 1 yr	Number of participants with exacerbations; Eradication of pathogens , overall rate of adverse events, emergence of new pathogens and resistance.	Decreased number of participants who had an exacerbation (RR 0.7 p<0.00001). Macrolide resistance increased,but a meta-analysis was not possible due to the diversity of parameters.Two studies included in meta-analysis reported on emergence of macrolide resistance: Altenburg et al. (2013, BAT Trial) reported that during treatment, 53 of 60 pathogens (88%) tested for sensitivity in 20 patients in the azithromycin group became macrolide resistant compared with 29 of 112 pathogens (26%) in	Science and technology development fund
196	32. Wu, Q.;Shen, W.;Cheng, H.;Zhou, X. Respirology, 2014	Meta analysis of studies	1-	530 (9 trials)	bx 7 adult and 2 paediatric	macrolides: azithromycin erythromycin, roxithromycin, clarithromycin	placebo or standard care	up to 1 yr	Number of participants with exacerbations; Eradication of pathogens , overall rate of adverse events, emergence of new pathogens and resistance.	Decreased number of participants who had an exacerbation (RR 0.7 p<0.00001). Macrolide resistance increased,but a meta-analysis was not possible due to the diversity of parameters.Two studies included in meta-analysis reported on emergence of macrolide resistance: Altenburg et al. (2013, BAT Trial) reported that during treatment, 53 of 60 pathogens (88%) tested for sensitivity in 20 patients in the azithromycin group became macrolide resistant compared with 29 of 112 pathogens (26%) in 22 patients in the placebo group (P < 0.001 by t-test).	Science and technology development fund
198	Wilson 2013	RCT	1+	124	Bx - idiopathic and post infective and with sputum positive for range of microbes	cipro inhaled 32.5mg 28/7	placebo	84/7	primary CFU reduction. Secondary SGRQ, eradication, resistance, exacerbation	minus 3.62 log difference v minus 0.27 p<0.001. Eradication 14/40 v 4/49 p=0.001	drug company

Biblio no	Bibliographic citation	Study type	Ev lev	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures	Effect size	Source of funding
199	Serisier 2013	RCT	1+	42	Bx- excluded CF NTM ABPA	dual release cipro	.placebo	24 weeks	primary CFU reduction. Secondary SGRQ, eradication, resistance, exacerbation	minus 4.2 log difference v minus 0.08 p=0.002. Exacibation median 134/7 vs 58/7 p=0.057mITT, 0.046 per protocol	drug company
200	Haworth 2014	RCT	1+	144	Bx - essential idiopathic and post infective - within 21/7 of course of antipsa abx	promixin 1MU bd	0.45% saline	until 1st exacerbation or 6/12	median time to first exacerbation primary. Secondary - per compliance, SGRQ, soutum weight, CFU	as per checklist - ITT - p=0.11 (165 days v 111days); in 80%+ grp 168 days v 103 days (p=0.028).	drug company
201	Murray 2011	RCT	1+	65	pathogenic organism in at least 3 sputa when stable in preceding year, 2 or more exac, exc cf, active abpa	neb gent 80mg bd	0.9% saline	15/12 (1 year intervention and 3/12 fu)	primary cfu reduction	signif reduction in cfu 5 log reduction (8.02-2.96) p<0.0001. No difference at 15/12 (3/12 after end of drug). Fewer exacerbations p<0.0001 and TTE (61.5 vs 120 p0.02)	
201	569. Murray, M. P.;Govan, J. R.;Doherty, C. J.;Simpson, A. J.;Wilkinson, T. S.;Chalmers, J. D.;Greening, A. P.;Haslett, C.;Hill, A. T. AJRCCM 2011	RCT	1+	65	adult CT proven bx, chronic infection,at least 2 exac in last yr, FEV1>30%, passed inhaled gent trial	neb gent 80mg bd	0.9% saline bd	1yr then 3 months follow up	Primary endpoint: sputum bacterial density. Gentamicin susceptibility testing was performed for all isolates of P. aeruginosa and gram-negative enteric bacteria at Months 0, 12,	12 months' treatment: the bacterial density had significantly reduced in the gentamicin group (2.96 [1.0–5.9] log10 cfu/ml) compared with the saline group (7.67 [7.34–8.17] log10 cfu/ml; P< 0.0001). No patients in either group at the end of treatment or at follow-up had developed gentamicin indeterminately (internediate) resistant or resistant strains.	Chief Scientists Office, Scotland,
201	569. Murray, M. P.;Govan, J. R.;Doherty, C. J.;Simpson, A. J.;Wilkinson, T. S.;Chalmers, J. D.;Greening, A. P.;Haslett, C.;Hill, A. T. AJRCCM 2011	RCT	1-	65	adult CT proven bx, chronic infection,at least 2 exac in last yr, FEV1>30%, passed inhaled gent trial	neb gent 80mg bd	0.9% saline bd	1yr then 3 months follow up	Primary endpoint: sputum bacterial density. Gentamicin susceptibility testing was performed for all isolates of P. aeruginosa and gram-negative enteric bacteria at Months 0, 12,	12 months' treatment: the bacterial density had significantly reduced in the gentamicin group (2.96 [1.0–5.9] log10 cfu/ml) compared with the saline group (7.67 [7.34–8.17] log10 cfu/ml; P< 0.0001). No patients in either group at the end of treatment or at follow-up had developed gentamicin indeterminately (internediate) resistant or resistant strains.	Chief Scientists Office, Scotland,
201	RCT of neb gent; Murray et al	RCT	1+	60- completed study 57	Inclusion criteria were chronically infected sputum (defined as pathogenic organisms cultured in at least three sputum samples when	Randomized controlled trial of 12-month twice-daily nebulized gentamicin compared with twice-daily nebulized 0.9% saline, followed by a 3-month treatment-free follow-up period in adults with non–cystic	Comparison of two groups and in between the group (baseline to end of study)	12months in study and 3 months post study follow up	The primary end point was a greater than or equal to one log unit reduction in sputum bacterial load, re- garded as the minimum important reduction necessary to	At the end of 12 months' treatment, compared with the saline group, in the gentamicin group there was reduced sputum bacterial density with 30.8% eradication in those infected with Pseudomonas aeruginosa and 92.8% eradication in those infected with other pathogens; less sputum purulence (8.7% vs. 38.5%; P , 0.0001); greater exercise capacity (510 [350–690]	CSO
206	Hnin, Khin;Nguyen, Chau;Carson, Kristin V;Evans, David J;Greenstone, Michael;Smith, Brian J	RCT	1+	1157	Mostly adults with Bx	oral and inhaled antibiotics vs placeebo	Effects of study drugs compared to Placebo	6-96 weeks	Exacerbation frequencies, hospital admissions and drug resistance.		Variable

Biblio no	Bibliographic citation	Study type	Ev lev	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures	Effect size	Source of funding
207	Yang, J. W.;Fan, L. C.;Lu, H. W.;Miao, X. Y.;Mao, B.;Xu, J. F.	RCT	1+	539	All Bx pts colonised with P aeruginosa	Inhaled antibiotics vs placebo	Effects of study drugs compared to Placebo	1 year	Reduction of sputum bacterial density, eradication of sputum Pseudomonas aeruginosa, the risk of exacerbations and other clinical outcomes related to inhalation treatment were analyzed.		None
208	Goyal V, Chang Anne B. Combination inhaled corticosteroids and long-acting beta2-agonists for children and adults with bronchiectasis. Cochrane Database of Systematic Reviews 2013(1) doi: 10.1002/14651858.CD010327[published Online First: Epub Date]|.	RCT	1-	40		use of budesonide/formoterol versus budesonide alone.			HR QOL		
214	Newall, C; Stockley R A; Hill S L.	RCT	1+	32	Bronchiectasis (HRCT)	**PR** - 8/52 hospital based outpt prog high intensity exercise. Performed X3/53 (2 supervised, 1 at home).Each session 45 mins. Exercise at 80% peak HR. Treadmill walking, static bike, stair climbing in hosp. Home ex = walking. Education sessions for all groups. **IMT** - pressure threshold device. Training started at 30% Pimax and increased by 5% each week until a training intensity of 60% PI max was achieved.	Control (n=9) - education sessions only PR Sham (n=11) - PR plus Sham IMT (used same device but at a low load 7cmH2O). Education sessions. PR IMT (n=12)	Pre, immediately post (8/52) and 3/12 after the programme had been completed.	Spirometry, PEmax, PImax, peak O2 uptake (maximal incremental treadmill test), submaximal treadmill test, ISWT, SGRQ, 24 hour sputum volume	PI max increased from 78 (17.7)cmH2O to 100.5 (25.7) cmH2O (p=0.003) in the PR-IMT group with a similar increase in the PR-SHAM group. No sig diff between 2 groups in Pimax. Sig improvements in endurance ex capac in both the PR IMT gp (mean increase 607.3m, 95% CI 436.0 to 778.7) and the PR-SHAM group (392.8m, 251.7 to 534). Percentage increase in wlkg distance similar between 2 training gps (mean change 205.7% (95% CI 34.7 to 426.1) in the PR-IMT group and 174.9% (31.6 to 310.6) in PR SHAM. 3/12 after training the improvement in endurance ex capacity was maintained in the PR-IMT group but not the PR-SHAM gp 1394.7 (347.7)m and 398.1 (114.2)m (p<0.01). Change between end of training and	No competing interests.
215	Mandal 2012	Before-after	3	19	unclear aetiology, fev1 52.4 %, 16% on long term abx, 74% psa	cyclical iv abx 8/52ly, different abx according to sens	previous year	1 year	reduction in exacerbation f, lcq, sgrq	9.3 before 8 after p=0.02 lcc improved by >1.3 in 63% pts and 42% in SGRQ	
216	266. Oral supplement enriched in HMB combined with pulmonary rehabilitation improves body composition and health related quality of life in patients with bronchiectasis. Olveira G , et al	randomized controlled trial	1-	30	Patients with non cystic fibrosis bronchiec- tasis, ages from 18 to 80 normally nourished (BMI > 18.5 in patients under 65 years old e >20 kg/m2 in patients over this age). Bronchiectasis	Patients randomised to receive pulmonary rehab or pulmonary rehab + oral nutritional supplement.	body composition (Dual-energy X-Ray Absorptiometry (DEXA), mid-arm muscle circumference (MAMC), phase angle by Bio-impedance), health related quality of	24 weeks	Outcome assessments were performed at baseline, 12 weeks and 24 weeks: DEXA, mid-arm muscle circumference, health related quality of life, handgrip strength, and plasma levels of prealbumin.	In the PRONS group bone mineral density (BMD), mean and maximum handgrip dynamom- etry, MAMC, QOLB and prealbumin were significantly increased from baseline at 12 and 24 weeks and Fat free Mass (FFM) and FFM index, at 12 weeks. In the PR group only mean handgrip dynamometry and prealbumin were significantly increased at 12 and 24 weeks. In both groups plasma myostatin was reduced at 12 weeks (without significant	Funded by the Consejería de Salud de la Junta de Andalucía (PI- 0239-2013); SEPAR 016/2013 y Neumosur 3/2013.
217	van Zeller, M.;Mota, P. C.;Amorim, A.;Viana, P.;Martins, P.;Gaspar, L.;Hespanhol, V.;Gomes, I.	Case series (retrospective, no control/comparision)	3	41	Bx: diagnosed by HRCT. Severe obstruction (25) 19 colonised	Bicycle exercise 30 mins 3 x per week. Additional UL and quads training for 12 weeks (median duration)	None	Pre and immediately post	6MWT, spiro, ABGs	No difference in 6MWT,ABGs or PFTs. Patients with idiopathic Bx showed sig diff in FVC and RV post-Rx (n=23)	No conflict of interest

Biblio no	Bibliographic citation	Study type	Ev lev	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures	Effect size	Source of funding
219	Liaw, M. Y.;Wang, Y. H.;Tsai, Y. C.;Huang, K. T.;Chang, P. W.;Chen, Y. C.;Lin, M. C.	RCT	1-	38 (6 dropped out from each group so n=13 in each group for final analysis)	Bronchiectasis (HRCT) Aged 40-80yrs.	IMT (pressure threshold device). Started at an intensity of 30% MIP and increased by 2cmH2O per week	Control group - no training programme.	Pre and at 8/52 (immmediately post).	PFTs, resting SpO2, 6 MWD, 6Mwork, MIP, MEP, SGRQ, Borg during 6MWT, lowest SpO2 during 6MWT.	IMT group - no sig diff in change from baseline in 6MWD (411.9 (133.5) vs 473.2 (1117.2m, p=0.021), 6Mwork, MIP and MEP. Significant improvements in both MIP (23.8 (25.3) vs 2.3 (16.4) cmH2O, adjusted p value = 0.005 and MEP (31.9 (30.8) vs. 11.5 (20.8) cmH2O, adjusted p value=0.038) levels after adjusting for age by linear regression were observed between groups. Mean and Sd	Grant from Chang-Gung Medical Research program (Taiwan). No conflicts of interest to disclose.
220	Al-Refaie, R. E.;Amer, S.;El-Shabrawy, M. 2013 Surgical treatment of bronchiectasis: a retrospective observational study of 138 patients Journal of Thoracic Disease 5 3 228-33	retrospective case series	+	138	patients with bronchiectasis	surgery	none		Mortality; Symptom resolution	N/A	None reported
231	Zhou, Z. L.;Zhao, H.;Li, Y.;Li, J. F.;Jiang, G. C.;Wang, J. 2013 Completely thoracoscopic lobectomy for the surgical management of bronchiectasis CHINESE MEDICAL JOURNAL	Case series	3	zero	patients with bronchiectasis	surgery	thoracotomy vs VATS Video assisted thoracic surgery	89 months	bleeding, mortality		Govt
232	Hiramatsu, M.;Shiraishi, Y.;Nakajima, Y.;Miyaoka, E.;Katsuragi, N.;Kita, H.;Hyogotani, A.;Shimoda, K. 2012 Annals of Thoracic Surgery: Risk factors that affect the surgical outcome in the management of focal bronchiectasis in a	Case series	+	zero	patients with bronchiectasis	surgery	none	4 years	bleeding, mortality	mortality 0%; morbidity 18%	Govt/ not declared
233	Zhang 2011 Ann Thor Surg 2011	Case series	3	279		thoracotomy/VATS					

Biblio no	Bibliographic citation	Study type	Ev lev	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures	Effect size	Source of funding
234	Gursoy, S.;Ozturk, A. A.;Ucvet, A.;Erbaycu, A. E. 2010 Surgery Today: Surgical management of bronchiectasis: the indications and outcomes	Case series	+	92	patients with bronchiectasis	surgery	none	15.3 months	morbidity 16%, mortality 1%		Govt/ not declared
239	Scheiter 2005	case series	3	55	patients with and without bronchiectassis	surgery				55patientswithoutcysticfibrosisunderwentresection. Forty-eight patients (mean age 45 (range 23–74) years; 32 women) were available for long-term followup. Twenty-five patients underwent resection for localized disease (group 1) and 23 had bronchiectasis in at least two different lobes (group 2).	
238	Bagheri, R.;Haghi, S. Z.;Fattahi Masoum, S. H.;Bahadorzadeh, L. 2010 Thoracic & Cardiovascular Surgeon: Surgical management of bronchiectasis: analysis of 277 patients	Case series	+	277	patients with bronchiectasis	surgery	none	4.5 years	morbidity 16%, mortality 1%	68.5% of patients were symptom-free at the last postoperative evaluation, 23.8% had an improvement in their symptoms, and 7.5% of patients showed no improvement.	Govt/ not declared
242	Beirne 2005	case series	3	22	22 patients (12 men, 10 women) underwent transplantation for bronchiectasis	transplantation				One-year Kaplan-Meier survival for all patients was 68% (95% confidence interval [CI], 54%-91%), and 5-year survival was 62% (95% CI, 41-83%).	

Biblio no	Bibliographic citation	Study type	Ev lev	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures	Effect size	Source of funding
244	de Pablo 2005	cohort	3	171		From 1991 to 2002 lung transplants were performed on 171 patients, 44 of whom had suppurative lung disease (27 had cystic fibrosis and 17 had bronchiectasis caused by other processes).		1 yr		Survival at 1 year was 79% and at 5 years, 49%, with no significant difference between the patients with cystic fibrosis and those with other suppurative diseases, nor between the patients with and without Pseudomonas colonization	
245	Titman 2009	cohort	3	1997	123 with bronchiectasis	transplantation				Transplantation appeared to improve survival for all groups.All groups had an increased risk of death at transplant, which fell below waiting list risk of death within 4.3 months	
246	Chang CL et Al, Coch Sys Review 2010	Meta-analysis	1-	1 trial 167	See Furomoto et al	See Furomoto et al	See Furomoto et al	See Furomoto et al	See Furomoto et al	Non Bactraemic/non Invas	See Furomoto et al
247	Poole et al, Cochrane Sys Review 2010	Metaanalysis	1-	2469 6 trials RCT	COPD	Influenza vaccination	Placebo, no intervention		Esac of COPD (All). Infective Exec COPD, Influenza Exec COPD. Hospital admisson, lung function, adverse vaccine effects	Weight Meon Differences (WMD). WMD - 0.37 95%-0.64 to 0.11	Not declared
249	Furumoto, Vaccine 2008	RCT 1 Open Labelled	1-	167	Chronic lung disease Bx=20	Pneumovax and influenza vaccines v influenza vaccine	Pneumovax and influenza vaccines v influenza vaccine	2 years	Exacerbation lung disease (a) infection (b) non infection pneumonia	Significant reducation in infective exac lung disease. No impact Pneumonia	Japanese Ministry for Health

Biblio no	Bibliographic citation	Study type	Ev lev	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures	Effect size	Source of funding
250	Moberley S et al. Cochsyst Review 2013	Meta-analysis18 RCT, 7 non RCT	1-	64852 in RCT, 62294 in non RCT	Healthy adults, Adult with Cronic Medical illness	14v pneumovax. 23v pneumovax	Placebo, no intervention		- Invasive pneumoccocal disease (1) - all cause penumonia - all cause mortality. Stratified by high/low income country and chronic medicial illness in high income country, Vaccine serotype pneumonia definitive, vaccine serotype presumptive pneumonia	IPD OR 0.26 95% CI 0.14-0.45: All cause pneumonia OR 0.72 95% CI 0.56-0.93 (high llevls of stat heterogeneity in RCT. All cause mortality : no impact: Low income countires all cause pneumonia OR 0.54 95 CI 0.43-0.67: High income countires all cause pneumonia in health yadults and chronic medical illness: no sig diff. VAccine serotype definitive pneumonia OR 0.13 (5% CI 0.05-0.38 (High level stat heterogeneity)	UK NHS
251	Andrews NJ et Al, Vaccine 2012	Case control study	2+	2542	Invasive pneumococcal disease and age> 65 years	Pneumovax vaccine	Odd vaccination in IPD cause by seroype within 23 valent pneumovax versus odd vaccination in IPD caused by serotypes which are not in 23 valent pneumonia	3.75 years	Pneumovax efficacy stratified by - age, - immunocompetence a) no immune deficit, b) chronic heart\lung and diabetes c) immunocompromised time since vaccination a) < 2 years, b) < 2-5 years	Age 65-74: < 2 years post vaccine Vaccine efficacy a) No immune defect 65% 95 CI 23-86), b) Chronic heart lung disease and DM Vaccine 69% 95 (22-88) Age 75-84 less than 2 yeatrs post immunisation vaccine efficacy fro chronmic lung/heart disease DM 65-95 CI 38-86 **s**	ENGLISH HPA

Biblio no	Bibliographic citation	Study type	Ev lev	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures	Effect size	Source of funding
257	1404 Gacouin	Cohort	3	16	12 female, FEV1 0.77, age 57	Addition of NIV	Pre- and post NIV hospitalisation	upto 60 months, mean 26	Pre- and post NIV hospitalisation	For patients alive 12 months after onset of NIPPV, the duration of hospitalization before and during NIPPV was 19±11 and 16±9 days, respectively (NS). For patients who were alive after 24 months of NIPPV, the duration of hospitalization was significantly decreased during the second year of follow-up (17±12 days before and 7±8 days during NIPPV, respectively; p<0.05). Questionnaires suggest tolerated well and beneficial.	None
258	1359 Benhamou	Case Control	3	14+14	Age 65, minimal other details except ALL HAD RIGHT HEART FAILURE	NIV	Standard Rx and oxygen	upto 46 months	Mortality, Hospital admission (in the NIV group, before and after initiation).	SURVIVAL median 45 months NIV versus 48 months LTOT p=NS. Hospital admissions between the year before (mean=48±55 and 5±8 days, respectively, in the NIV and control group), the year following home NIV therapy for each patient (mean= 10±31 and 9± 16 days), and the period before death or the end of the follow-up of the study (mean per year). P=???	None
266	McDonnell et al. Non cystic fibrosis bronchiectasis: A longitudinal retrospective observational cohort study of Pseudomonas persistence and resistance. Respir Med 2015;109:716-726	essentially cross-sectional - data collected at time of identifying cohorts	+	155	attenders at a bronchiectasis clinic in Newccastle			median 46 months	lung function, imaging, healthcare resource use, symptoms, longitudinal sputum microbiology	identified patients with transient or persistent isolation of organisms - more frequent admissions to hospital, worse lung function in those with pa but the emphasis of the study appears to be on the prevalence of PA across severity bands and hence not as useful for this question	

Biblio no	Bibliographic citation	Study type	Ev lev	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures	Effect size	Source of funding
266	McDonnell et al. Non cystic fibrosis bronchiectasis: A longitudinal retrospective observational cohort study of Pseudomonas persistence and resistance. Respir Med 2015; 109(6):716-26	cross-sectional - retrospective review of consecutive patients jul 2007-jun 2009 examining presence of PA in sputum cultures over that time, together with data such as lung function and exacerbation frequency	3	155	adult, bronchiectasis, secondary care monitoring	nil	comparing persistently infected patients with HI v PA	2 years	hospital admission, lung function, persistence of infection, exacerbation rates	HI and PA similar frequency (58.1%5 and 50.3% respectively), persistent infection similar (56.7% of HI, 60.3% of PA). PA more frequent as airflow obstruction becomes more severe (5 of 39 (12.8%) of those with minimal airflow limitation v 18/38 (47.4%) of those with severe airflow limitation. More admissions in PA (1.3 v 0.7 per annum, p=0.035) but exacerbation rates the same. Predictors of PA colonisation: low FEBV1% predicted (OR 2.46, 95% CI 1.27-4.77) and polymicrobial colonisation (OR 4.07, 95% CI 1.56-10.58).	not pharma
268	Kunst et al. Nontuberculous mycobacterial disease and Aspergillus-related lung disease in bronchiectasis. ERJ 2006; 28: 352-357	Case control	2+	34 with NTM, 61 controls	Consecutive cases of Bx + NTM 1995-2003.	n/a	Existing NTM – frequency of Aspergillus infection in those subjects compared to by without	not stated	Evidence of aspergillus related disease	Aspergillus related disease about 5 times greater in NTM colonised patients	
269	Goeminne PC, Nawrot TS, Ruttens D, Seys, Dupont LJ. Mortality in non-cystic fibrosis bronchiectasis: a prospective cohort analysis. Respiratory Medicine	Cohort study	+	245	HRCT confirmed bronchiectasis, 51% female	Patients that died during follow-up	patients that survived	mean 5.1 years	mortality	Independent predictors of mortaltiy were age, number of lobes affected on CT and COPD aetiology	FWO
270	Loebinger et al. Mortality in bronchiectasis: a long-term study assessing the factors infleuncing survival. Eur Respir J 2009; 34: 843–849	Cohort study	+	91	Clinically diagnosed BE and participated in a previous validated study of the SGRQ in 1994	n/a	n/a	13 years	Mortality	Independent predictors of mortality in bronchiectasis were age, Pseudomonas aeruginosa, male gender, RV/TLC ratio, TLC, KCO and SGRQ activities score.	none
271	Evans et al, Lung function in bronchiectasis; the influence of Pseudomonas aeruginosa, Eur Respir J 1996;9:1601-04.	Case control	+	49	PA patients (n=12) and non-PA patients (n=37)	PA colonised patients	non-PA colonised patietns	mean 10.2 years	decline in pulmonary function (FEV1 and FVC)	Large difference in FEV1 decline between PA and non-PA patients arising following first isolation of PA	not stated
272	Wilson CB et al. Effect of sputum bacteriology on the quality of life of patients with bronchiectasis. Eur Respir J 1997; 10: 1754–1760	Cohort study	+	87	CT defined bronchiectasis, stable for 6 weeks	PA n=22	non-PA n=65	cross-section	SGRQ, lung function and radiological severity	Patients with PA have worse quality of life	Not reported
273	Martinez-Garcia. Quality of life determinants in patients with clinically stable bronchiectasis. Chest 2005;128:739-745	cross-sectional, prospective	3	86	clinic attendees 1990-Jun 2003 - not clear when SGRQ was done during the follow-up period	n/a	n/a	not stated	QOL	PA colonization correlated negatively with quality of life (not independent factor) - Pearson CC r=0.31 overall (p<0.01)	government

Biblio no	Bibliographic citation	Study type	Ev lev	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures	Effect size	Source of funding
274	Davies, The effect of Pseudomonas aeruginosa on pulmonary function in patients with bronchiectasis, Eur Respir J 2006; 28: 974–979	case control	++	163	3 groups, never isolated pseudomonas n=67, intermittent pseudomonas 82, and chronic infection n=14	3 groups as stated before	3 groups as stated before	mean 8.8-11 years	Decline in pulmonary function (FEV1, FVC)	No difference in rate of decline in FEV1 between pseudomonas patients with and without chronic colonisation	None
275	Martinez-Garcia et al, Factors associated with lung function decline in adult patients with stable non-cystic fibrosis bronchiectasis. Chest	Cohort study	-	76	HRCT diagnosed bronchiectasis with >1 lobe involved or cystic bronchiectasis. CF	PA n=15	non-PA N=61	2 years (with 6 monthly visits)	Decline in FEV1	Independent predictors of FEV1 decline were Pseudomonas colonisation, "severe exacerbations" and systemic inflammation	Spanish Ministry of Health
276	Mirsaeidi et al. Non-tuberculous mycobacterial disease is common in patients with non-cystic fibrosis bronchiectasis. Int J Infect Dis 2013; 17:	retrospective notes review (cross-sectional)	3	182	CT proven Bx in adults, not cF	n/a	those with NTM (68) compared to those without (114)		clinical characteristics assessed, but no comment on prognosis or outcomes. 55 met ATS criteria for NTM-related disease - 30% of total	n/a	not stated
277	Angrill et al. AJRCCM 2001. 164:1628-1632	Cohort study	+	49	49 HRCT confirmed BE, 9 nonsmoking controls. BE patients 65% female,	Bronchiectasis patients	Controls	Cross-sectional	MPO, elastase, TNF-a, IL-1b, IL-6, IL-8, IL-10 by ELISA	Higher neutrophil counts and inflammatory amrkers (TNF-a, IL-1b, IL-8, lastase and MPO in colonised patients (N=22) vs non-colonised N=23	SEPAR, SOCAP and Clinic Hospital Barcelona
278	Hill AT; Association between Airway Bacterial Load and Markers of airway inflammation in patients with stable chronic bronchitis;2000; am J Med	cross-sectional	3	43	Bx on CT or bronchography; productive cough; stable state	n/a	n/a	1996-1999	numerous but as small part of study, assessed sputum markers of inflammation and presence of PPM	n=5 with PA, n=20 with HI, n=4 with MC; measures of airway inflammation significantly worse in PA than HI, best in MC - n small and unclear if relates to subjects or samples (more than one from each subject)	Industry
279	Rogers et al. Clinical measures of disease in adult non-CF bronchiectasis correlate with airway microbiota composition, Thorax 2013;68:731-737	Cohort study	+	41	subgroup of patients from a randomized controlled trial (BLESS)	n/a	n/a	12 months but most data in this analysis are cross-sectional	Comparison between BAL and induced sputum samples, correlation of diversity with lung function	Correlation between species richness and lung function	UK Natural Environment Research Council
280	Tunney et al. Lung microbiota and bacterial abudnance in patients with bronchiectasis when clinically stable and during exacerbations. *AJRCCM* 2013; 10:1110-1126	Cohort study	++	40 and 14	40 patients cross-sectional study, 14 patietns in longitudinal study before and after antibiotics	N/A	N/A	23 months (includes a cross-sectional study as well)	Culture and pyrosequencingboth cross-sectional and before and after antibiotic treatment for exacerbation	Suggests that changes in pathogens do not explain exacerbations of bronchiectasis	Northern Ireland Chest Heart and stroke grant
284	Outcomes of PA eradication therapy in Bx; White L and Suntharalingam J	Retrospective	2+	30 patients	Patients with bronchiectasis who had undergone “Pseudomonas eradication therapy” were identified retrospectively from electronic case records. Patients were included in the study if they had: (i) a diagnosis of bronchiectasis as based on clinical presentation and	Intravenous regime: Intravenous gentamicin 4 mg/kg plus ceftazidime 2 g three times daily for 2-weeks, followed by nebulised colistin 2 megaunits twice daily for 3 months +/− oral ciprofloxacin 500 mg twice daily for 3 months. Oral regime: Ciprofloxacin 500 mg twice daily for 3 months plus nebulised colistin 2 megaunits twice		26.4months	All patients undergoing Pseudomonas eradication therapy from 2004 to 2010 were identified retrospectively and assessed for microbiological eradication, exacerbation frequency, hospital admissions, clinical symptoms and lung function.	Pseudomonas was initially eradicated from sputum in 24 patients (80.0%). 13/24 patients remained Pseudomonas-free and 11/24 were subsequently reinfected (median time 6.2 months). Exacerbation frequency was significantly reduced from 3.93 per year pre-eradication and 2.09 post-eradication (p = 0.002). Admission rates were similar, at 0.39 per year pre-eradication and 0.29 post-eradication (p = NS). 20/30 patients reported initial clinical improvement, whilst at one-year follow up, 19/21 had further improved or remained stable. Lung function was unchanged.	NA
285	Addition of Inhaled Tobramycin to Ciprofloxacin for Acute Exacerbations of Pseudomonas aeruginosa Infection in Adult Bronchiectasis; Bilton et al	A double-blind, randomized, active comparator, parallel-de-sign study	1+	53	A history of chronic P aeruginosa lung infection, confirmed by a sputum culture that was positive for P aeruginosa both within the 12 months before screening and at the time of screening, was required for eligibility. In addition, the P aerugi-nosa isolate had to show	At the time of exacerbation, subjects were randomized to one of the following two active treatment arms: (1) therapy twice daily with TIS and twice daily with Cip (ie, the TIS/Cip arm); or (2) twice-daily therapy with placebo and Cip (ie, the placebo/Cip arm).		42 days	The primary efficacy end point was the clinical outcome assessment at day 21 (called the test of cure); at this time, each subject was categorized as “cured,” “failed,” or “indeterminate. The microbiological response was assessed at day 21 based on the sputum culture findings, and consisted of “eradicated” (ie, no P	An inhaled solution of Cip with tobramycin, compared to placebo, achieved greater microbiological response but no statistically significant difference in clinical efficacy at days 14 or 21. Clinical and microbiological outcomes at the test of cure (ie, the clinical outcome assessment at day 21) were concordant when an inhaled tobramycin solution was added to therapy with Cip and compared to placebo (p 0.01). Both subject groups had similar overall adverse event rates, but subjects receiving therapy with an inhaled tobramycin solution reported an increased frequency of wheeze (50%; placebo group, 15%).	Not known

Biblio no	Bibliographic citation	Study type	Ev lev	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures	Effect size	Source of funding
285	912. Bilton, D.;Henig, N.;Morrissey, B.;Gotfried, M. Chest, 2006	RCT (double-blind, randomized, active comparator, parallel-design study)	1-	n=53	adult CT proven bx, chronic PA infection, acute exacerbation	Oral Ciprofloxacin + inhaled tobramycin solution (bd) for 14 days	Oral Ciprofloxacin + inhaled placebo (quinine sulphate) solution (bd) for 14 days	6 weeks from 1st dose in trial	Clinical outcome assessments at day 14 & 21. Primary efficacy end point was the clinical outcome assessment at day 21: “cured,” “failed,” or “indeterminate.” Microbiological response (day 21) based on sputum culture findings: eradicated, persistent, superinfected, or indeterminate.	Day 21, 19 of 27 subjects (70.4%) treated with placebo/Cip were considered to be cured, compared with 13 of 26 subjects (50.0%) treated with TIS/Cip (odds ratio, 0.36; p=0.091). No statistical difference in sputum eradication.TIS/Cip had mean reductions in P aeruginosa of 3.67 log10 and 3.25 log10 cfu, respectively, on days 7 and 14 with mean reductions in placebo/Cip of 1.15 log10 cfu at day 7 and 0.52 log10 cfu at day 14 (p<0.001 at both timepoints)	Sponsored by Chiron.
285	912. Bilton, D.;Henig, N.;Morrissey, B.;Gotfried, M. Chest, 2006	RCT (double-blind, randomized, active comparator, parallel-design study)	1-	53	adult CT proven bx, chronic PA infection, acute exacerbation	Oral Ciprofloxacin + inhaled tobramycin solution (bd) for 14 days	Oral Ciprofloxacin + inhaled placebo (quinine sulphate) solution (bd) for 14 days	6 weeks from 1st dose in trial	Clinical outcome assessments at day 14 & 21. Primary efficacy end point was the clinical outcome assessment at day 21: “cured,” “failed,” or “indeterminate.” Microbiological response (day 21) based on sputum culture findings: eradicated, persistent, superinfected, or indeterminate. PA sputum load at days 7, 14 & 21. Emergence of antibiotic resistance.	Day 21, 19 of 27 subjects (70.4%) treated with placebo/Cip were considered to be cured, compared with 13 of 26 subjects (50.0%) treated with TIS/Cip (odds ratio, 0.36; p=0.091). No statistical difference in sputum eradication.TIS/Cip had mean reductions in P aeruginosa of 3.67 log10 and 3.25 log10 cfu, respectively, on days 7 and 14 with mean reductions in placebo/Cip of 1.15 log10 cfu at day 7 and 0.52 log10 cfu at day 14 (p<0.001 at both timepoints). isolation of treatment-emergent, antibiotic resistant organisms was comparable between study arms. One TIS/Cip subject and two placebo/Cip subjects who had begun the study with Cip-susceptible P aeruginosa strains (MIC, 2 g/mL) had Cip-resistant strains (MIC, 4 g/mL) by the last study visit. One TIS/Cip subject who had begun the study with tobramycin-susceptible P aeruginosa (MIC, 8 g/mL) had a resistant P aeruginosa infection (MIC, 16 g/mL) at their last visit. Tobramycin resistant P aeruginosa infection did not develop in placebo/Cip subjects.	Sponsored by Chiron.
288	Allergic bronchopulmonary aspergillosis in patients with and without evidence of bronchiectasis. Greenberger PA1, Miller TP, Roberts M, Smith LL.)Ann Allergy. 1993 Apr;70(4):333-8.	Observational cohort study	2++	28	Allergic bronchopulmonary aspergillosis (ABPA) may complicate 1% to 2% of all cases of chronic asthma. Twenty-eight patients	No intervention	Serum anti-Aspergillus fumigatus (Af) IgG was lower in ABPA-S (n = 28) versus ABPA-CB (central bronchiectasis) (n = 58) at the time of initial	11 patients followed up for a total of 63 patient years	There were trends toward lower concentrations of total serum IgE, serum anti-Af-IgE, and anti-Af-IgA in ABPA-S. Eleven patients with ABPA-S were evaluated closely for a total of 63 patient-years and	N/A	Academic institution

Biblio no	Bibliographic citation	Study type	Ev lev	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures	Effect size	Source of funding
289	Paul A. Greenberger, MDa, Robert K. Bush, MDb, Jeffrey G. Demain, MDc, Amber Luong, MD, PhDd, Raymond G. Slavin, MD, MSe, and Alan P. Knutsen, MD Allergic Bronchopulmonary AspergillosisJ ALLERGY CLIN IMMUNOL PRACT VOLUME 2, 2014, NUMBER 6 703-708)	Review	4	N/A	There remains lack of agreement on diagnostic criteria and approaches to treatment of patients with Allergic Bronchopulmonary Aspergillosis (ABPA). The results of a survey of AAAAI members regarding these 2 issues are presented and compared for concordance with published recommendations. The literature was reviewed for pertinent reports and an electronic survey was conducted of AAAAI members and fellows regarding diagnostic criteria, numbers of patients evaluated for ABPA, and treatment approaches. From 508 respondents to the survey sent to 5155 U. S. physicians in the AAAAI database of members and fellows, 245 (48%) health professionals had treated at least 1 patient with ABPA in the previous year. For the diagnosis of ABPA, there was a difference in the threshold concentration of total serum IgE as 44.9% used >	N/A	N/A	N/A	N/A	N/A	N/A
290	Greenberger PA. Allergic bronchopulmonary aspergillosis. J Allergy Clin Immunol 2002;110:685-92	Review	4	N/A	N/A	No intervention	This review dis- cusses clinical, radiologic, investigational, pathogenetic, and treatment issues of ABPA.	N/A	Recommend itraconazole as a steroid sparing agent. Recommends reducing dose of steroid. Patients with ABPA can have cylindrical, varicose, and cystic bronchiectasis that involves multiple bronchi	N/A	Supported by the Ernest S. Bazley Grant to Northwestern Memorial Hospital and Northwestern University. Academic institution.

Biblio no	Bibliographic citation	Study type	Ev lev	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures	Effect size	Source of funding
292	Ritesh Agarwal, Ajmal Khan, Ashutosh N Aggarwal, et al. Role of Inhaled Corticosteroids in the Management of Serological Allergic Bronchopulmonary Aspergillosis (ABPA) (Intern Med 50: 855-860, 2011)	Observational cohort study	2++	21	The study group included 21 (8 men and 13 women) pa- tients of ABPA-S with a mean (SD) age of 39.3 (12.9) years. The median duration of asthma prior to diagnosis of ABPA was six years.21 patients of serologic ABPA diagnosed between July 2005 and June 2008 who refused treatment with oral corticosteroids and itraconazole for various reasons. all patients with asthma were screened presenting to Chest clinic with an *Aspergil- lus* skin test. Patients who demonstrated type I responses in aspergillus skin test were further investigated for ABPA. Pa- tients were diagnosed as ABPA-S if they met all the follow- ing criteria: (A) diagnosis of bronchial asthma (B) immedi- ate cutaneous hyperreactivity to *A. fumigatus* antigen; (C) total IgE levels >1,000 IU/mL; (D) *A. fumigatus* specific IgE levels >0.35 kUA/L; and, (E) normal HRCT of the chest with or without the following criteria: (a) presence of	Patients with ABPA-S were treated with a combination of formoterol/budesonide (24-1600 micro- grams per day), and followed up with history, physical examination, chest radiograph and total IgE levels at 6, 12, 18 and 24 weeks. Asthma control was evaluated using the Global Initiative for Asthma (GINA) crite- ria. OCS were initiated if the IgE levels continued to rise after six months of therapy with ICS.	N/a	Median follow up of 15 months following initiation of OCS	There were 8 men and 13 women with a mean (SD) age of 39.3 (12.9) years. There was subjective improvement in all patients treated with ICS but none had complete control of asthma. After six months of therapy with ICS, the median IgE levels increased by 99.3%. After the initiation of OCS, there was complete resolution of asthma symptoms in 19 patients, and IgE levels fell by a median of 52.6% at six weeks. The median duration of follow-up was 15 months after OCS therapy. Eighteen patients achieved complete remis- sion and three patients had a relapse in the first three months after stopping OCS. One patient required long- term OCS and was classified as glucocorticoid-dependent ABPA.	High doses of ICS alone have no role in the management of ABPA-S and should not be used as first-line therapy. In patients receiving OCS or alternate therapy, ICS can be used as an add-on therapy for the control of symptoms of asthma.	Academic institution
293	Usefulness of inhaled high-dose corticosteroids in allergic bronchopulmonary aspergillosis. B Imbeault; Y Cormier *Chest.* 1993;103(5):1614-1617.	Case reports	3	2	31 year old man with asthma and APBA. 18 year old man with allergic rhinitis , Ct findings of central brochiectais and findings of ABPA	Use of high dose inhaled steroid in patients with APBA in whom there is difficutly in weaning oral steroids.	N/A	N/A	With the use of high-dose inhaled steroids, both subjects could be completely taken off their therapy with oral steroids. In both cases, inhaled steroids alone were able to prevent recurrence of pulmonary infiltrates, although patient 1 required a short burst of oral prednisone after 11 months. Inhaled steroids also controlled symptoms, and subjects maintained relatively low levels of serum IgE.	The recurrence of disease during treatment with inhaled steroids suggests that this form of treatment is not always sufficient. This is not surprising, since, even with oral steroids, the amount of medication needed to control disease activity fluctuates over time. It appears that inhaled steroids are useful during periods of decreased activity, when relatively low doses or oral steroids would suffice (example, ≤20 mg/day), or to diminish the dose or duration of oral steroids. Subjects placed on inhaled treatment should be closely followed and oral steroids reinstated as required. More studies are needed to confirm the findings of this short report.	Not known
295	Wark PA, Hensley MJ, Saltos N, Boyle MJ, Toneguzzi RC, Epid GD, et al. Antiinflammatory effect of itraconazole on stable allergic bronchopulmonary aspergillosis; a randomized control trial. J Allergy Clin Immnol 2003;111: 952-7.	randomized, double-blind, placebo-controlled trial	1+	29	Adult patients with ABPA and chronic asthma	Patients were randomised to receive 400mg itraconazole daily or placebo.	Serum eosinophilia, IgE, IgG and number of exacerbations.	16 weeks	By using regression analysis in a random-effects model, subjects receiving itraconazole had a decrease in sputum eosinophils of 35% per week, with no decrease seen in the placebo arm (P <.01). Sputum eosinophil cationic protein levels decreased with itraconazole treatment by 42% per week compared with 23% in	By using regression analysis in a random-effects model, subjects receiving itraconazole had a decrease in sputum eosinophils of 35% per week, with no decrease seen in the placebo arm (P <.01). Sputum eosinophil cationic protein levels decreased with itraconazole treatment by 42% per week compared with 23% in the placebo group (P <.01). Itraconazole reduced systemic immune activation, leading to a decrease in serum IgE levels (310 IU/mL) compared with levels seen in the placebo group (increase of 18 IU/mL, P <.01) and a decrease in IgG levels to A fumigatus (15.4 IU/mL) compared with levels	Academic institution

Biblio no	Bibliographic citation	Study type	Ev lev	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures	Effect size	Source of funding
296	Salez F, Brichet A, Desurmont S, Grosbois JM, Wallaert B, Tonnel AB. Effects of itraconazole therapy in allergic bronchopulmonary aspergillosis.Chest. 1999 Dec;116(6):1665-8.	interventional cohort study	2++	14	Fourteen patients were studied: 7 men and 7 women (mean age, 44.5 3.1 years old; range, 26 to 67). All of them presented signs of ABPA as defined by the criteria of Rosenberg et al.6 The patients were considered to have ABPA if they had asthma, eosinophilia, immediate skin reaction to	patients were treated with oral itraconazole, 200 mg/d, for at least 12 months.	Blood eosinophilia, serum total IgE levels, and serum precipitating antibodies against *A fumigatus* antigen significantly decreased. No decrease of specific IgE against *A fumigatus* spp was observed. All patients experienced a partial improve- ment in pulmonary function tests:	2 year reference period prior to intervention. 1 yr follow up thereafter	During the 2-year reference period, no significant clinical, immunologic, and functional improvement was observed on a long-term basis. During the itraconazole treatment period, a clinical improvement was observed. Blood eosinophilia, serum total IgE levels, and serum precipitating antibodies against *A fumigatus* antigen significantly decreased. No decrease of	All patients experienced a partial improve- ment in pulmonary function tests: FEV1 significantly increased from 1,433 185 to 1,785 246 mL/s ($p < 0.01$). All patients successfully lowered oral glucocorticoid dose when receiving itraconazole. In 7 of 14 patients receiving itraconazole, the removal of oral glucocorticoids was possible. these results demonstrate the efficacy of itraconazole in ABPA in reducing or eliminating the need for glucocorticoid therapy, along with clinical, biological, and functional improvement.	Not known
297	Wark PA, Gibson PG, Wilson AJ. Azoles for allergic bronchopulmonary aspergillosis associated with asthma. Cochrane Database Syst Rev 2004;3:	Systematic review	1++	Twelve trials were identified, but only three were prospective, randomised and controlled. A total of 94 participants were included.	All controlled trials that assessed the effect of azole antifungal agents compared to placebo or other standard therapy for allergic bronchopulmonary aspergillosis were reviewed.	All controlled trials that assessed the effect of azole antifungal agents compared to placebo or other standard therapy for allergic bronchopulmonary aspergillosis were reviewed.	Na	Na	N/A	Itraconazole modifies the immunologic activation associated with allergic bronchopulmonary aspergillosis and improves clinical outcome, at least over the period of 16 weeks. Adrenal suppression with inhaled corticosteroids and itraconazole is a potential concern.	Cochrane database
298	Moreira AS, Silva D, Reis Ferraira A, Delgado L. Antifungal treatment in allergic bronchiopulmonary aspergillosis with and without cystic fibrosis: a systematic review. Clin Exper Allergy 2014;44:1210-27.	Systematic review	1++	studies with comparable outcomes were pooled for meta-analysis. Thirty-eight studies - four randomized controlled trials and 34 observational studies - met the eligibility criteria. The antifungal	tudies with comparable outcomes were pooled for meta-analysis. Thirty-eight studies - four randomized controlled trials and 34 observational studies - met the eligibility criteria. The antifungal interventions described were itraconazole, voriconazole, posaconazole,	tudies with comparable outcomes were pooled for meta-analysis. Thirty-eight studies - four randomized controlled trials and 34 observational studies - met the eligibility criteria. The antifungal interventions described were itraconazole, voriconazole, posaconazole, ketoconazole, natamycin, nystatin and amphotericin B.	N/A	N/A	N/A	An improvement in symptoms, frequency of exacerbations and lung function was reported in most of the studies and was more common with oral azoles. Antifungals also had a positive impact on biomarkers and radiological pulmonary infiltrates, but adverse effects were also common. The quality of the evidence supporting these results was low or very low due to a shortage of controlled studies, heterogeneity between studies and potential bias. Antifungal interventions in ABPA improved patient and disease outcomes in both asthma and cystic fibrosis. However, the recommendation for their use is weak and clinicians should therefore weigh up desirable and undesirable effects on a case-by-case basis. More studies with	Academic institution
299	Chishimba L, Niven RM, Cooley J, Denning DW. Voriconazole and posaconazole improve asthma severity in allergic bronchopulmonary aspergillosis and severe asthma with fungal sensitization. J Asthma 2012;49:423-33.	observational cohort study	2+	25	25 adult asthmatic patients with either ABPA or Severe asthma with fungal sensitisation(SAFS)receiving voriconazole or posaconazole. Clinical, radiological, and immunological evaluation was used to assess response.ABPA (n = 20) or SAFS (n = 5), 10 males, median age = 58 years. All	No intervention	Clinical response to voriconazole was observed in 17/24 (70%) patients at 3 months, 15/20 (75%) at 6 months, and 12/16 (75%) at 12 months compared with 7/9 (78%) at 3, 6, and 12 months for posaconazole.		Asthma severity, use of Oral corticosteroids, health care utilisation, health care status, use of short acting B2 agonist, measurement of immunological markers.	Eighteen of 24 (75%) patients discontinued oral corticosteroids (OCS), 12 of them within 3 months of therapy. Asthma severity was downgraded from severe to moderate (n = 8) and moderate to mild (n = 1) asthma in 9 of 24 (38%) asthmatic patients. There was a marked reduction in OCS and short-acting beta-2 agonist use, health-care utilization due to asthma, and improvement in overall health status. Furthermore, there was a statistically significant reduction in immunological markers appearing at 9 months ($p = .008$) for total IgE and at 12 months for radioallergosorbent test IgE for Aspergillus fumigatus ($p = .0056$). Six of 23 (26%) patients on voriconazole had AEs requiring discontinuation before 6	Academic institution
300	Quinti 2011	Multi centre prospective study	3	303	CVID 201 ALA 101		Stratfied patient presence, absence infection OR		Feaure of PD		
301	Quinti 2007	Multi centre prospective cohort	2	224	Adult, child with CVID		Patient diagnosis and follow up	Median 11.5 years	PID Effect of long term IgG CT every 4 years		

Biblio no	Bibliographic citation	Study type	Ev lev	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures	Effect size	Source of funding
303	de Gracia 2004	Single centre prospective	3	29	CVID CPD	IgG	Evolution of lung damage	2 years	Reduction serious infection		
315	Helicobacter pylori and upper gastrointestinal symptoms in bronchiectasis K.W. Tsang, W-K. Lam, E. Kwok, K-N. Chan*, W.H.C. Hu, G.C. Ooi+, L. Zheng, B.C.Y. Wong, S-K. LamEur Respir J 1999; 14: 1345-1350	Observational	1 plus	100 patients	Patients with CT proven Bronchiectais in stable state, previously assessed fof serum levels of H.pylpri IgG serology	No intervention	lung function, 24 hour sputum volume, exacerbation frequency, number of lobes affected with bronchiectasis. Comparison with control and bronchiectasis patients who are caga positive v negative	Not applicable	lung function, 24 hour sputum volume, exacerbation frequency, number of lobes affected with bronchiectasis. Comparison with control and bronchiectasis patients who are caga positive v negative	there was no significant difference in sputum, volume produced, lung function parameters or the number of lung lobes affected by bron- chiectasis between patients according to their anti-H. pylori CagA status. Patients who suffered acid regurgitation or upper abdominal dis- tension had a significantly lower FEV1 and FVC com- pared with their counterparts. The presence of upper abdominal pain and distension was also associated with the number of lobes	Academic institution
315	Tsang et al. Helicobacter pylori and upper gastrointestinal symptoms in bronchiectasis. Eur Respir J 1999; 14: 1345-1350	follow-up to previous cross-sectional study	3	100 plus 94 healthy controls	Much data in previous study publication which I don't have - presumably CT proven Bx, not CF, adults.	n/a	n/a	n/a	Already assessed H pylori seroprevalence, which apparently correlated with disease activity - now looking at virulence factors for GI disease to see if it affects chest	Assocation between GI symptoms and severity of bx, but not related to Hp serology.	Uni HK
316	High Seroprevalence of *Helicobacter pylori* in Active Bronchiectasis KENNETH W. TSANG, SHIU-KUM LAM, WAH-KIT LAM, JOHAN KARLBERG, BENJAMIN C. WONG, WAYNE H. HU, WING-WAI YEW, and MARY S. IP AM J RESPIR CRIT CARE MED 1998;158:1047–1051.	Observational	1 plus	100 bronchiectasis 87 TB and 94 controls	One hundred patients who suffered from bronchiectasis (di- agnosed by typical clinical symptoms and high- resolution computed tomography) who were in steady state (defined by	No intervention	Comparisons between the three groups and the number of patients in each group with IgG positivity to H pylori specifid IgG. With in the bronchiectasis group this was compared with	Not applicable	number of patients in each group with IgG positivity to H pylori specifid IgG. With in the bronchiectasis group this was compared with parameters of sputum volume, lung function and cause of bronchiectasis.	This study shows that there is a high seroprevalence of *H. py- lori* infection in bronchiectasis (76%) which is significantly higher than that of the normal volunteers (54.3%) and tuber- culous patients (52.9%). . It is very likely that the abnormally high seroprevalence is specific to bronchiectasis as there was no association with tu- berculosis, another chronic infective and inflammatory lung condition. Among the bronchiectatic patients, the sputum producers had a H. pylori seroprevalence	Academic institution
318	Does Helicobacter pylori have a pathogenic role in bronchiectasis? J. Angrilla,, N. S´anchezb, C. Agust´ıa, J.Ma. Guilemanyc, R. Miqueld, J. Gomeze, A. Torresa Respiratory Medicine (2006) 100, 1202–1207	Observational	2+	46 with bronchiectasis. 8 contol patients.	46 patients with bronchiectasis, diag- nosed by clinical and high- resolution chest CT (HRCT) scan criteria, in a stable clinical situation.	No intervention	Presence of H pylori IgG serology Immunostaining of bronchial mucosa looking for H pylori.	Not applicable	Presence of H pylori IgG serology Immunostaining of bronchial mucosa looking for H pylori.	The results of this study could not demonstrate H. pylori itself in bronchial specimens from patients with bronchiectasis. In order to be more certain about the role of H. pylori in bronchiectasis, further studies were suggested to be undertaken to clarify the pathogenetic mechanisms underlying the pos sible association between these diseases. The authors determined Hp-specific IgG in the patients, and did not find differences of H. pylori seropositivity between bronchiectasis patients and the general population seropositivity expressed in previous Spanish epidemiological studies.	Academic institution
342	Barker 2000- same pt group as Couch 2001	RCT	1+	74 (37 in each grp)	Ct, PSA. Cf + abpa exclusions	TOBI	.placebo	intervention 4/52 then 2/52 further observation	primary cfu reduction at 4/52	26% (8/31) cf 14% (4/29)placebo showed 4x MIC change p=0.25. Some different data reported re pts with MIC >16 resistant between the 2 studies reported in 4/36 vs 1/32 p=0.36. At weeks 4 same CFU data as Couch but p<0.01. No stats on the eradication but same data 13/31 vs 0/29.	

Biblio no	Bibliographic citation	Study type	Ev lev	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures	Effect size	Source of funding
342	1233. Barker, A. F.;Couch, L.;Fiel, S. B.;Gotfried, M. H.;Ilowite, J.;Meyer, K. C.;O'Donnell, A.;Sahn, S. A.;Smith, L. J.;Stewart, J. O.;Abuan, T.;Tully, H.;Van Dalfsen, J.;Wells, C. D.;Quan, J. AJRCCM, 2000.	RCT	1+	74	adult bx confirmed by conventional or high resolution CT. P. aeruginosa >4log10 cfu/g sputum.	tobramycin soluion for inhalation (TSI)	placebo (quinine sulphate)	6 weeks from 1st dose in trial	Primary end point: Change in P. aeruginosa density from baseline to week 4. Additional endpoints (1) change in P. aeruginosa density from baseline values to week 2 and to week 6; (2) an investigator's subjective assessment of a change in the patient's general medical condition ("improved" or "not improved") (3) lung function (4) safety endpoints. Microbiological response categorized according to whether P. aeruginosa was eradicated, reduced by treatment, or did not respond to treatment. Emergence of tobramycin resistance,	TSI group had a mean decrease in P. aeruginosa density of 4.54 log10 colony-forming units (cfu)/g sputum compared with no change in the placebo group (p< 0.01). 26% (eight of 31) of TSI patients had P. aeruginosa isolates that showed at least a fourfold increase from baseline to Week 6 in the tobramycin MIC compared with 14% (four of 29) of placebo patients (p= 0.25). Four of 36 (11%) patients in the TSI group and one of 32 (3%) patients in the placebo group who began the study with susceptible P. aeruginosa had resistant P. aeruginosa at their last visit (p=0.36). Three of the four patients in the TSI group who developed resistant P. aeruginosa showed no microbiological response.	Sponsored by PathoGenesis Corporation, Seattle, WA.
343	1019. Drobnic, M. E.;Sune, P.;Montoro, J. B.;Ferrer, A.;Orriols, R. Ann Pharmacotherapy, 2005.	RCT (double-blind, placebo-controlled crossover trial)	1+	30	adult CT proven bx, chronic infection with P. aeruginosa: 3 +ve cultures, separated by 1 month,	Neb tobraycin (300mg) bd	Placebo (0.9% saline bd)	13 months (6 months in each arm with 1 month washout)	Clinical outcomes (number of exacerbations, number of hospital admissions, number of hospital admission days,	The number of admissions and days of admission (mean +/- SD) during the tobramycin period (0.15 +/- 0.37 and 2.05 +/- 5.03) were lower than those during the placebo period (0.75 +/-1.16 and 12.65 +/- 21.8) (p < 0.047). A decrease in PA	No details
343	1019. Drobnic, M. E.;Sune, P.;Montoro, J. B.;Ferrer, A.;Orriols, R. Ann Pharmacotherapy, 2005.	RCT (double-blind, placebo-controlled crossover trial)	1-	30	adult CT proven bx, chronic infection with P. aeruginosa: 3 +ve cultures, separated by 1 month,	Neb tobraycin (300mg) bd	Placebo (0.9% saline bd)	13 months (6 months in each arm with 1 month washout)	Clinical outcomes (number of exacerbations, number of hospital admissions, number of hospital admission days,	The number of admissions and days of admission (mean +/- SD) during the tobramycin period (0.15 +/- 0.37 and 2.05 +/- 5.03) were lower than those during the placebo period (0.75 +/-1.16 and 12.65 +/- 21.8) (p < 0.047). A decrease in PA	No details
343	Drobnic 2005	double blind RCT	1-	30	CT BX, PA, all pt completed 2 weeks of iv abx before starting	TOBI 300mg	placebo	6/12 both arms w 1/12 washout	hospital days, PFT, SGRQ, exacerbation rate, cfu	only significnat findings were a reduction in the number of hospital admissions and admission days and decrease in PA density.	
344	1478. Rayner, C. F.;Tillotson, G.;Cole, P. J.;Wilson, R. Journal of Antimicrobial Chemotherapy, 1994.	Case series (before and after study)	1+	10	adult CT proven bx	Oral ciprofloxacin (500-1500mg daily)	None	90 days (retrospective study)	Pulmonary function, hopsital admissions, infective exacerbations. Emergence of bacterial resistance.	Symptomatic improvement in 7/10 patients. Resistance to ciprofloxacin developed in 2 patients with Pseudomonas aeruginosa infection and this was associated with clinical deterioration.	No details.
344	1478. Rayner, C. F.;Tillotson, G.;Cole, P. J.;Wilson, R. Journal of Antimicrobial Chemotherapy, 1994.	Case series (before and after study)	3	10	adult CT proven bx	Oral ciprofloxacin (500-1500mg daily)	None	90 days (retrospective study)	Pulmonary function, hopsital admissions, infective exacerbations. Emergence of bacterial resistance.	Symptomatic improvement in 7/10 patients. Resistance to ciprofloxacin developed in 2 patients with Pseudomonas aeruginosa infection and this was associated with clinical deterioration.	No details.
348	Eur Respir J. 2014 Mar;43(3):900-3. doi: 10.1183/09031936.00167813. Epub 2013 Oct 31. Molecular epidemiological analysis suggests cross-infection with Pseudomonas aeruginosa is rare in non-cystic fibrosis bronchiectasis. De Soyza A1, Perry A, Hall A J, Sunny	Single centre cohort study	"2+"	40 NCFBr patients, 36 attending a specilaist clinic, 4 attending general respiratory clinics	adults with Bronchiectasis	none	AT in tube array,	cross sectional study in the main,	cross infection/ epidemic strain infection not noted with execption of 2 patients sharing a very similar isolate		NIHR
349	Pujana, I.;Gallego, L.;Martin, G.;Lopez, F.;Canduela, J.;Cisterna, R. Epidemiological analysis of sequential Pseudomonas aeruginosa isolates from chronic bronchiectasis patients without cystic fibrosis. Journal of Clinical Microbiology 1999	Single centre cohort study	""2+ Well-conducted case control or cohort studies with a low risk of confounding or bias and a moderate probability	16 patients, 64 pseudomonas isolates		none		cross sectional study			

Biblio no	Bibliographic citation	Study type	Ev lev	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures	Effect size	Source of funding
350	Chronic colonization by Pseudomonas aeruginosa of patients with obstructive lung diseases: cystic fibrosis, bronchiectasis, and chronic obstructive pulmonary disease. Valderrey AD1, Pozuelo MJ, Jiménez PA, Maciá MD, Oliver A, Rotger R. Diagn Microbiol Infect Dis. 2010 Sep;68(1):20-7. doi: 10.1016/j.diagmicrobio.2010.04.008.		"2-"	10 patients with bronchiectasis	adults with Bronchiectasis, CF or COPD; 10 bronchiectasis patients studied			longitudinal	no single dominant clone across the 10 cases. Some patients had more than one clone isolated longitudinally		not noted