Continuous Medical Education Rounds

Vancouver CoastalHealth

Territory Acknowledgement

Vancouver Coastal Health is committed to delivering exceptional care to 1.25 million people, including the First Nations, Métis and Inuit, within the traditional territories of the Heiltsuk, Kitasoo-Xai'xais, Lil’wat, Musqueam, N'Quatqua, Nuxalk, Samahquam, shíshálh, Skatin, Squamish, Tla'amin, Tsleil-Waututh, Wuikinuxv, and Xa'xtsa.

We wish to acknowledge that the land on which we gather is the traditional and unceded territory of the Coast Salish Peoples, including the xʷməθkʷəy̓əm (Musqueam), Sḵwx̱wú7mesh (Squamish) and səlilwətaɬ (Tsleil-Waututh) Nations.

Vancouver CoastalHealth

Image of the Sea to Sky Corridor on the traditional and unceded territories of the Lil'wat, N'Quatqua, Samahquam, Skatin, Squamish and Xa'xtsa Nations.

Bronchiectasis

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VCH Dept of Family & Community Practice
CME Rounds – September 16, 2026

Disclosures

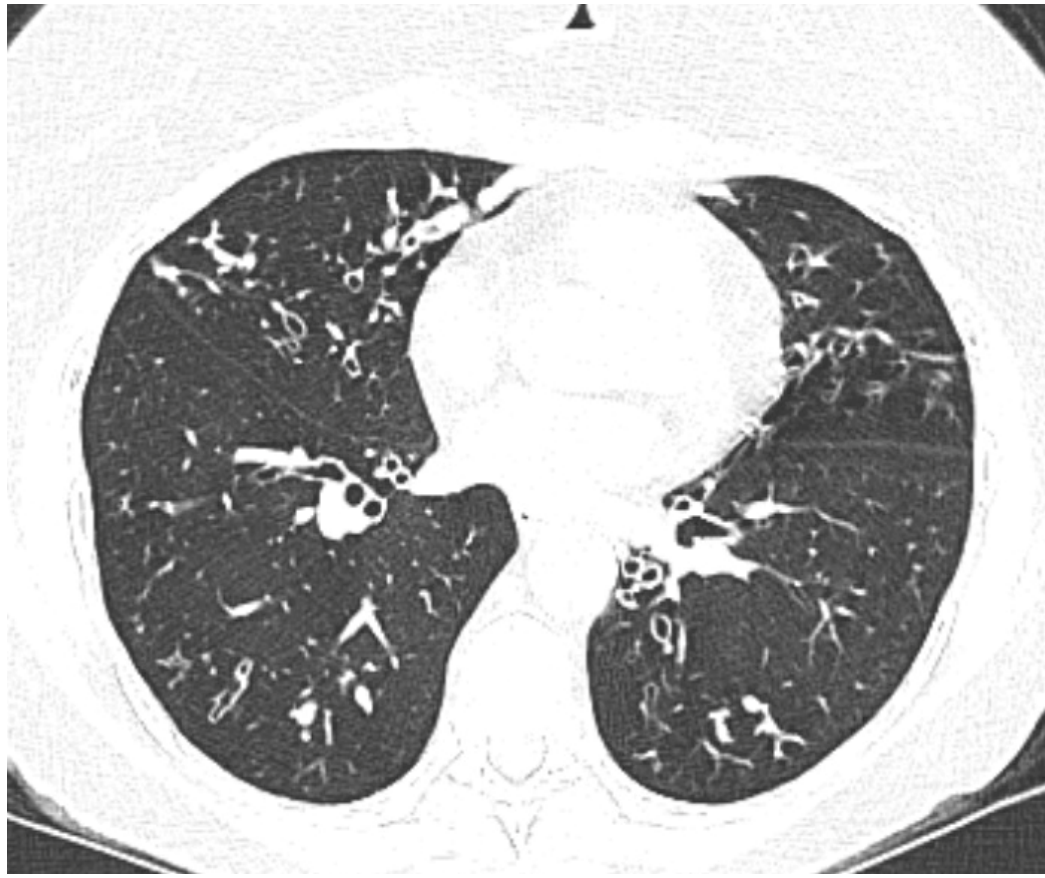
- Astrazeneca – Speaker honorarium
- Consultant Fees:
  - Logit Group
  - 2 Beacon Medical Systems

Objectives

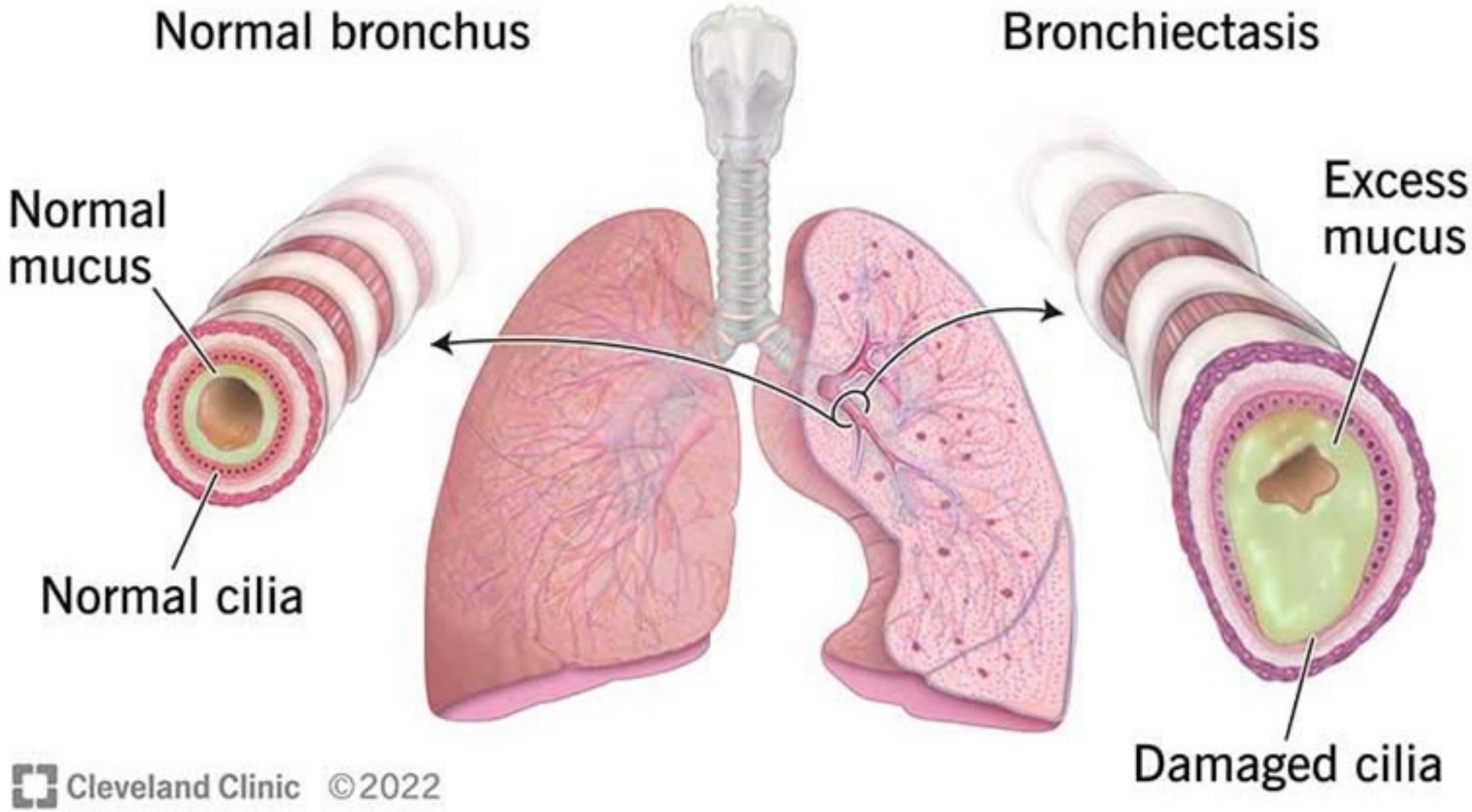
- Review etiologies, pathophysiology of bronchiectasis.
- Discuss guidelines-based approach to investigations and treatment bronchiectasis.
- Practical tips.
- Novel therapies in bronchiectasis.

Case

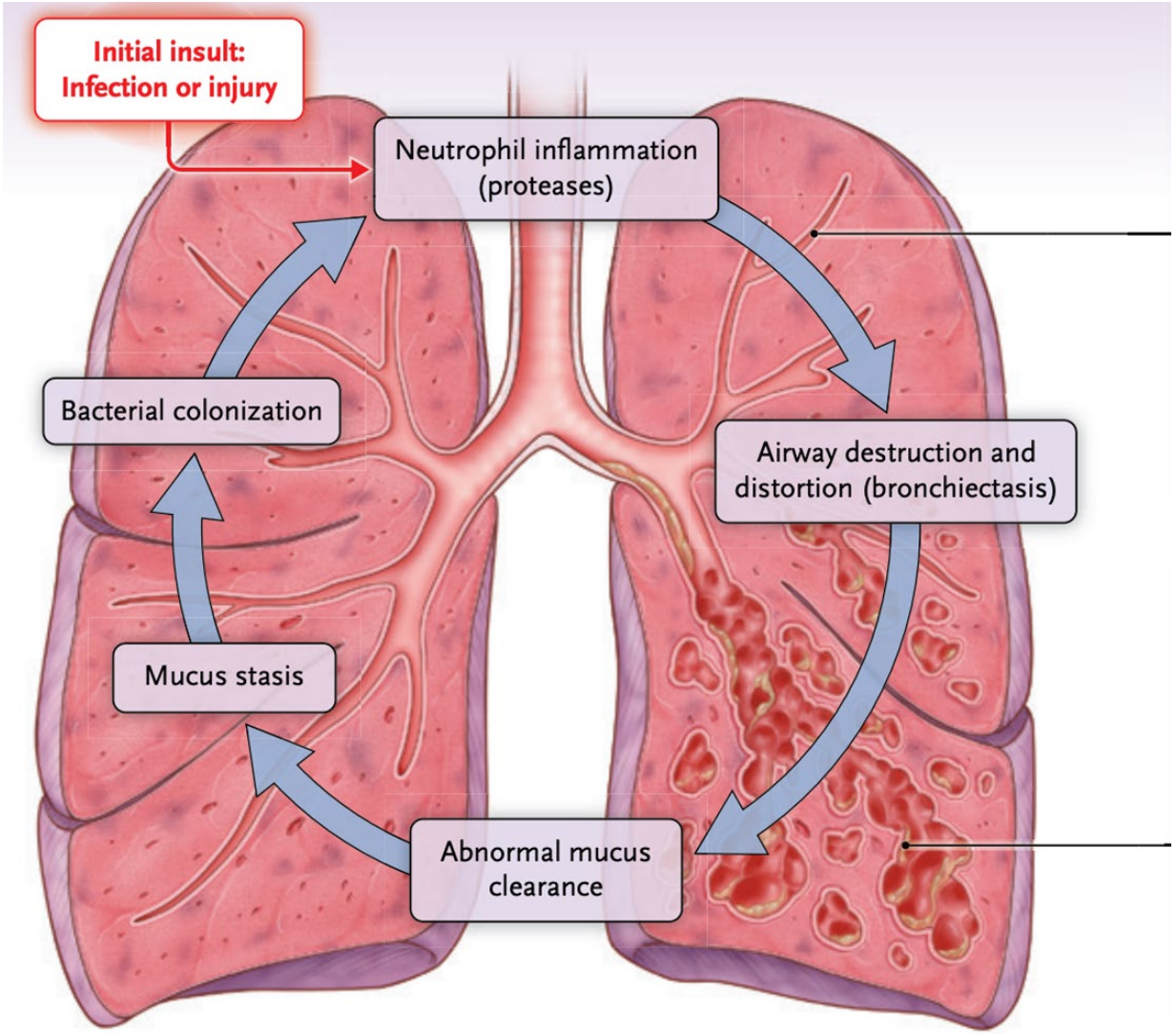
- 62 year old woman
- Chronic rhinosinusitis, polyps – prior OR



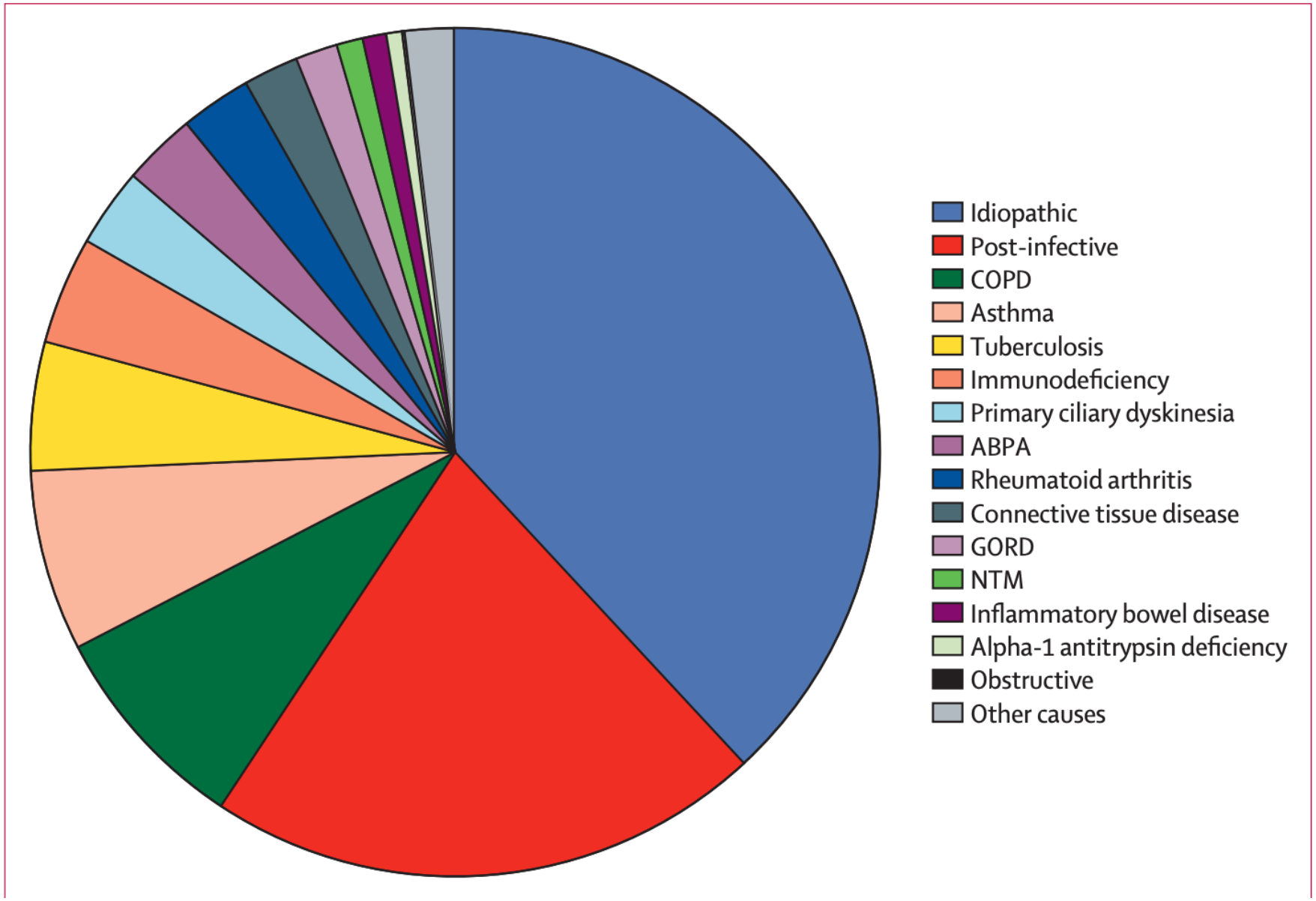
- Symptoms started in her 20s
- *S. aureus* and *P. aeruginosa* on cultures
- Multiple exacerbations per year, IV antibiotics
- FEV1 64% ← 89% 6 years prior
- Severe daily symptoms


Normal bronchus
Bronchiectasis
Normal mucus
Normal cilia
Excess mucus
Damaged cilia
Cleveland Clinic ©2022

Pathophysiology of Bronchiectasis

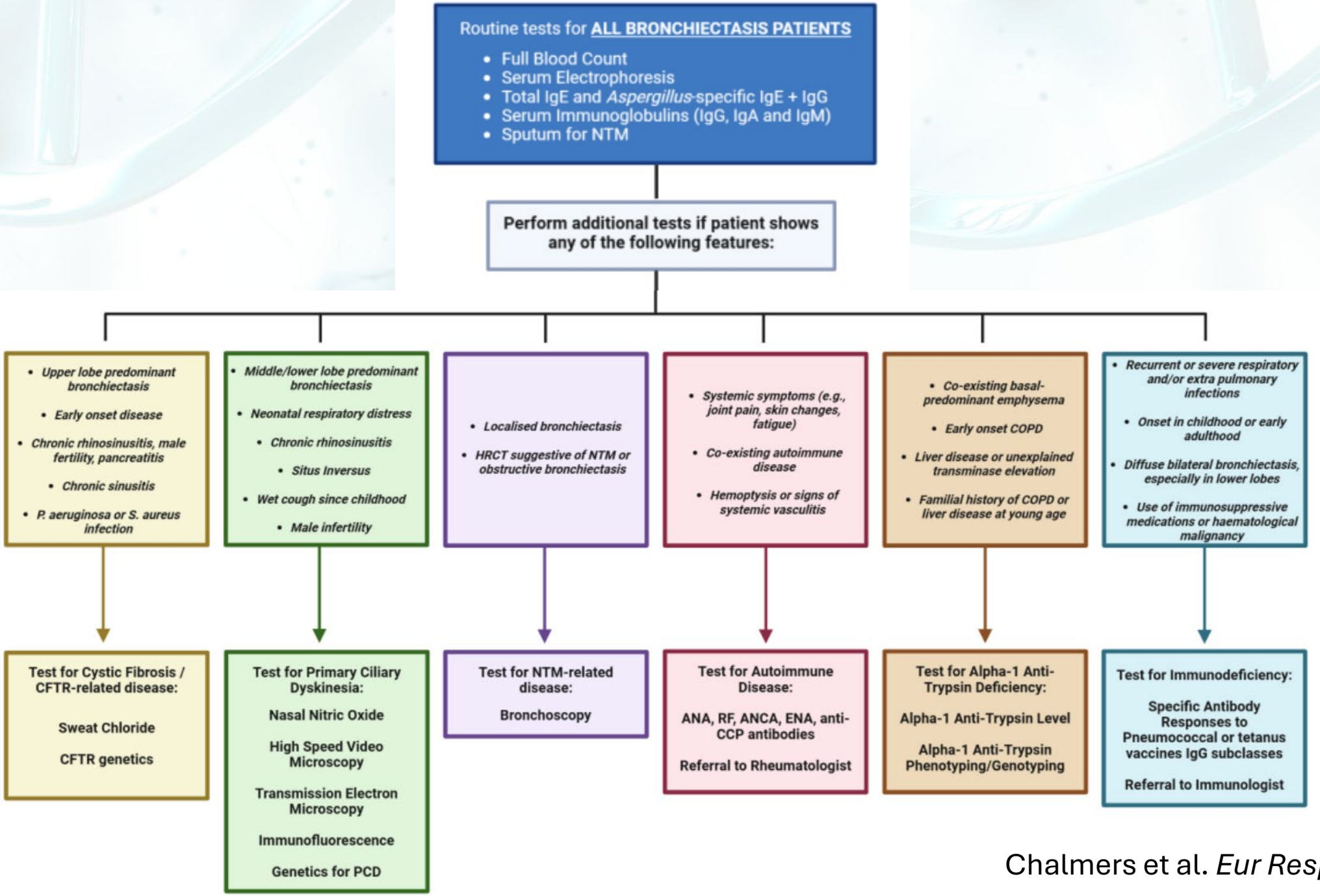


O'Donnell, NEJM 2022

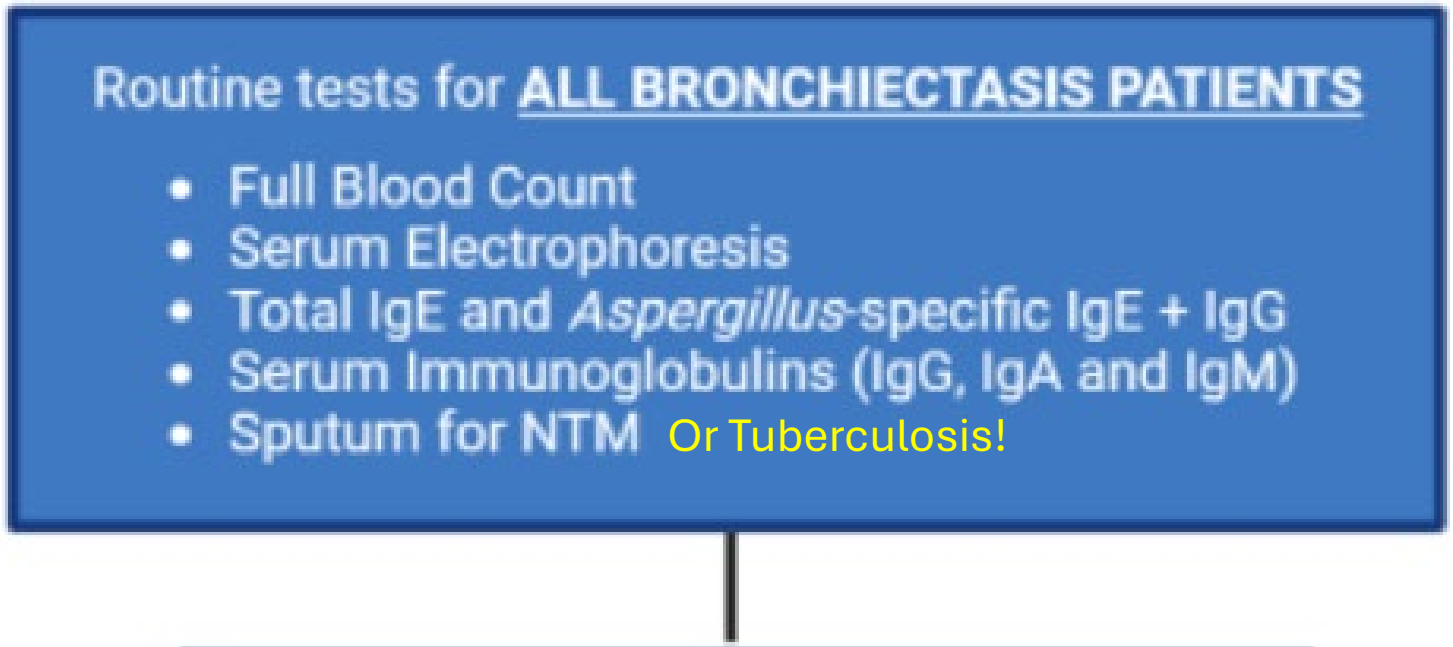


Chalmers et al, *Lancet*, 2023

Work-up of Bronchiectasis



Chalmers et al. *Eur Respir J,* 2025



- Elevated IgG & IgA is common in bronchiectasis
- SPEP to rule out monoclonal disorders (multiple myeloma, MGUS, CLL, Waldenstrom's)

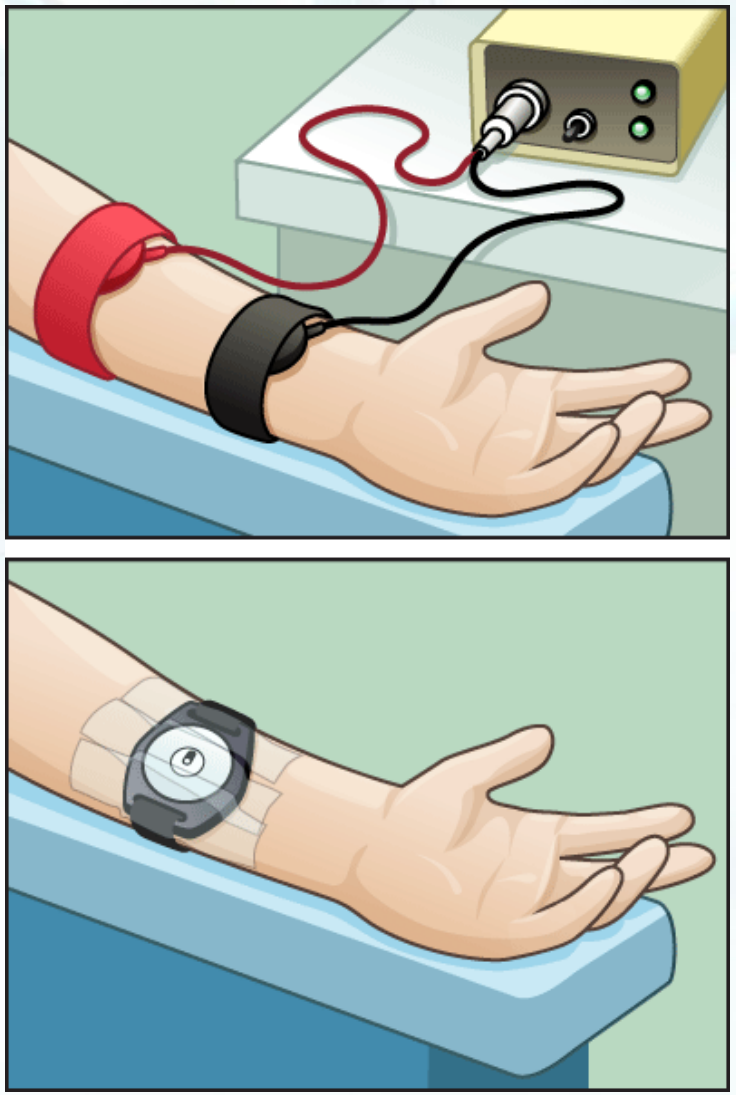
Chalmers et al. *Eur Respir J,* 2025

- *Upper lobe predominant bronchiectasis*
- *Early onset disease*
- *Chronic rhinosinusitis, male fertility, pancreatitis*
- *Chronic sinusitis*
- *P. aeruginosa or S. aureus infection*

Test for Cystic Fibrosis / CFTR-related disease:

Sweat Chloride

CFTR genetics



Chalmers et al. *Eur Respir J,* 2025

- *Middle/lower lobe predominant bronchiectasis*
- *Neonatal respiratory distress*
- *Chronic rhinosinusitis*
- *Situs Inversus*
- *Wet cough since childhood*
- *Male infertility*

Test for Primary Ciliary Dyskinesia:

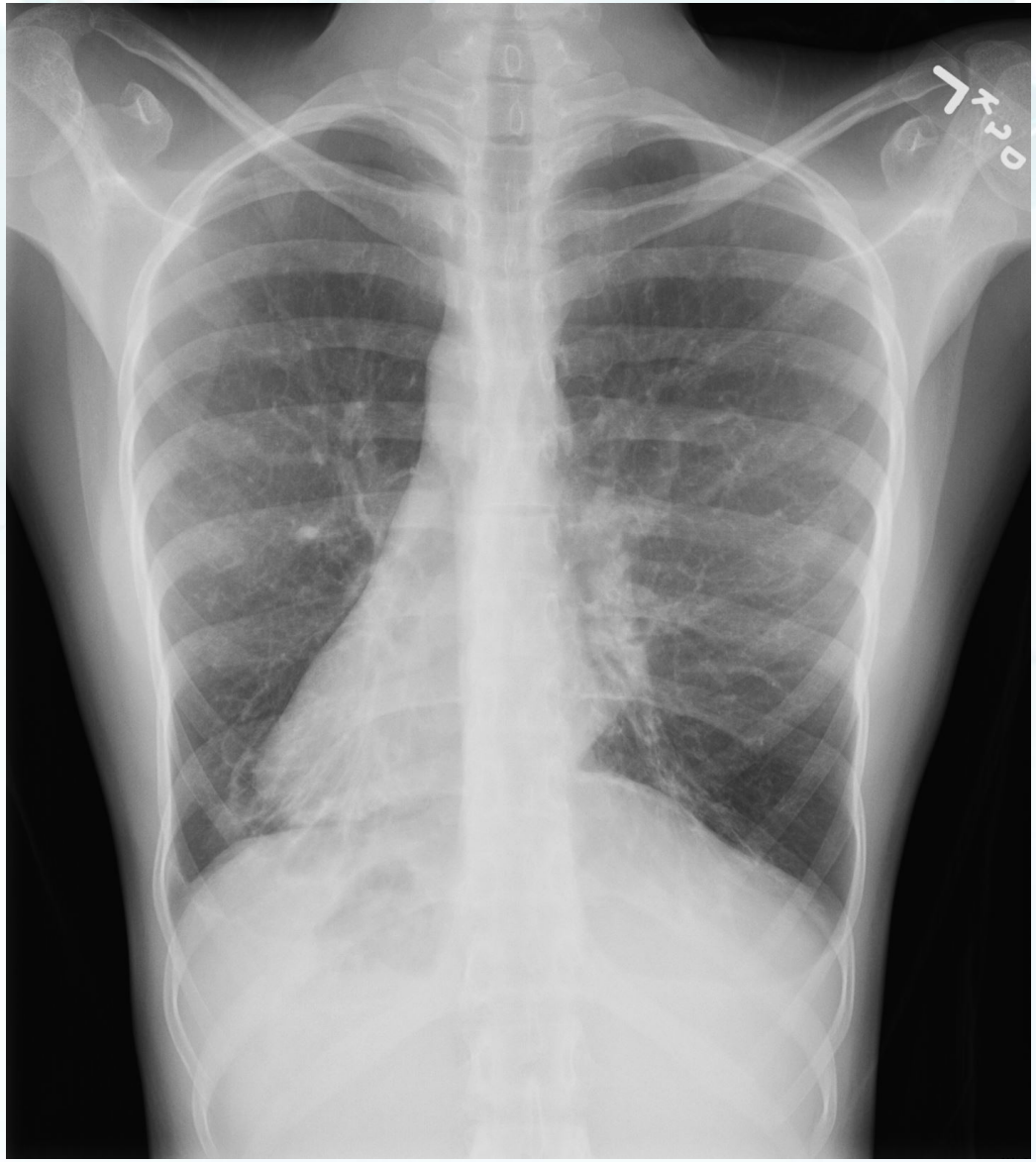
Nasal Nitric Oxide

High Speed Video Microscopy

Transmission Electron Microscopy

Immunofluorescence

Genetics for PCD

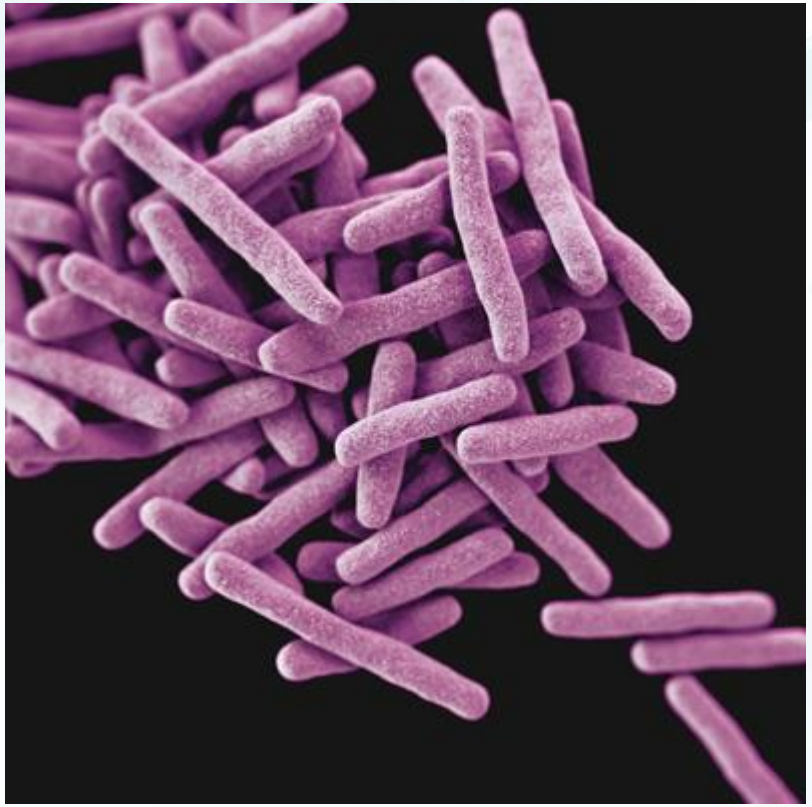


Chalmers et al. *Eur Respir J,* 2025

- *Localised bronchiectasis*
- *HRCT suggestive of NTM or obstructive bronchiectasis*

Test for NTM-related disease:

Bronchoscopy



Chalmers et al. *Eur Respir J,* 2025

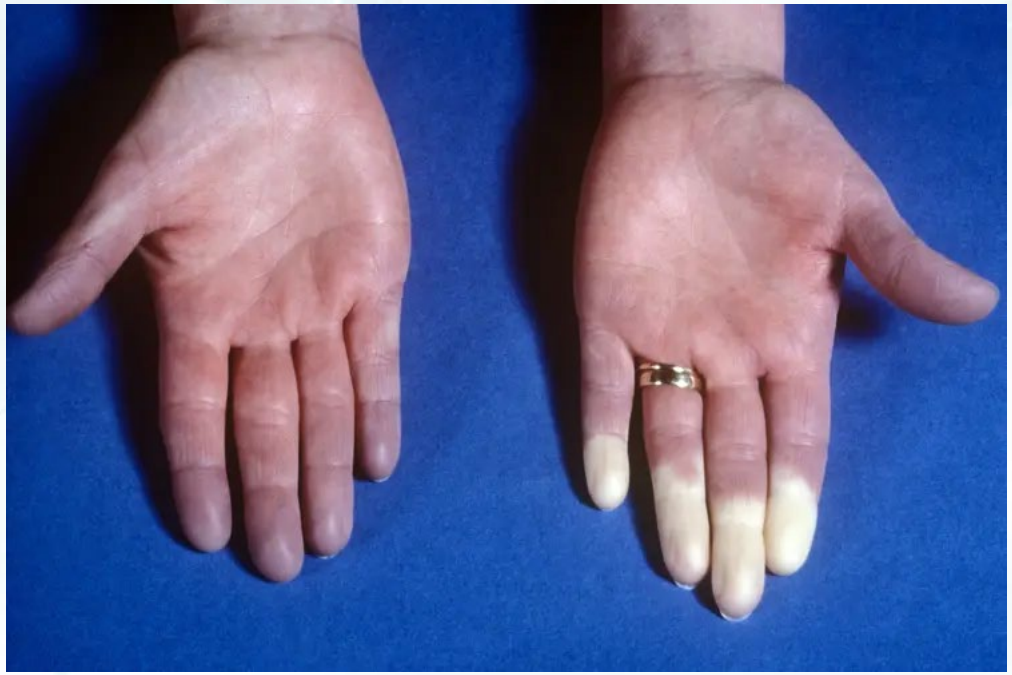
- *Systemic symptoms (e.g., joint pain, skin changes, fatigue)*
- *Co-existing autoimmune disease*
- *Hemoptysis or signs of systemic vasculitis*

↓

Test for Autoimmune Disease:

ANA, RF, ANCA, ENA, anti-CCP antibodies

Referral to Rheumatologist



***Signs of Inflammatory Bowel Disease -> Refer to GI**

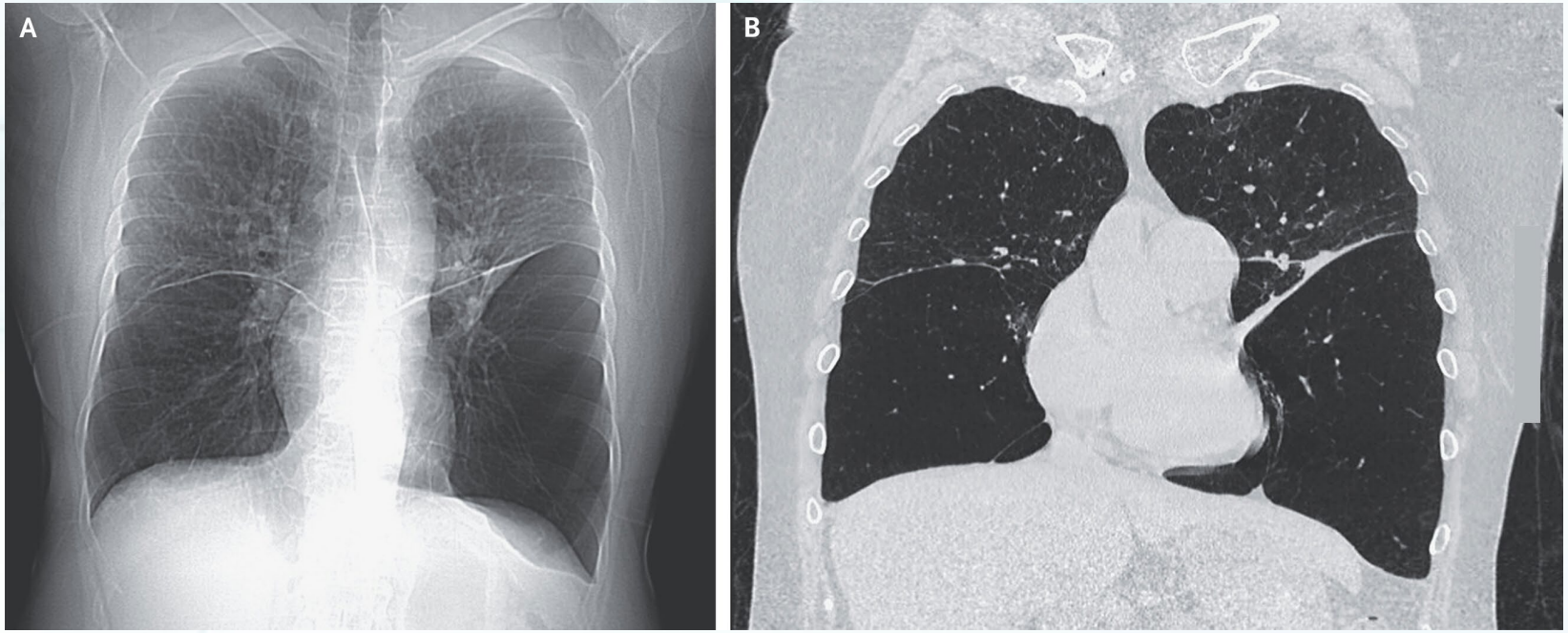
Chalmers et al. *Eur Respir J,* 2025

- *Co-existing basal-predominant emphysema*
- *Early onset COPD*
- *Liver disease or unexplained transminase elevation*
- *Familial history of COPD or liver disease at young age*

Test for Alpha-1 Anti-Trypsin Deficiency:

Alpha-1 Anti-Trypsin Level

Alpha-1 Anti-Trypsin Phenotyping/Genotyping



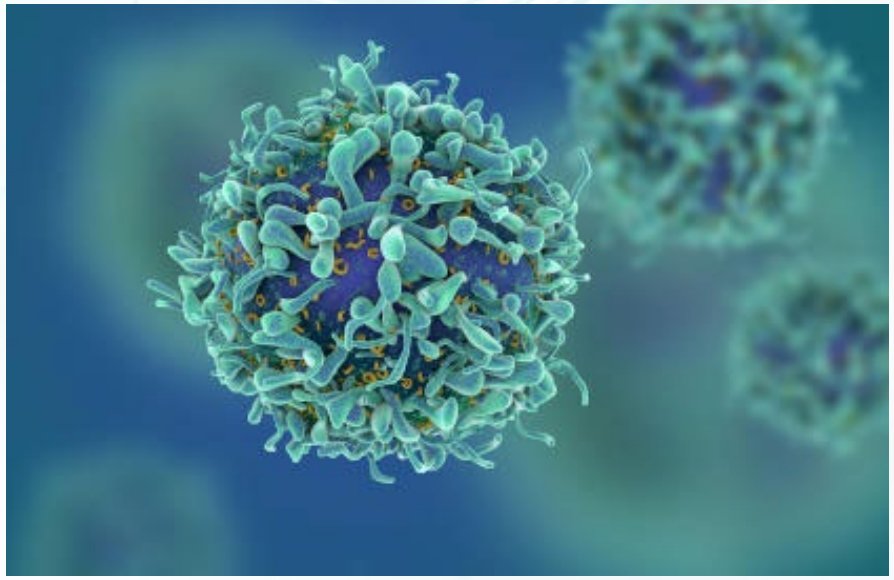
Chalmers et al. *Eur Respir J,* 2025
Hernandez, Perez, *N Engl J Med,* 2024

- *Recurrent or severe respiratory and/or extra pulmonary infections*
- *Onset in childhood or early adulthood*
- *Diffuse bilateral bronchiectasis, especially in lower lobes*
- *Use of immunosuppressive medications or haematological malignancy*

Test for Immunodeficiency:

Specific Antibody Responses to Pneumococcal or tetanus vaccines IgG subclasses

Referral to Immunologist



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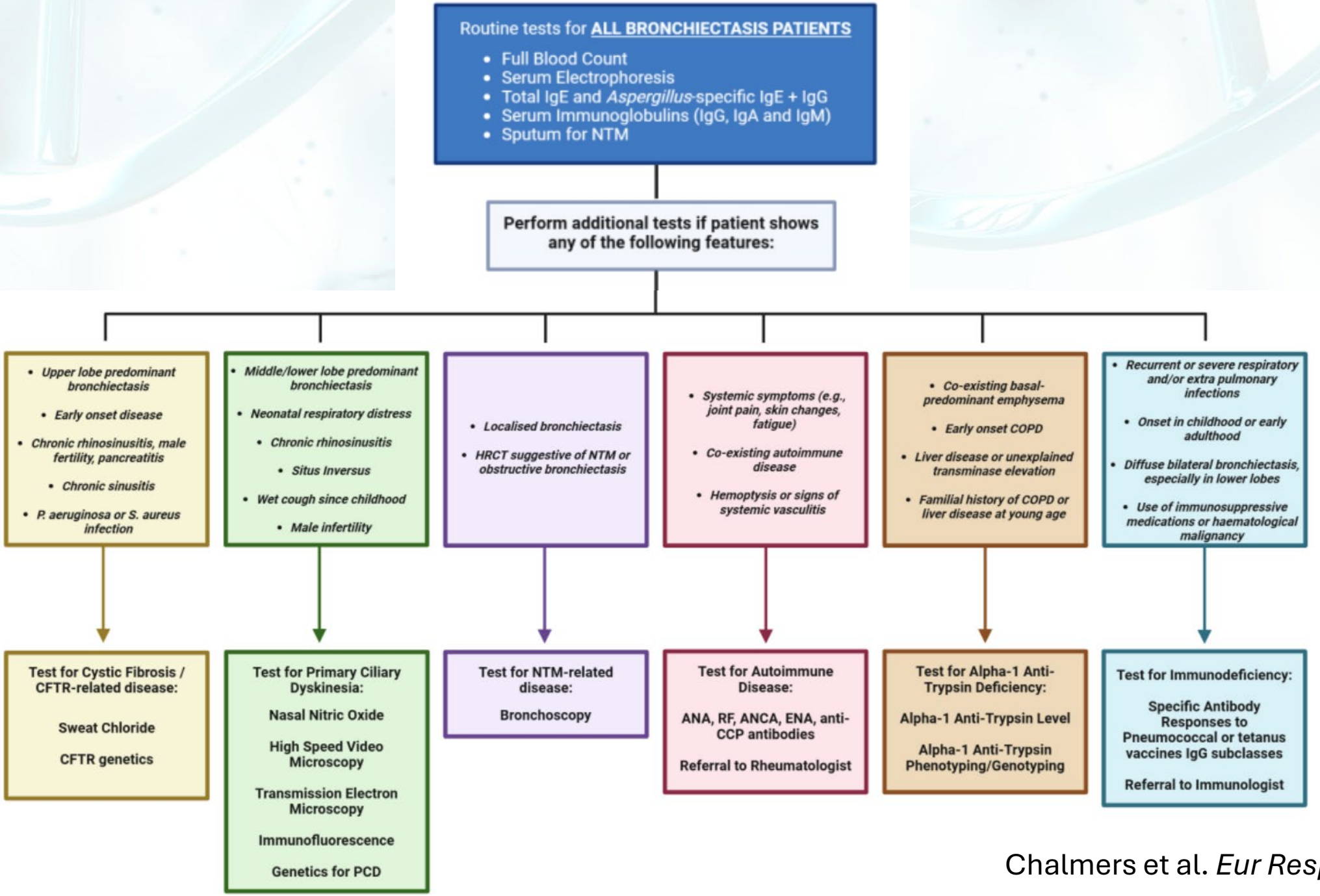


Chalmers et al. *Eur Respir J,* 2025

Table 2. Causes of Disease in the Diagnosis of Bronchiectasis.*

Cause	Associated Findings	Evaluation
Airway abnormality		
After bacterial or viral pneumonia or tuberculosis; airway obstruction by tumor or foreign body	Usually none	Patient history, prior imaging review, bronchoscopy in focal disease
Congenital tracheobronchial abnormalities		
Mounier–Kuhn, Williams–Campbell, and Ehlers–Danlos syndromes	—	CT findings
Aspiration syndrome		
Vocal cord disease or dysfunction; esophageal disease or dysmotility	Head and neck cancer, prior radiation treatment, neurologic disease, esophageal motility disorder, gastroesophageal-junction abnormality	Modified barium swallow, esophagram, pH testing, esophageal motility testing
Allergic bronchopulmonary aspergillosis	Asthma symptoms	Aspergillus-specific IgE, aspergillus skin-prick testing, IgE level
Chronic obstructive pulmonary disease or asthma	Chronic purulent sputum production	Pulmonary-function testing, CT imaging

O'Donnell, NEJM 2022

Bronchiectasis Severity Index

- Age
- BMI
- FEV1
- Prior hospitalization (2 years)
- Exacerbations in prior year
- MRC
- *Pseudomonas*? Other bugs?
- Radiographic severity

TABLE 2 The Bronchiectasis Severity Index

Severity marker	Score
Age, years	
<50	0
50–69	2
70–79	4
⩾80	6
BMI, kg·m^{-2}	
<18.5	2
18.5–25	0
26–29	0
⩾30	0
FEV_1 % pred	
>80	0
50–80	1
30–49	2
<30	3
Previous hospital admission	
No	0
Yes	5
Number of exacerbations in previous year	
0	0
1–2	0
⩾3	2
MRC breathlessness score	
1–3	0
4	2
5	3
***Pseudomonas* colonisation**	
No	0
Yes	3
Colonisation with other organisms	
No	0
Yes	1
Radiological severity: ⩾3 lobes involved or cystic bronchiectasis	
Yes	1
No	0

Bronchiectasis Severity Index

https://www.bronchiectasis severity.com/15-2/

Bronchiectasis Severity Score

14

0-4

Mild Bronchiectasis

1 year outcomes: 0 - 2.8 % mortality rate, 0 - 3.4 % hospitalisation rate

4 year outcomes: 0 - 5.3 % mortality rate, 0 - 9.2 % hospitalisation rate

5 - 8

Moderate Bronchiectasis

1 year outcomes: 0.8 - 4.8 % mortality rate, 1.0 - 7.2 % hospitalisation rate

4 year outcomes: 4 % - 11.3 % mortality rate, 9.9 - 19.4 % hospitalisation rate

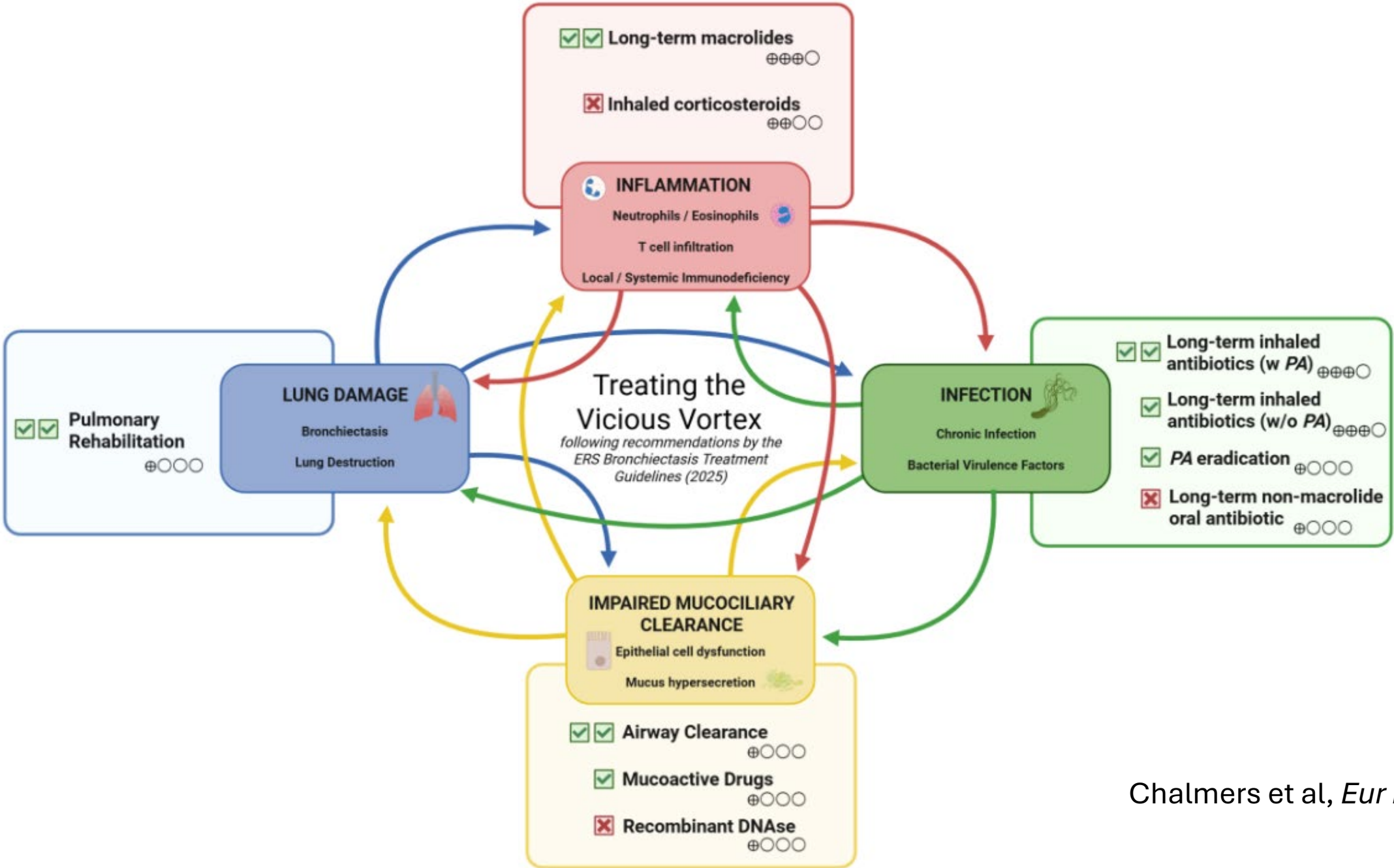
9 +

Severe Bronchiectasis

1 year outcomes: 7.6 % - 10.5 % mortality rate, 16.7 - 52.6 % hospitalisation rate

4 year outcomes: 9.9 - 29.2 % mortality, 41.2 - 80.4 % hospitalisation rate

Treatment of Bronchiectasis (+ practical tips)



Chalmers et al, *Eur Respir J,* 2025

Bronchiectasis Management

Set expectations; Bronchiectasis is irreversible scarring

Goals: Improve symptoms, prevent exacerbations, stabilize

Bronchiectasis Management

Set expectations; Bronchiectasis is irreversible scarring
Goals: Improve symptoms, prevent exacerbations, stabilize

Treating exacerbations, without delay and for long enough

-Bacterial lower respiratory tract infection in someone with bronchiectasis

= 14 days antibiotics, guided by most recent sputum culture.
Don’t delay antibiotics to collect culture (but still collect one).
Amox-clav is good empiric choice.
May have normal CXR.

Bronchiectasis Management

Set expectations; Bronchiectasis is irreversible scarring
Goals: Improve symptoms, prevent exacerbations, stabilize

Treating exacerbations, without delay and for long enough = 14 days

Monitoring for new pathogens**

Bronchiectasis Management

Set expectations; Bronchiectasis is irreversible scarring
Goals: Improve symptoms, prevent exacerbations, slow decline in lung function
Treating exacerbations, without delay and for long enough = 14 days

Monitoring for new pathogens**

Investigate for Treatable traits

Bronchiectasis Management

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Optimize comorbidities (asthma, COPD, sinuses, GERD, immunodeficiency, CTD)

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Oxygen, Vaccines; Nutrition; Pulmonary Rehab, Smoking cessation

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Consider Respirology Referral

Philosophy of airway clearance

"better out than in" - avoid cough suppressants

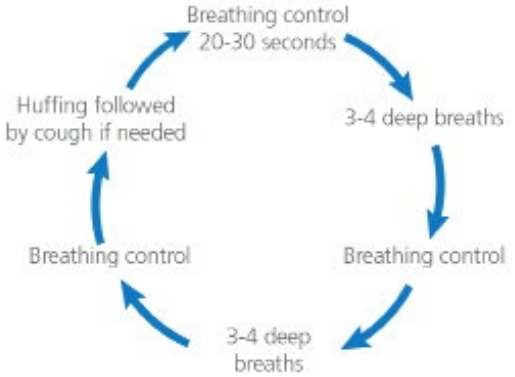
Bacteria/pus out of lungs and into the garbage

Use pictures & diagrams**

Allied health involvement.

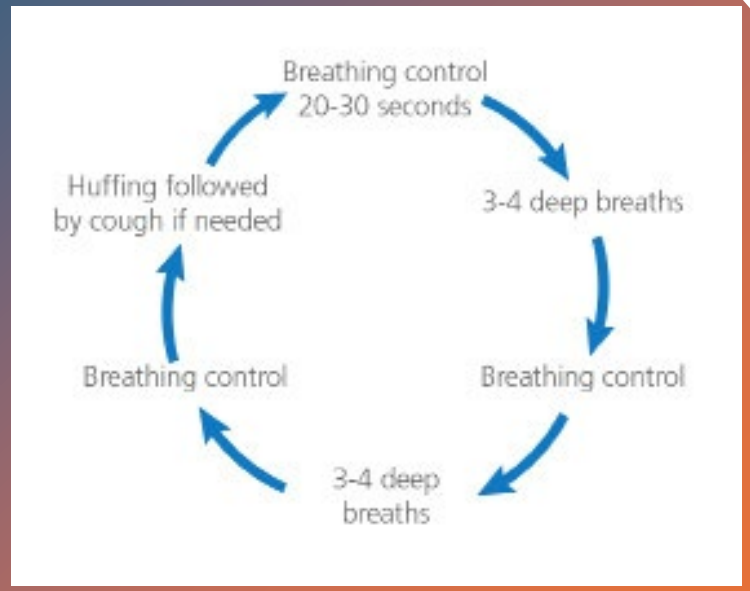
Chest Physiotherapy → Many different techniques:

- Percussion/postural drainage
- PEP mask/flutter/Acapella/Aerobika
- Vest
- **Active cycle of breathing**
- Autogenic drainage



The best physio is that done consistently and properly.
**Make sure they sterilize their device per instructions!

Initiate physio prior to other therapies – backbone of treatment.



Airway Clearance Techniques "Chest Physio"

- Necessary, even if "dry lungs" at baseline
- Keep it simple
  - Active Cycle of Breathing
  - Aerobika ® + huffing
- Do it properly, consistently
- Involve your allied health colleagues
- Consider pulmonary rehab
- Hydrate!
- Pre-treatment with SABA

Mucolytic Therapy

- Nebulized Hypertonic Saline (7% > 3% as tolerated)
- Adjunct to chest physiotherapy

- ~~Dornase alfa~~

Goal: Improve symptoms

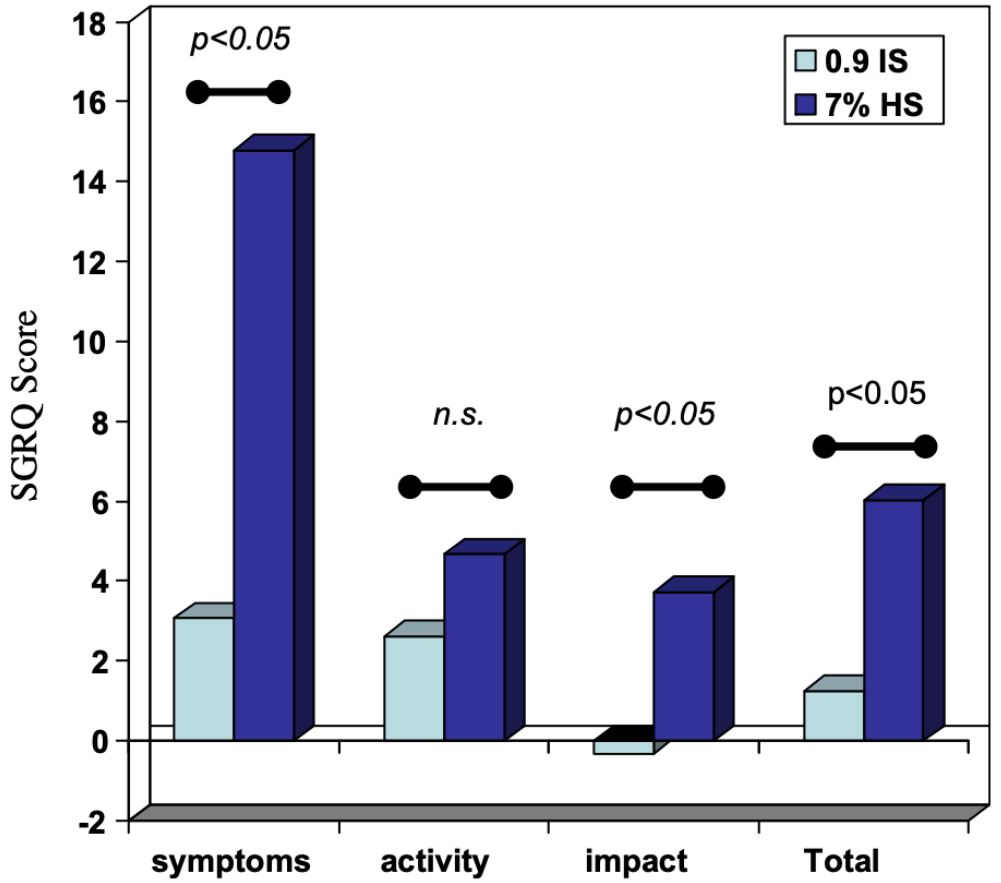


Figure 2 Changes in St Georges Respiratory Quality of Life Questionnaire for active and placebo phases.

Kellett et al, *Respir Med,* 2011

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 OCTOBER 23, 2025 VOL. 393 NO. 16

Hypertonic Saline or Carbocisteine in Bronchiectasis

J.M. Bradley,[1] B. O'Neill,[2] D.F. McAuley,[1] J.D. Chalmers,[3] A. De Soyza,[4] A.T. Hill,[5,6] M. Carroll,[7] M.R. Loebinger,[8,9] J. Duckers,[10] M. Clarke,[11,12] R.H. McLeese,[13] K. Ferguson,[14,15] A. Jackson,[12] C. Campbell,[12] C. McDowell,[12] A. Agus,[12] J. Norrie,[11] F. Copeland,[16] D.G. Downey,[1,15] R. Convery,[17] M. Kelly,[14] W. Flight,[18] N.P. Talbot,[18] J.R. Hurst,[19] J. Steer,[20] M. Anwar,[21] M. Shahidi,[22] T. Gatheral,[23] M. Etumi,[24] A.L. Sullivan,[25] A.A. Ionescu,[26] V. Patil,[27] M. Bhattacharya,[28] S. Caskey,[15] D. Cosgrove,[17] C. Hagan,[17] A. Shoemark,[3] T. McManus,[13] G. Davies,[4] and J.S. Elborn,[1] for the CLEAR Investigator Team*

"Participants without a regular airway-clearance regimen at baseline were taught active cycle of breathing techniques using standardized material."

Table 2. Outcomes in the Modified Intention-to-Treat Population.*

Outcome	HTS (N=126)	No HTS (N=141)	Mean Difference or Hazard Ratio, HTS vs. No HTS (95% CI)	Carbocisteine (N=129)	No Carbocisteine (N=138)	Mean Difference or Hazard Ratio, Carbocisteine vs. No Carbocisteine (95% CI)
	mean (95% CI)			*mean (95% CI)*		
Primary outcome: no. of pulmonary exacerbations over 52 wk†	0.76 (0.58 to 0.95)	0.98 (0.78 to 1.19)	−0.25 (−0.57 to 0.07)	0.86 (0.66 to 1.06)	0.90 (0.70 to 1.09)	−0.04 (−0.36 to 0.28)

- Secondary Outcomes – No change: HRQoL, days to of antibiotics, lung function, days to next exacerbation

- Medical supply stores, pharmacy
- Pre-treatment with salbutamol/ipratropium
- *Equipment needs to be cleaned/sterilized properly

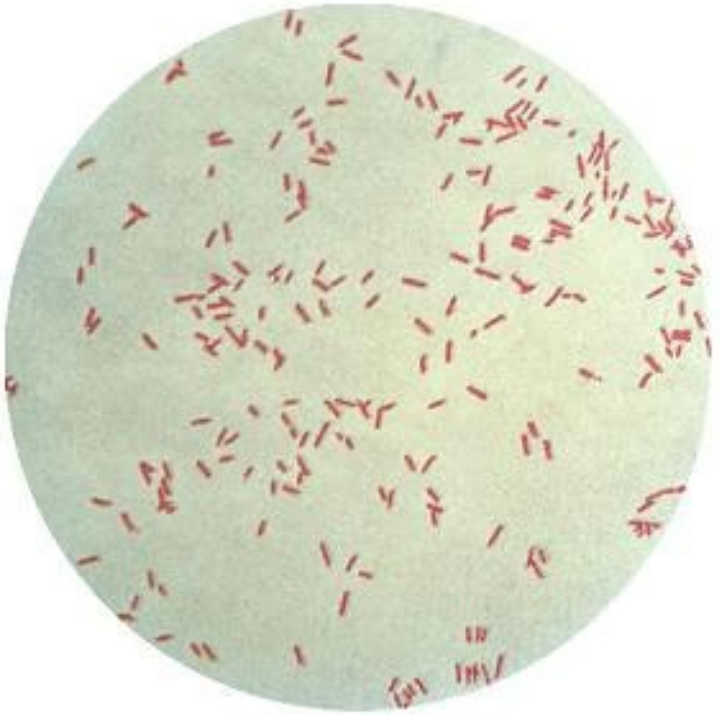
Inhaled Antibiotics

Eradication of *P. aeruginosa*

Long-Term suppressive therapy

Pseudomonas aeruginosa

- Associated with:
  - Higher mortality
    More hospitalizations
    Increased exacerbations
    Worse QOL
    Lower FEV1



Chronic infection: >1 culture, >3 months apart

Value in → Attempting to eradicate NEW isolate
→ Chronic suppressive therapy for CHRONIC infections

Eradication of *P. aeruginosa*

2 weeks IV antibiotics vs 2 weeks Ciprofloxacin PO

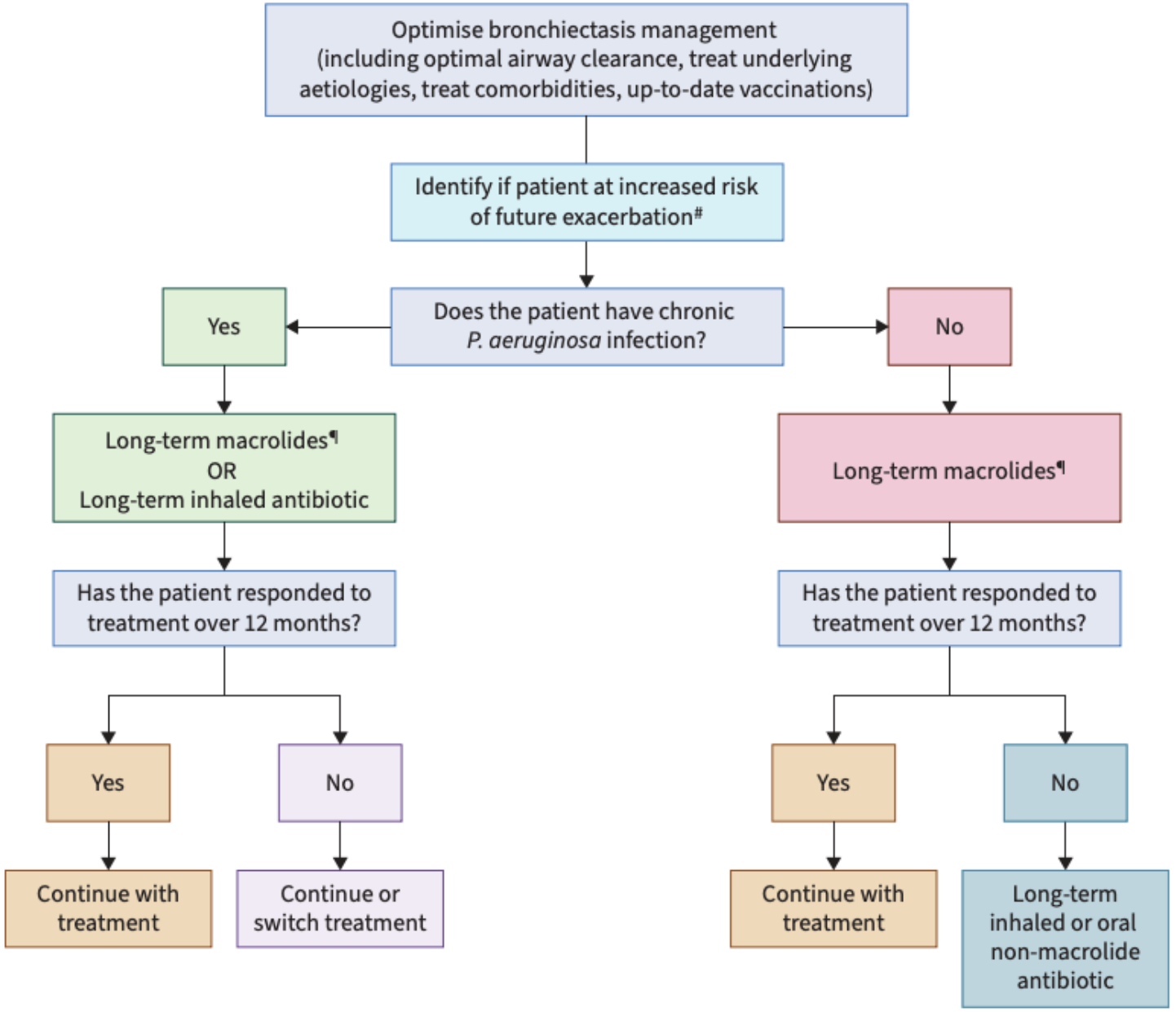
Cipro for *Pseudomonas* :
750 mg BID

With 3 months of nebulized Antibiotic (typically tobramycin)

Follow sputum cultures

- During treatment, esp. during last week of 3rd month
- If eradicated: q1 month x 2-3 after

Chronic Antibiotics for Chronic Infection



High Risk of Exacerbations:

A) ≥2 per year

B) 1 per year + severe symptoms

C) ≥1 per year hospitalized

*Consider test dose

Chalmers et al, *Eur Respir J,* 2025

PROMIS-I

	PROMIS-I		
	Colistimethate sodium (n=176)	Placebo (n=197)	p value
Primary efficacy endpoint			
Annual exacerbation rate, least squares mean, negative binomial mode	0·580	0·948	..
Annual rate ratio, least squares mean	..	0·612 (95% CI 0·457 to 0·820)	p=0·0010
Secondary efficacy endpoints, in order of protocol specified hierarchical testing			
Median time to first exacerbation, days	NR (95% CI 266·0 to NR)	208·0 (152·0 to 261·0)	..
Kaplan Meier, 25–75% percentile	122·0 to NR	67·0 to NR	..
Comparison of survival curves	..	..	p=0·00074
Hazard ratio for time to first exacerbation, Cox model	..	0·590 (95% CI 0·432 to 0·806)	..
Change from baseline to 12 months or end of treatment in St George's Respiratory Questionnaire total score for quality of life between treatment groups, number of patients with data available	124	144	..
Change from baseline to 12 months or end of treatment in St George's Respiratory Questionnaire total score for quality of life between treatment groups, least squares mean, linear mixed model	..	−4·552 (95% CI −7·755 to −1·349)	p=0·0055

- 377 patients, 12 countries, 12 months
- Chronic *P. aeruginosa*
- High risk of exacerbations

Haworth et al, *Lancet Respir Med*, 2024

Tobramycin injectable	80 mg BID	•Approx**. $400-1100/month** (excluding cost of saline, syringes, needles, etc.) •**Is a PharmaCare benefit**	•Requires reconstitution, sterile technique •Contains preservative that can cause airway irritation in some individuals •15-30 min to nebulize
Aztreonam (Cayston®)	75 mg TID	•Approx**. $4000/month** •**NOT a PharmaCare benefit** - --> requires Special Authority. •**Patient Support Program**	•Device is compact and portable •Only takes ~5 min to nebulize •Midday dose can be difficult to fit in for many individuals
Colistin / colistimethate	150 mg BID	•Approx**. $2500-3000/month** •**Is a PharmaCare benefit**	•Requires reconstitution, sterile technique •May cause more airway irritation •15-30 min to nebulize

**Prices may be historic/inaccurate

Credit: R. Dagenais Clinical Pharmacy Specialist

Inhaled Tobramycin

Prescription:

Tobramycin 80 mg (40 mg/mL IV formulation, preservative-free) nebulized BID

28 days on/28 days off VS continuous

Mix with Salbutamol 2.5mg (2.5 mg/2.5 mL nebule) OR Saline
- reduce bronchospasm and increased volume for nebulizer cup

“Please provide 18G needles and 3 mL syringes for administration”

Consider if renal or ototoxic monitoring required.
Monitor: tinnitus, balance changes, hearing loss, hemoptysis, bronchospasm
Caution: aminoglycoside resistance in NTM disease

***TOBI ® 300 mg liquid, TOBI ® podhaler – **High dose** - requires special authority - usually used in CF

Order of Therapies

Salbutamol (or Ipratropium)

Mucoactive therapies

Airway Clearance Cycles x ~15 mins

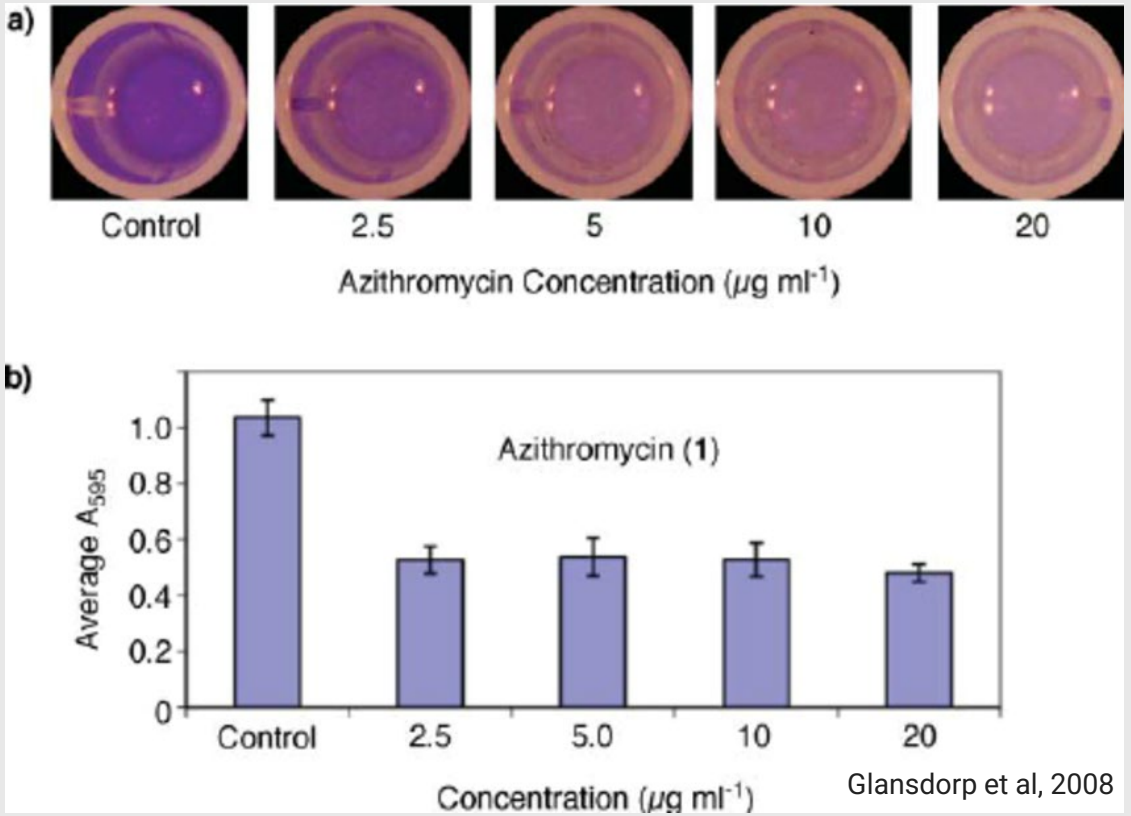
Maintenance Inhalers

Inhaled Antibiotics

HYDRATE

Chronic Azithromycin

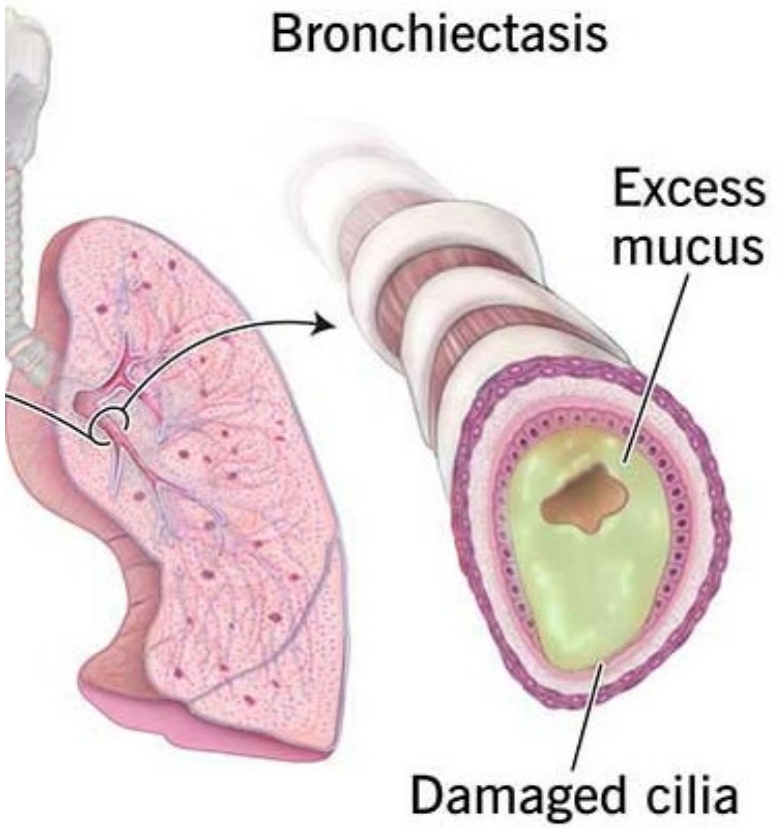
- 500 mg 3x/week or 250 mg OD
- Trials: 6-12 months, typically continue indefinitely as long as tolerated, no NTM
- Significant reductions in exacerbations
  (3 separate systematic review/meta-analysis based on 3 large RCTs)
- Reduced sputum volume, improved SGRQ
- **Rule out Non Tuberculous Mycobacterium first!**

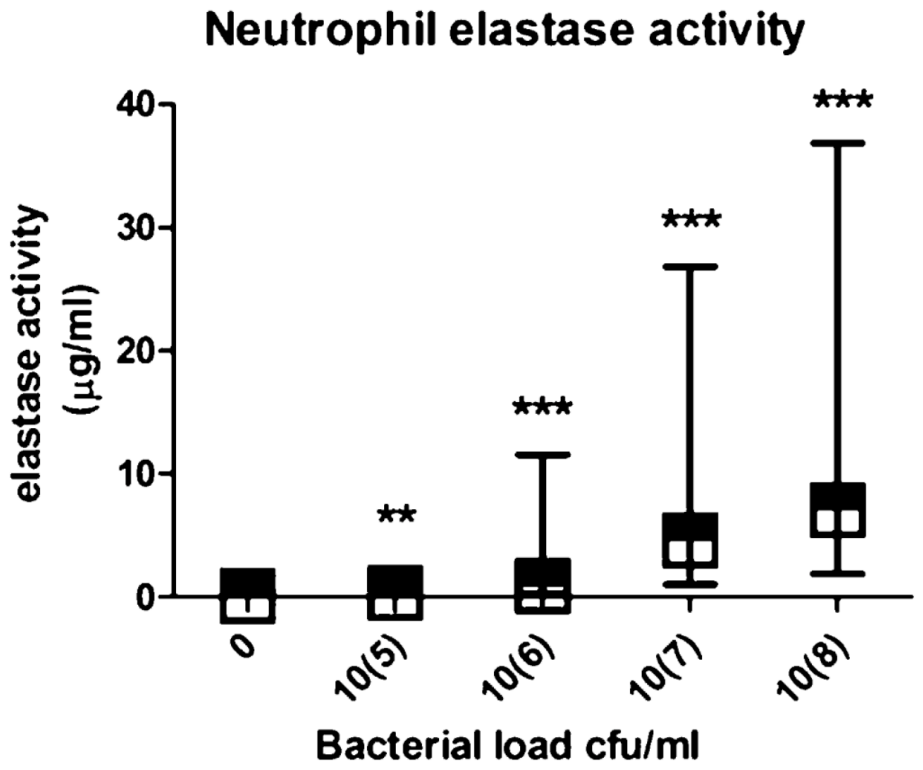


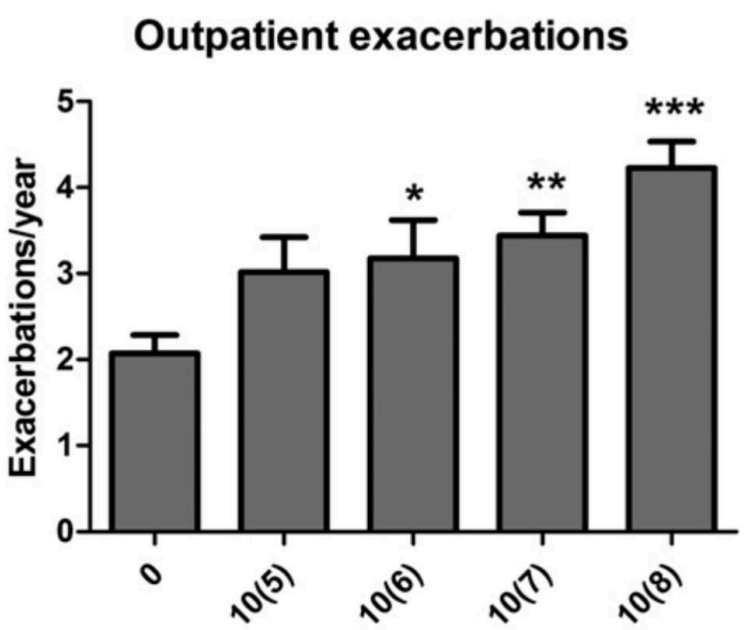
Glansdorp et al, 2008

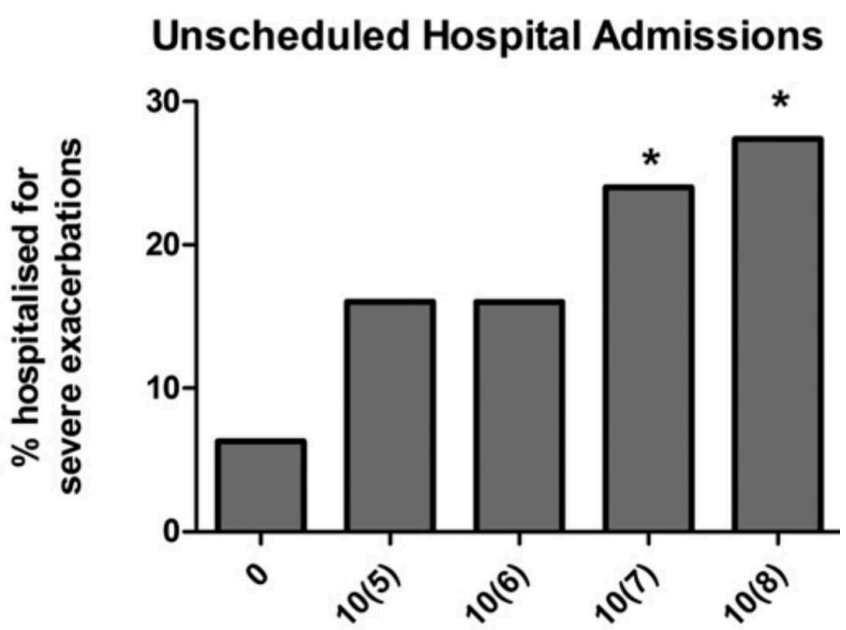
The Proof in the Pudding

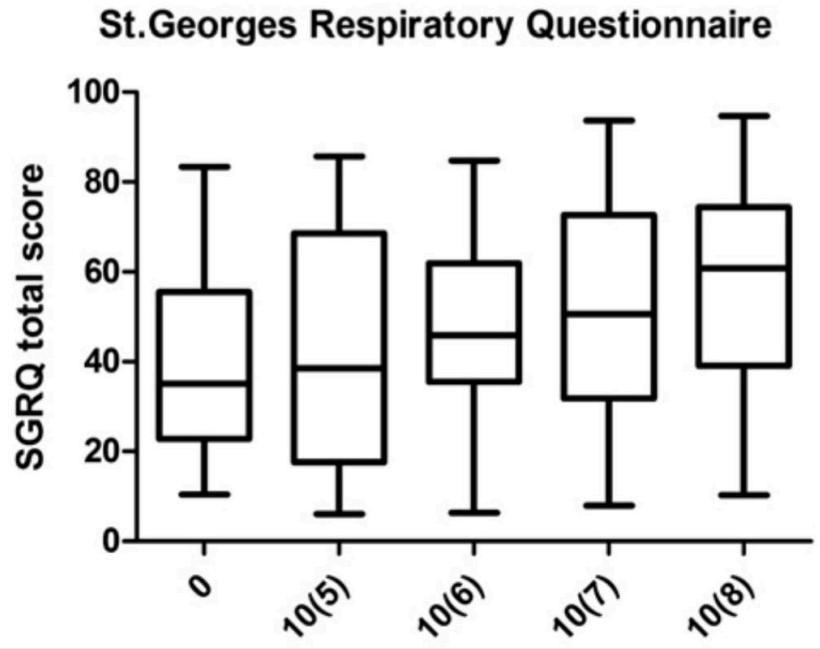
Chalmers et al, *Am J Respir Crit Care Med*, 2012









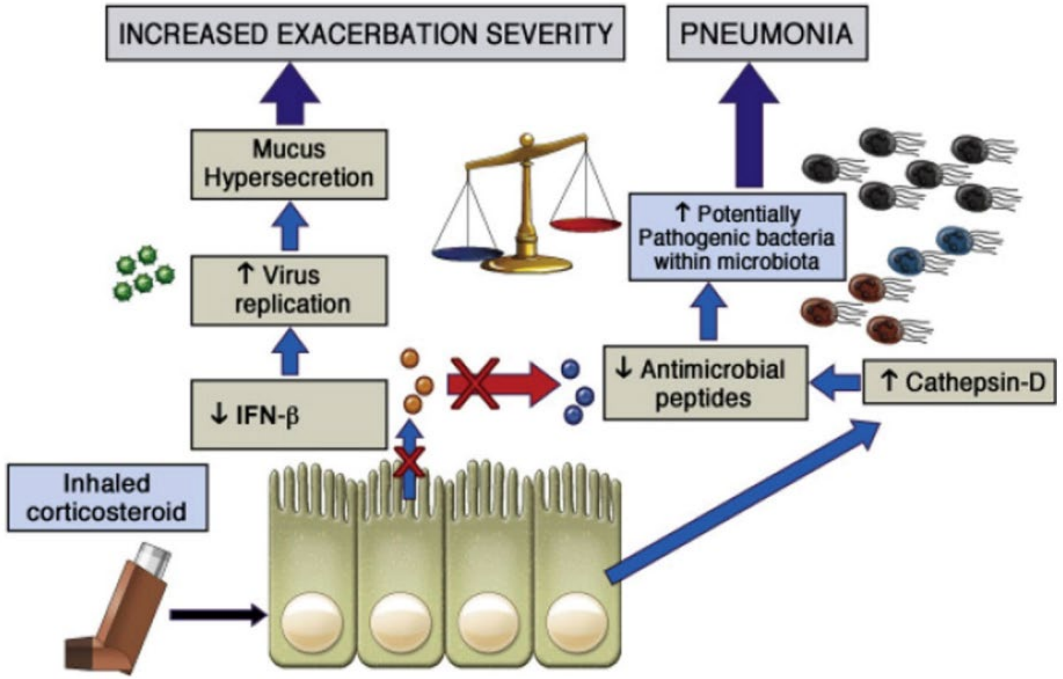


*p < 0.05, **p < 0.01, ***p < 0.0001

Chalmers et al, *Am J Respir Crit Care Med,* 2012

Inhaled Corticosteroids

- Bronchiectasis = neutrophilic inflammation
- ICS:
  - Inhibits neutrophil apoptosis
  - Local immunosuppression



Martínez-García MÁ et al. *Drugs*., 2022

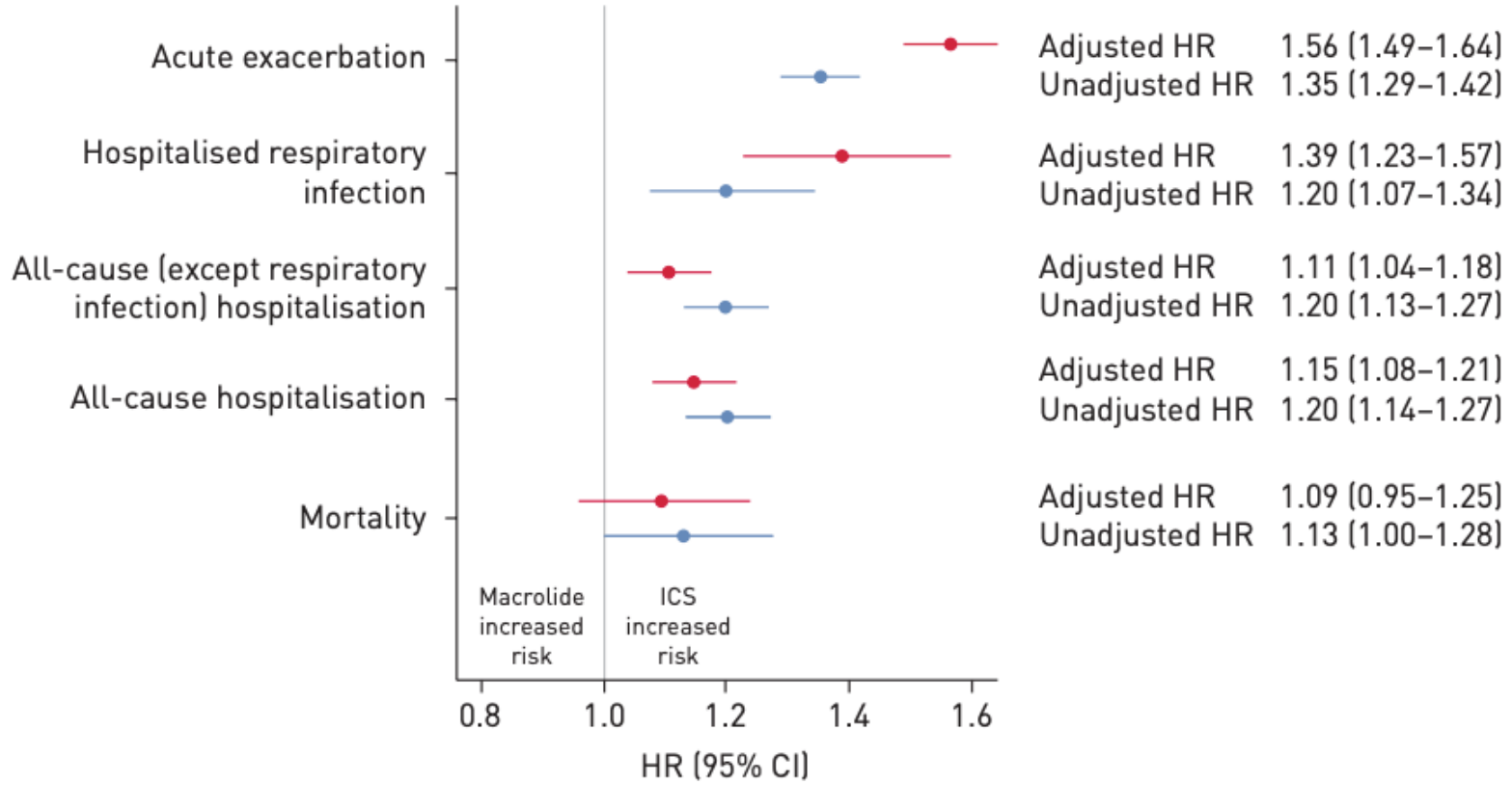
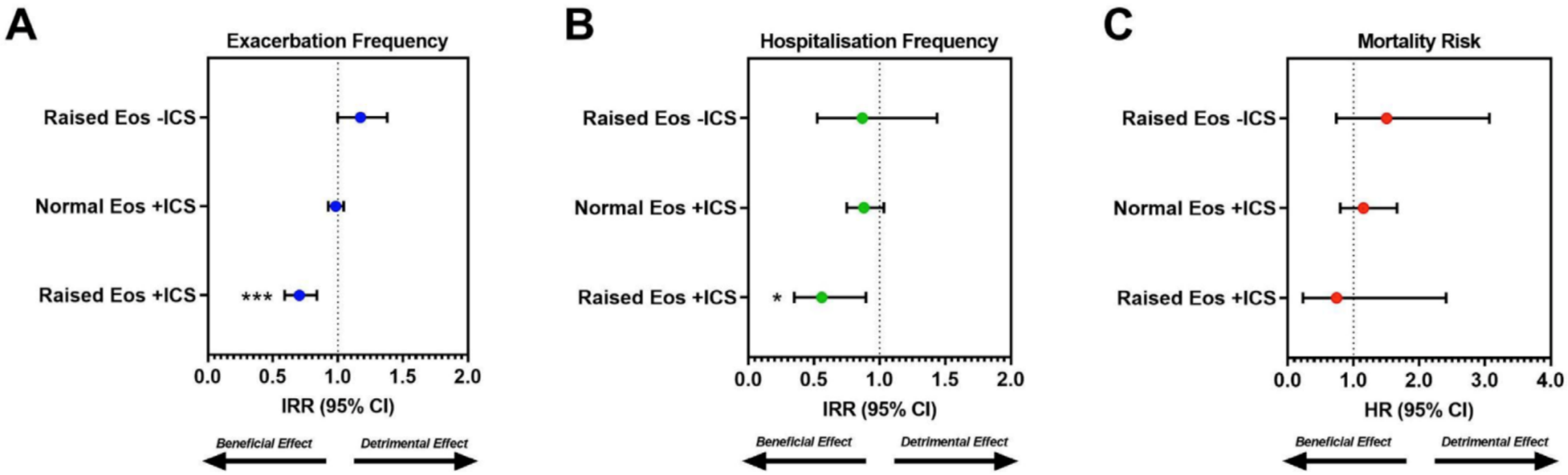


FIGURE 2 Forest plot of unadjusted (blue) and adjusted (red) hazard ratios (95% CIs) of key outcomes comparing new use of inhaled corticosteroid (ICS) therapy to macrolide monotherapy for bronchiectasis. Adjusted hazard ratios included propensity score decile, oral corticosteroid dose category and nontuberculous mycobacteria history.

- 285 043 Medicare enrollees with bronchiectasis

- 83 589 new ICS Rx
- 6 500 new macrolide Rx

Henkle et al. *Eur Respir J.*, 2018



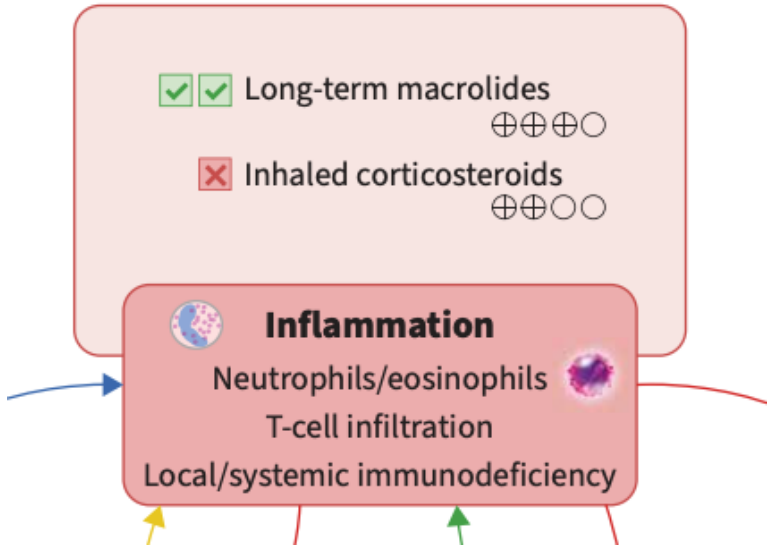
Could some people benefit?

Pollock J et al. *Thorax*, 2024

Inhaled Corticosteroids - Bottom Line

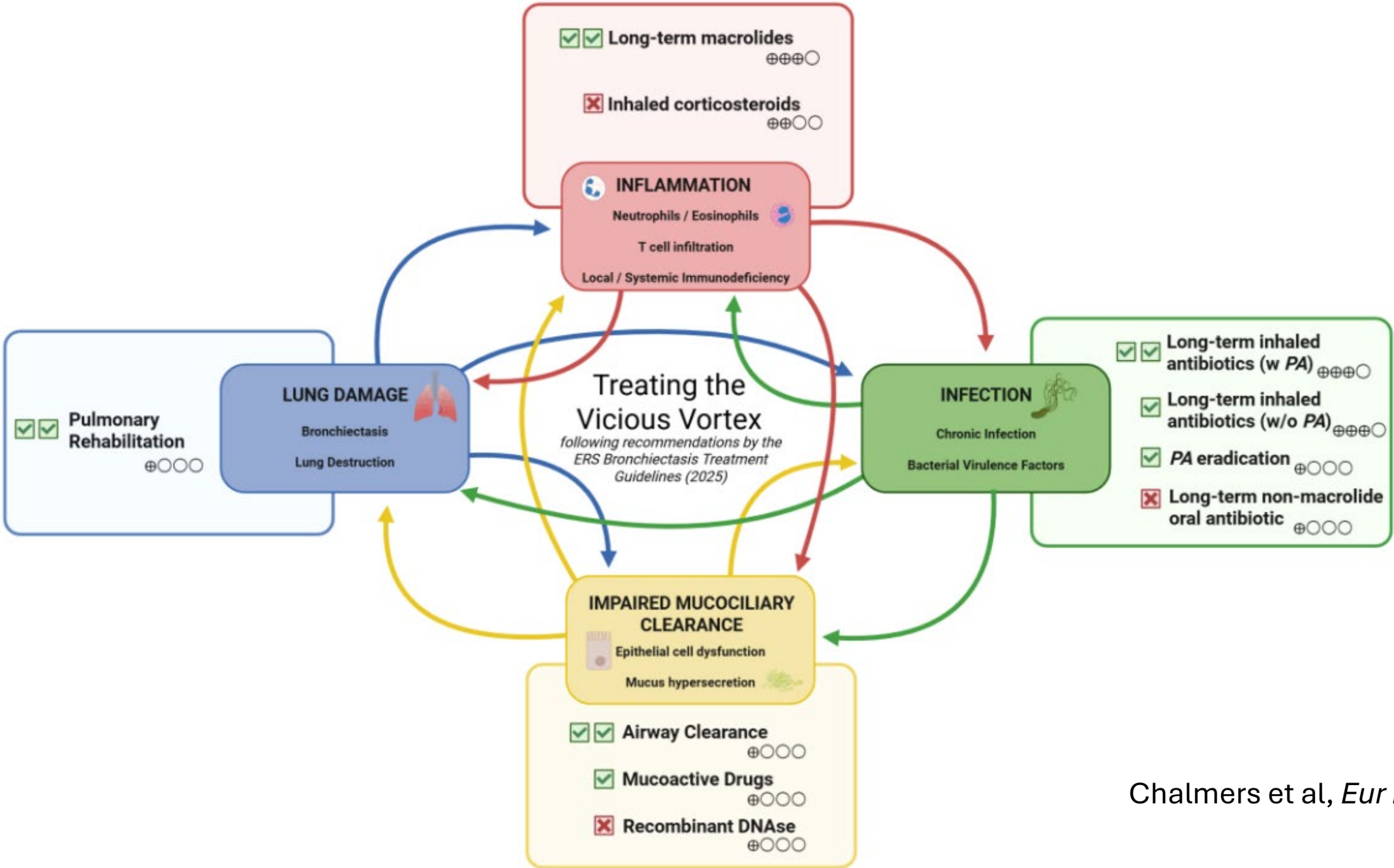
- Necessary for treatment of asthma, ABPA, +/-COPD
- Otherwise potentially harmful
  → consider deprescribing

- **Mucus clearance between pre and post spiro readings can look like “bronchodilator response”



- No role for oral corticosteroids in bronchiectasis exacerbation unless comorbid asthma exacerbation.

Chalmers et al. *Eur Respir J,* 2025



Chalmers et al, *Eur Respir J,* 2025

Pulmonary Rehabilitation

- Improved exercise capacity
- Reduction in exacerbation rate
- Not sustained long term without maintenance program

Table 3 Number of exacerbations over 12 months (n = 55)

	Control n = 25	Exercise n = 30	p value
Exacerbations	2 (1 – 3)	1 (0 – 2)	0.012
Exacerbations requiring antibiotics	2 (0 – 4)	1 (0 – 2)	0.061
Exacerbation days	10 (2 – 13)	7 (3 – 11)	0.23
Exacerbation days with antibiotics	11 (2 – 15)	7 (2 – 13)	0.36

Data are median (IQR), p value represents difference between groups.

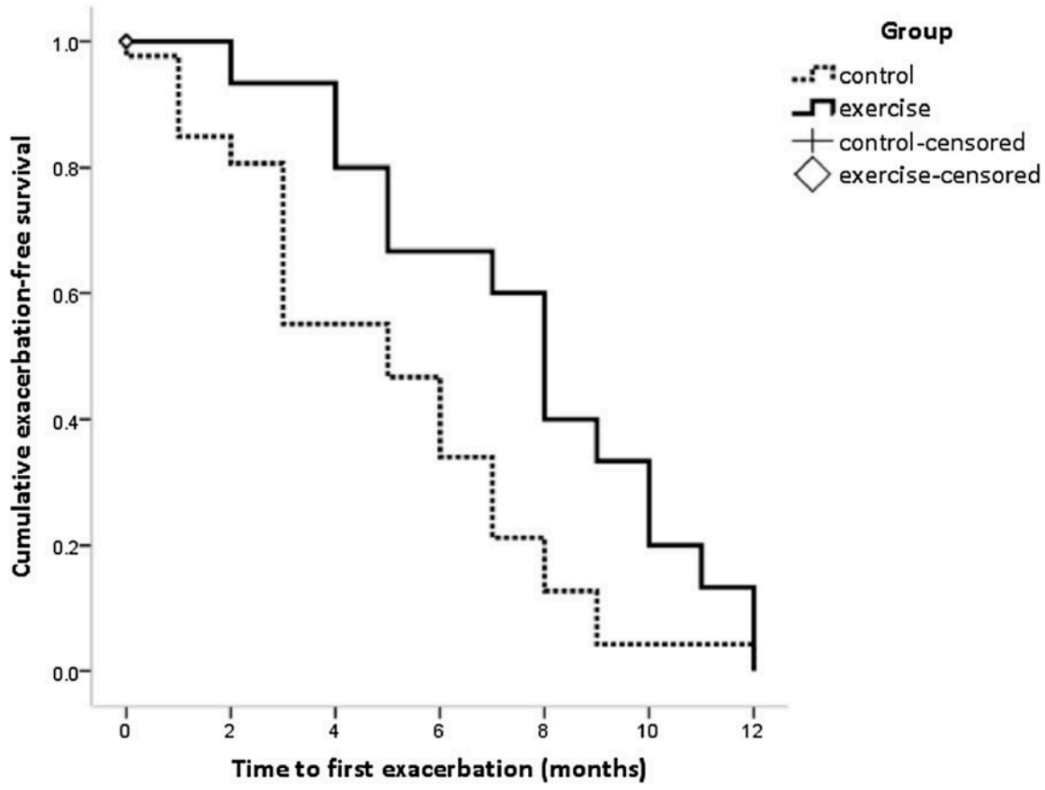
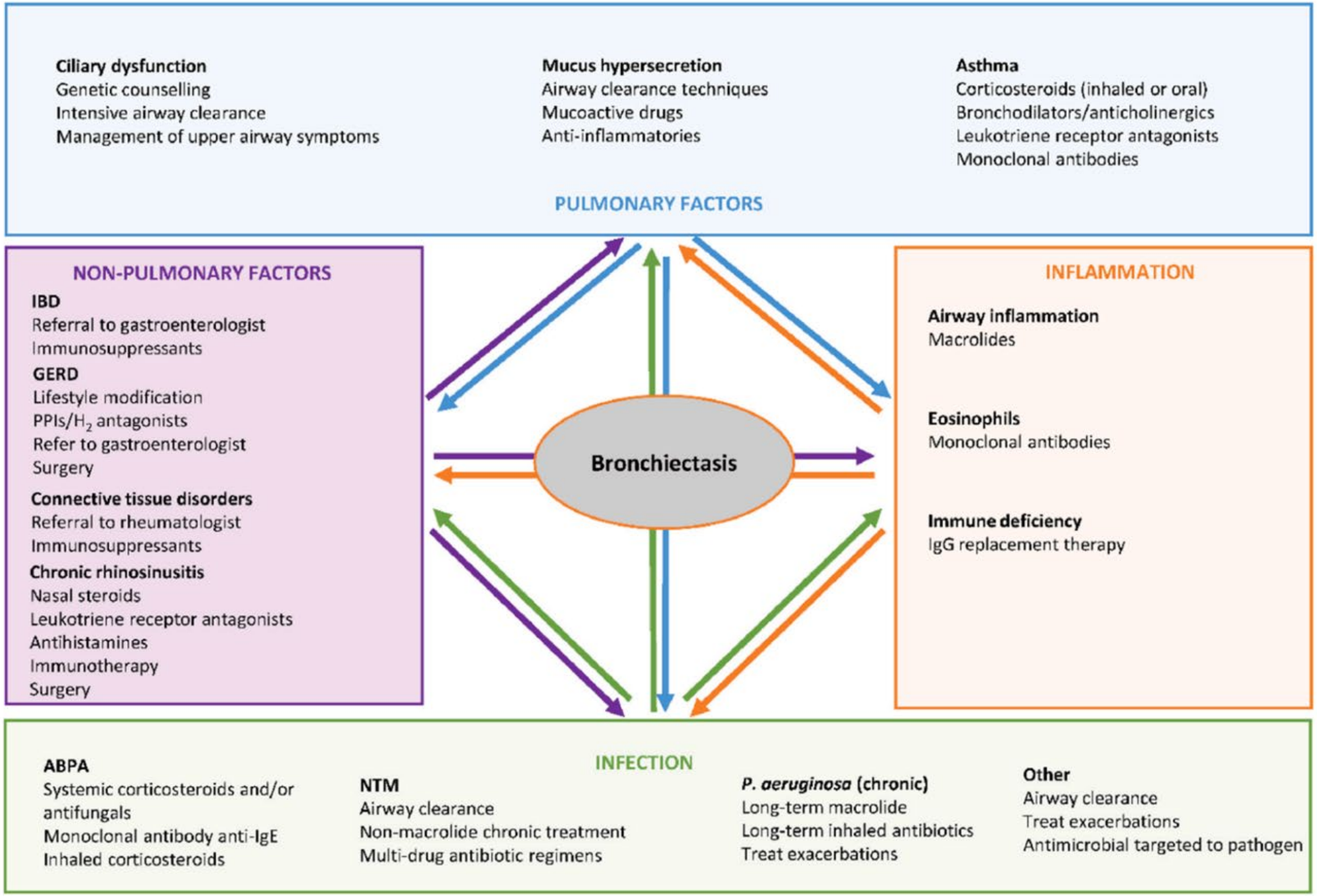
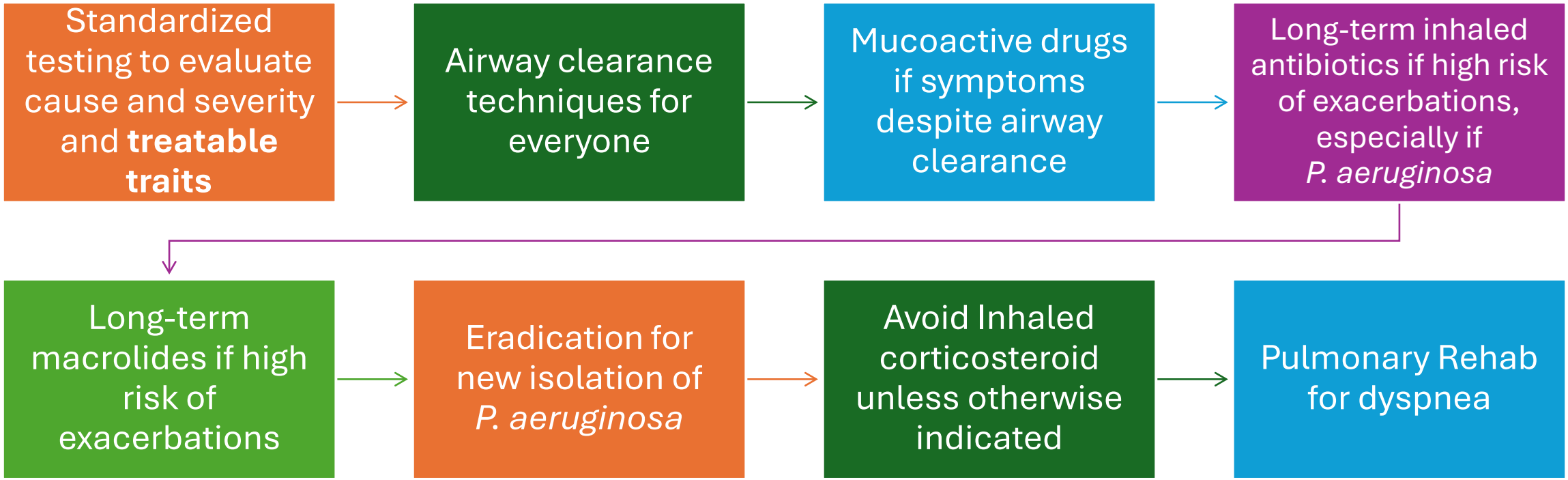


Figure 4 Time to first exacerbation, p = 0.047.

Lee et al. *Respir Res*, 2014


Ciliary dysfunction
Genetic counselling
Intensive airway clearance
Management of upper airway symptoms
Mucus hypersecretion
Airway clearance techniques
Mucoactive drugs
Anti-inflammatories
Asthma
Corticosteroids (inhaled or oral)
Bronchodilators/anticholinergics
Leukotriene receptor antagonists
Monoclonal antibodies
PULMONARY FACTORS
NON-PULMONARY FACTORS
IBD
Referral to gastroenterologist
Immunosuppressants
GERD
Lifestyle modification
PPIs/H2 antagonists
Refer to gastroenterologist
Surgery
Connective tissue disorders
Referral to rheumatologist
Immunosuppressants
Chronic rhinosinusitis
Nasal steroids
Leukotriene receptor antagonists
Antihistamines
Immunotherapy
Surgery
Bronchiectasis
INFLAMMATION
Airway inflammation
Macrolides
Eosinophils
Monoclonal antibodies
Immune deficiency
IgG replacement therapy
INFECTION
ABPA
Systemic corticosteroids and/or antifungals
Monoclonal antibody anti-IgE
Inhaled corticosteroids
NTM
Airway clearance
Non-macrolide chronic treatment
Multi-drug antibiotic regimens
P. aeruginosa (chronic)
Long-term macrolide
Long-term inhaled antibiotics
Treat exacerbations
Other
Airway clearance
Treat exacerbations
Antimicrobial targeted to pathogen

2025 ERS Bronchiectasis Guidelines

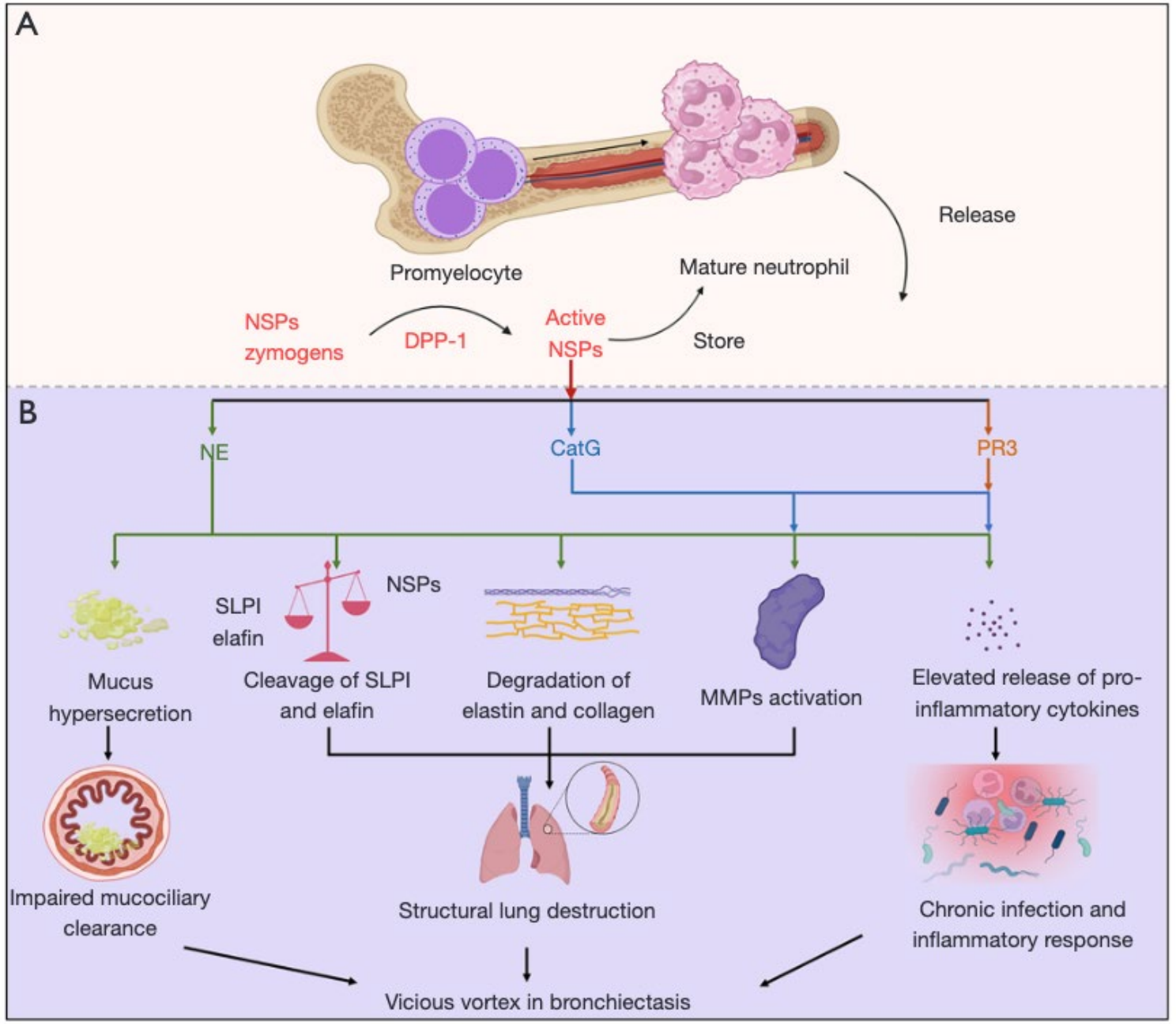


Chalmers et al. *Eur Respir J,* 2025

Novel Therapeutics

Brensocatib

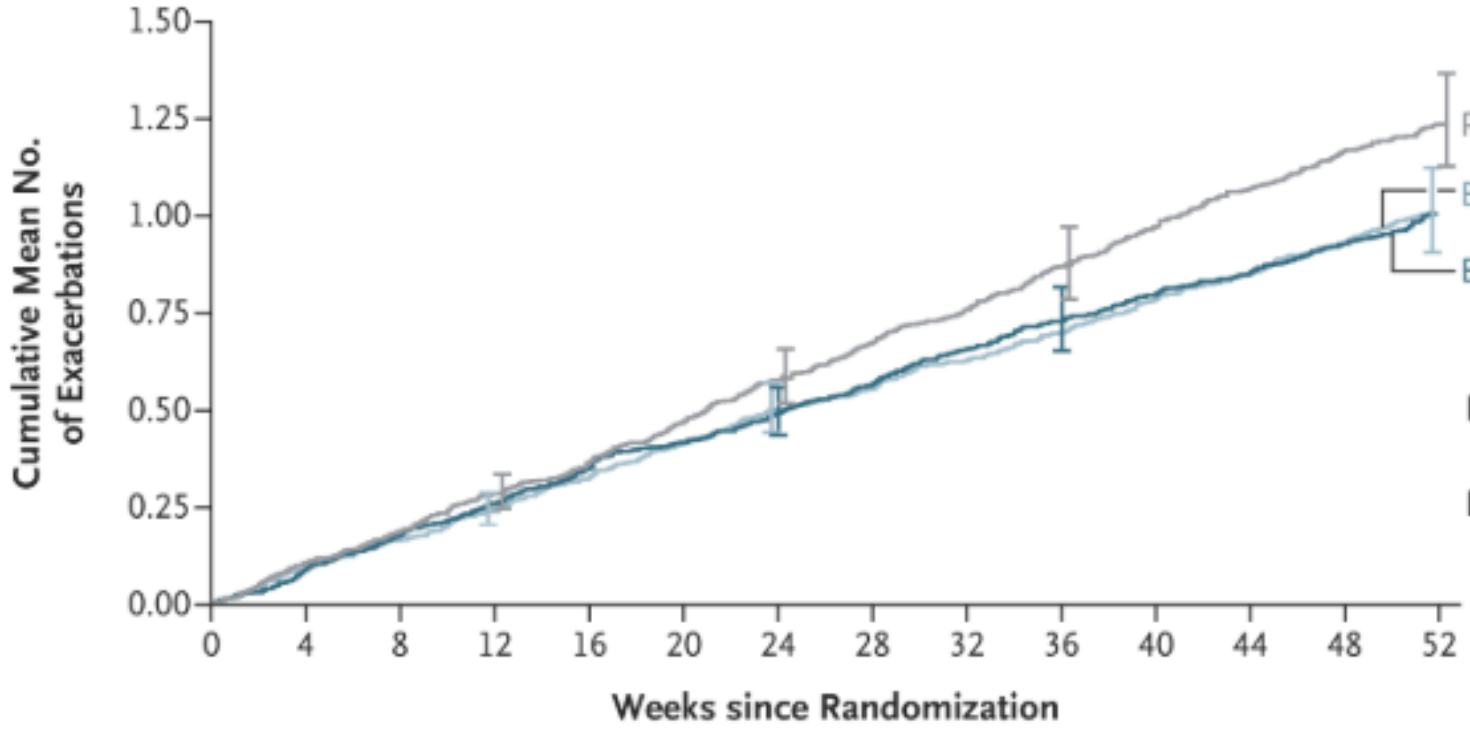
- First mechanism-specific treatment for non-CF bronchiectasis
- Dipeptidyl peptidase-1 (DPP-1) inhibitor
- Neutrophil Serine Proteases



Tang et al. *J Thorac Dis*, 2025

ASPEN

A Exacerbations over the 52-Wk Treatment Period



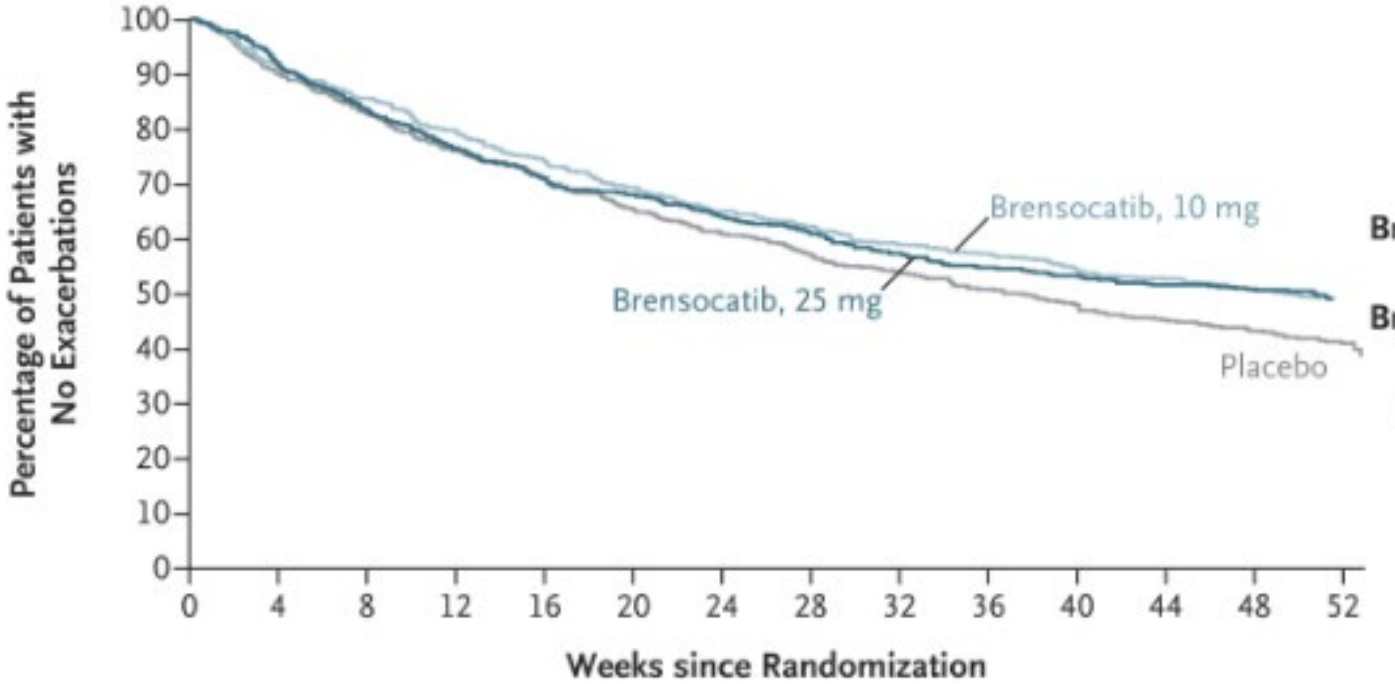
	Rate Ratio vs. Placebo (95% CI)	Adjusted P Value
Brensocatib, 10 mg (N=583)	0.79 (0.68 to 0.92)	0.004
Brensocatib, 25 mg (N=575)	0.81 (0.69 to 0.94)	0.005
Placebo (N=563)	—	—

No. at Risk

Brensocatib, 10 mg	583	582	582	576	570	565	564	555	546	540	533	529	522	516
Brensocatib, 25 mg	575	572	568	566	563	552	550	543	540	537	528	523	520	515
Placebo	563	562	556	551	547	544	539	534	529	522	519	509	507	499

Chalmers et al. *N Engl J Med*, 2025

B Time to the First Pulmonary Exacerbation

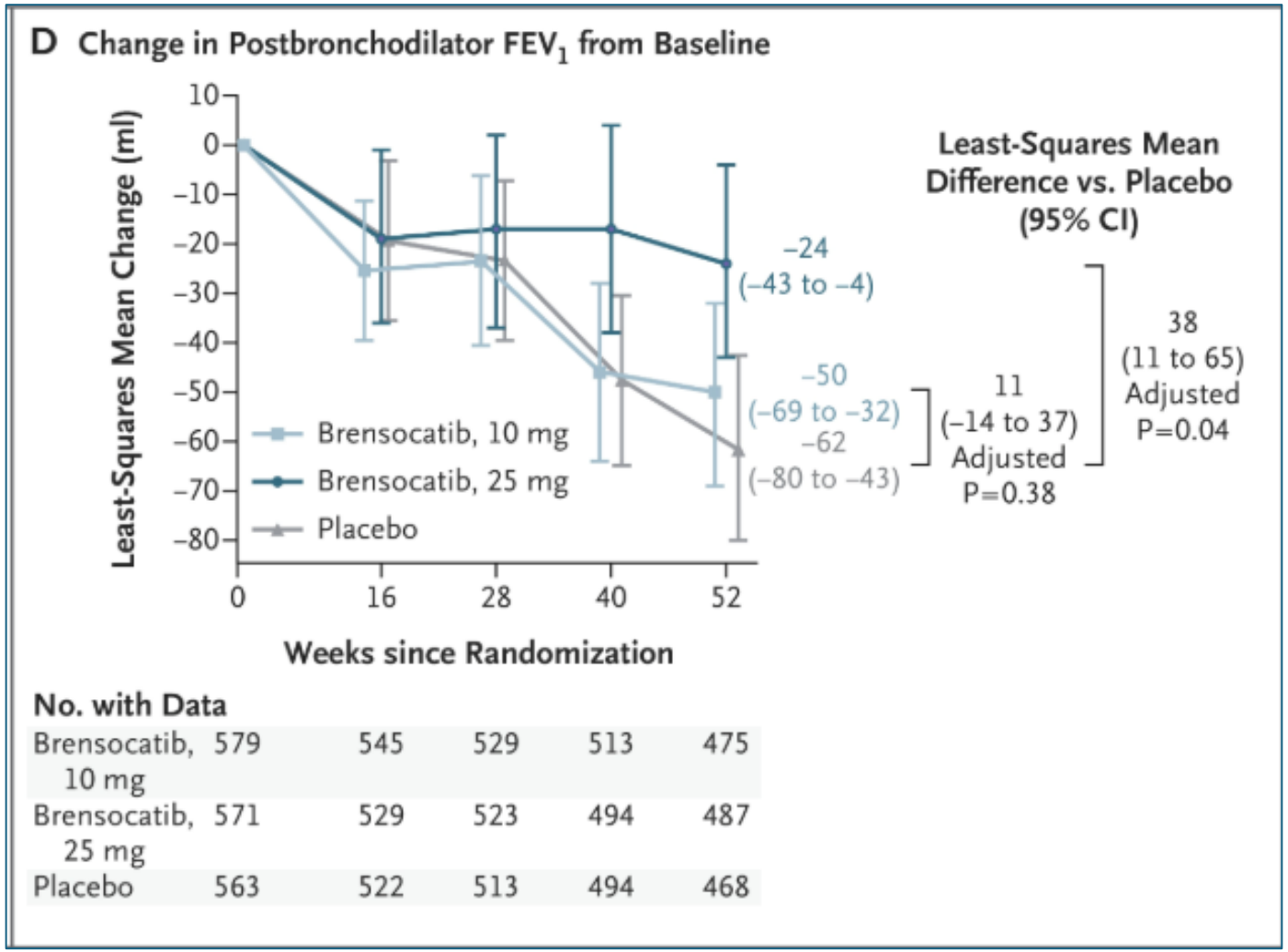


	Hazard Ratio vs. Placebo (95% CI)	Adjusted P Value
Brensocatib, 10 mg (N=583)	0.81 (0.70 to 0.95)	0.02
Brensocatib, 25 mg (N=575)	0.83 (0.70 to 0.97)	0.04
Placebo (N=563)	—	—

No. at Risk

Brensocatib, 10 mg	583	537	498	459	427	393	367	346	322	310	292	280	265	183
Brensocatib, 25 mg	575	526	475	433	400	380	357	337	313	296	282	270	264	169
Placebo	563	506	461	417	386	354	328	303	281	261	245	228	217	154

Chalmers et al. *N Engl J Med,* 2025



Bottom Line Brensocatib:

- Reduction rate of exacerbations
- Delayed time to exacerbation
- Attenuation lung function decline
- Irrespective of macrolide use

- Adverse effects:
  Hyperkeratosis
  Gingivitis/Periodontitis

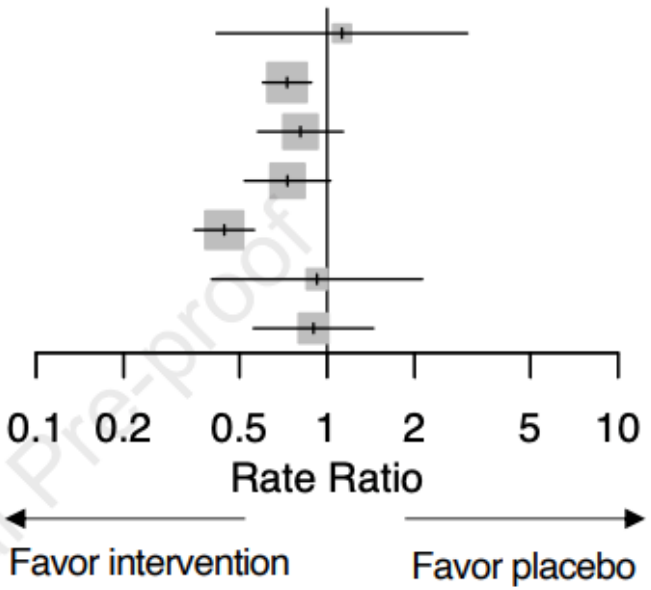
- No increase bacterial infections

- Not yet available in Canada

Chalmers et al. *N Engl J Med,* 2025

A

Intervention	Trials	Events/Total Intervention	Events/Total Comparator	Comparison: other vs 'Placebo' (Random Effects Model)	Rate Ratio	95% CI
CXCR2 antagonist	1	9/26	8/26		1.12	[0.42; 3.04]
DPP–1 inhibitor	4	1443/1687	911/834		0.73	[0.60; 0.88]
ICS	3	115/92	139/88		0.81	[0.58; 1.14]
ICS+LABA	3	89/78	117/76		0.73	[0.52; 1.03]
Macrolide	7	160/251	350/243		0.44	[0.35; 0.56]
PDE4 inhibitor	1	12/15	13/15		0.92	[0.40; 2.13]
Statin	2	40/51	53/56		0.90	[0.56; 1.44]

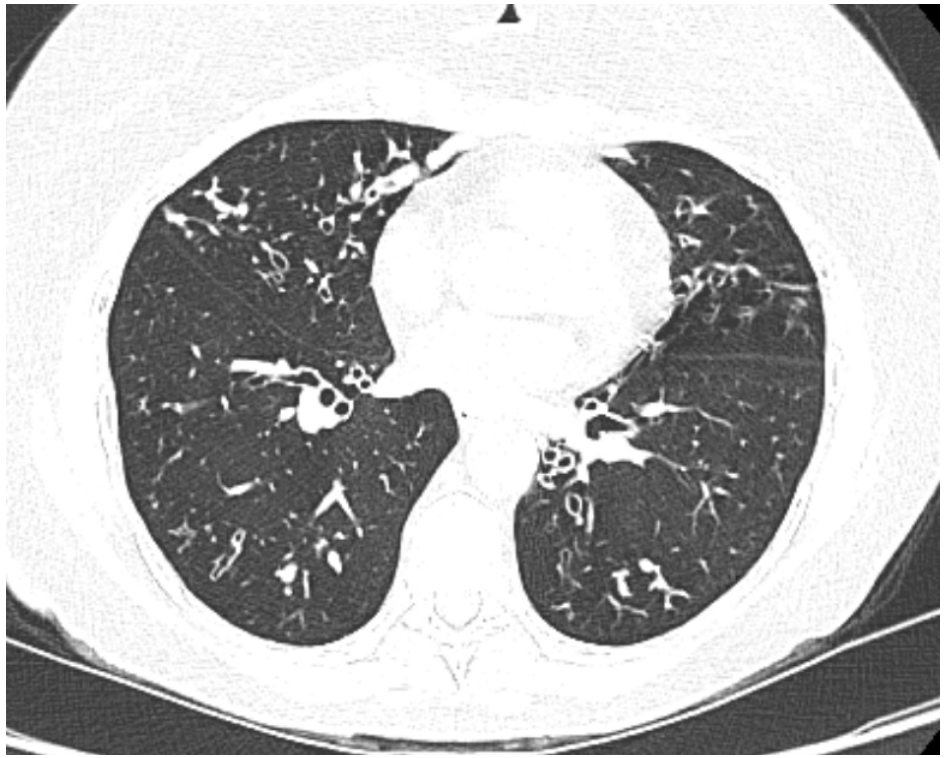


Heterogeneity: $I^2 = 33.3\%$, $\tau^2 = 0.0208$, $p = 0.1021$

Yamamoto et al. *CHEST,* 2026

Case

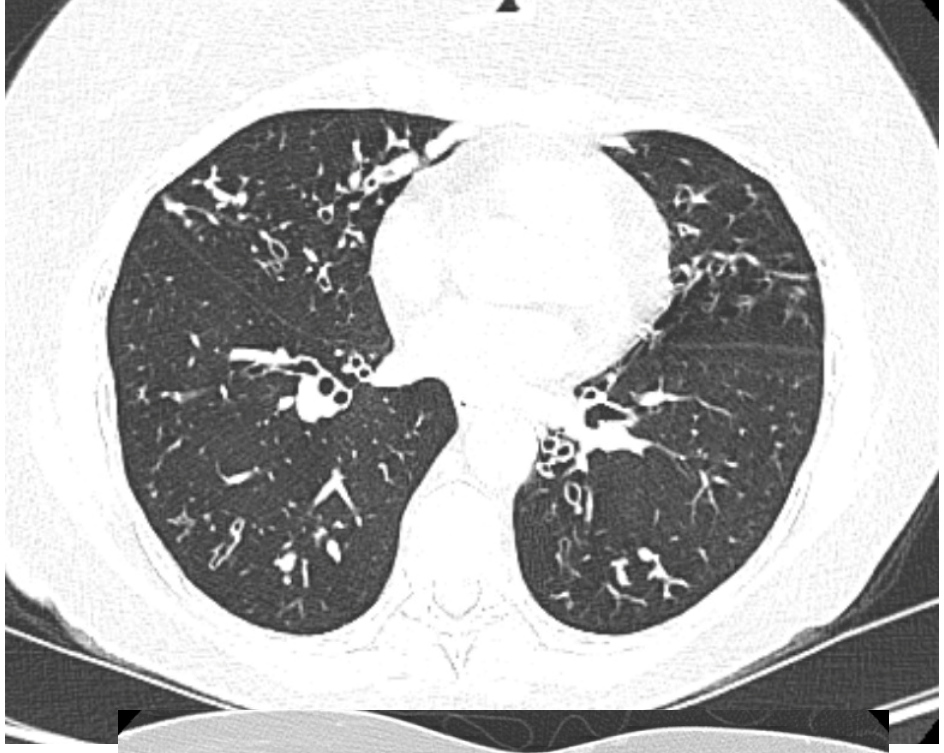
- 62 year old woman
- Chronic rhinosinusitis, polyps – prior OR
- Symptoms started in her 20s
- *S. aureus* and *P. aeruginosa* on cultures
- Multiple exacerbations per year, IV antibiotics
- FEV1 64% ← 89% 6 years prior
- Severe daily symptoms

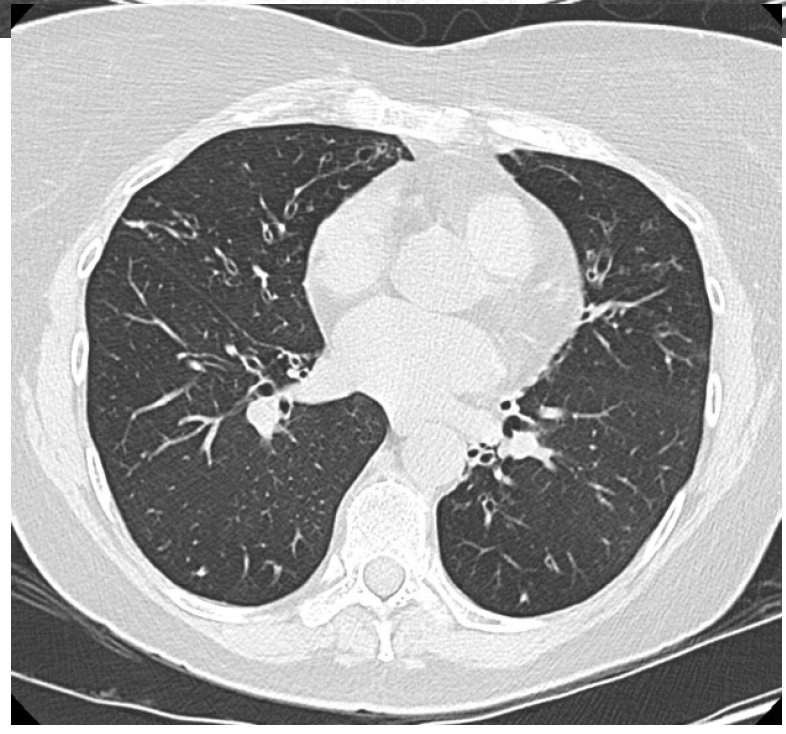


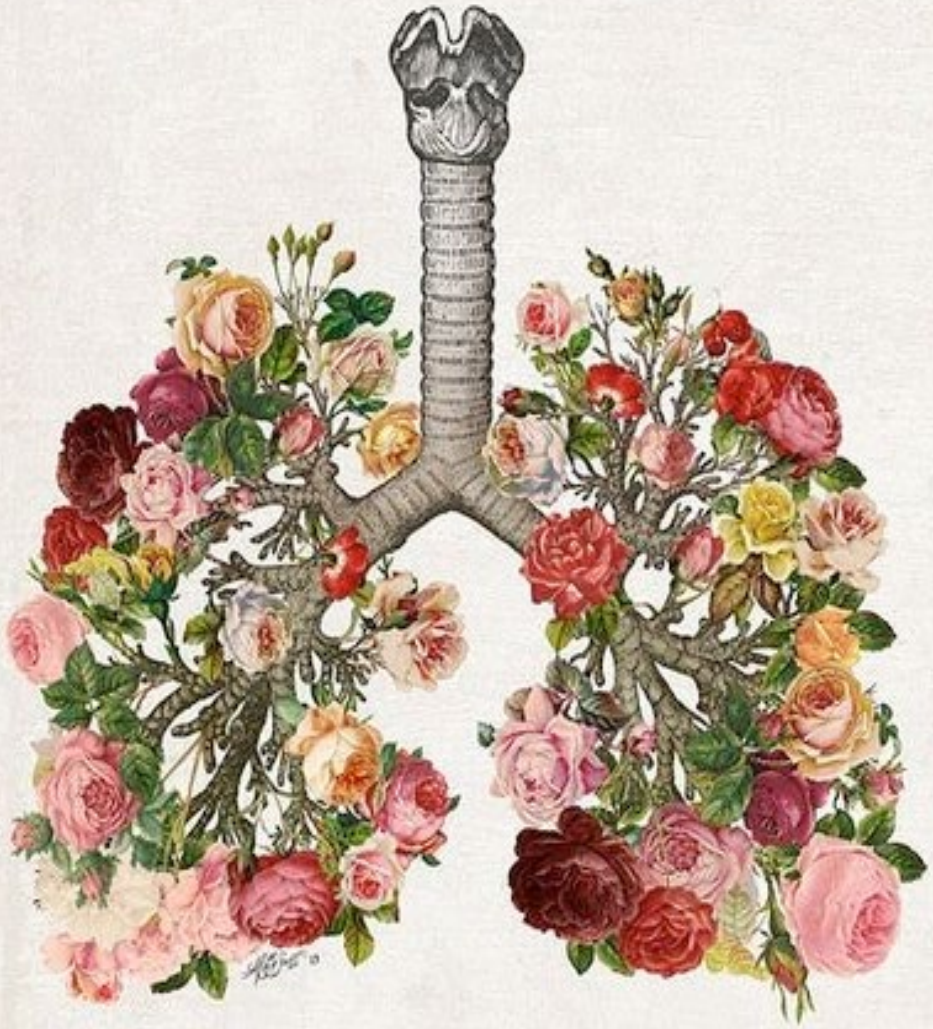
Case

- Optimized comorbidities
- Started airway clearance routine, inhaled tobramycin
- FEV1 64% -> 71%

- Sweat chloride 43,33 mmol/L
- CFTR Genetics: F508del/R117H
- Started CFTR modulator
- FEV1 84%







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- Determine etiology to not miss treatable traits.
- Airway clearance is fundamental.
- *P. aeruginosa* should be treated seriously!
- Consider Respirology referral if symptomatic, severe/progressive disease, *P. aeruginosa*
- Review indication for inhaled corticosteroids.
- Novel therapeutics on the horizon.

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