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(copd OR "Pulmonary Disease, Chronic Obstructive"[Mesh])

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Respir Med

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. 2026 Jul 18:109036.

doi: 10.1016/j.rmed.2026.109036. Online ahead of print.

Lower lung function and respiratory symptoms are associated with reduced accelerometer-measured physical activity in middle-aged adults

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Affiliations Expand

- **PMID: 42471218**

- **DOI: 10.1016/j.rmed.2026.109036**

Abstract

Background: Physical activity (PA) has well-documented cardio-respiratory protective effects in individuals with lung diseases. Whilst most studies examining

the relationship between PA, lung function and respiratory symptoms have included self-reported PA data, studies assessing PA objectively using accelerometers are scarce.

Aim: To explore the association of sedentary behavior (SED) and moderate-and-vigorous PA (MVPA), assessed using accelerometer data, with lung function and respiratory symptoms, and to compare associations in ever-smokers with never-smokers, within a large sample of middle-aged individuals.

Methods: In the population-based, cross-sectional Swedish CArdioPulmonary BioImage Study (SCAPIS), men and women aged 50 to 64 years were included. PA was assessed from triaxial hip acceleration data processed into PA intensity categories. Time spent in SED and MVPA was used. Dynamic spirometry (FEV_1 and FVC) was performed post-bronchodilation and respiratory symptoms were self-reported using a questionnaire.

Results: Complete data were obtained from 25,975 individuals (52% females). Lower lung function and presence of respiratory symptoms were both associated with less MVPA, with stronger associations for lung function. An interaction between lung function and smoking status was found, so that each unit of increase in lung function was associated with a greater increase in MVPA among ever-smokers versus never-smokers.

Conclusion: Lower lung function and presence of respiratory symptoms were both associated with less MVPA in a general middle-aged Swedish population. In addition, the association between lung function and MVPA were stronger among ever-smokers. Further clinical studies are needed to clarify the role of PA in slowing lung function decline and preventing respiratory diseases.

Keywords: Forced Expiratory Volume in 1 second (FEV(1)); Forced Vital Capacity (FVC); Moderate-and-Vigorous Physical Activity (MVPA); Swedish CArdioPulmonary BioImage Study (SCAPIS); smoking habits.

Conflict of interest statement

Declaration of Competing Interest ☒ The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Lowie EGW Vanfleteren reports a relationship with AstraZeneca that includes: consulting or advisory. Lowie EGW Vanfleteren reports a relationship with GlaxoSmithKline LLC that includes: consulting or advisory. Lowie EGW Vanfleteren reports a relationship with Sanofi that includes: consulting or advisory. Lowie EGW Vanfleteren reports a relationship with Chiesi that includes: consulting or advisory. Lowie EGW Vanfleteren reports a relationship with Grifols Inc that includes: consulting or advisory. Lowie EGW Vanfleteren reports a relationship with Pulmonx that includes: consulting or advisory. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Cite

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Respir Med

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. 2026 Jul 17:261:109046.

doi: 10.1016/j.rmed.2026.109046. Online ahead of print.

Impact of comorbidities on endobronchial valve treatment response in severe emphysema patients

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- PMID: 42468857

- DOI: 10.1016/j.rmed.2026.109046

Abstract

Background and objective: Endobronchial valve (EBV) therapy is an established intervention for patients with advanced emphysema with lung hyperinflation, improving pulmonary function, exercise capacity, and quality of life. Although comorbidities are highly prevalent in this patient population, their effect on EBV treatment outcomes remains unclear. This study aimed to investigate the impact of comorbidities on clinical EBV treatment response in routine clinical practice.

Methods: Baseline and 12-month follow-up data were extracted from a prospective registry of EBV procedures conducted between 2016 and 2023. Comorbidities were self-reported via a questionnaire and validated with medical records. Patients were stratified by comorbidity burden: <3 and ≥ 3 comorbidities. Between-group comparisons included relative changes in forced expiratory volume in 1 s (FEV_1), residual volume (RV), 6-min walk distance (6MWD), St. George's Respiratory Questionnaire (SGRQ), safety outcomes, and patient-reported satisfaction.

Results: In total, 202 patients were included of whom 103 (51%) had ≥3 (range 3-7) comorbidities. Both comorbidity groups demonstrated significant improvements in FEV_1, RV, 6MWD, and SGRQ at 12 months following EBV treatment, with no significant differences between groups. Notably, patients with a higher comorbidity burden did not show a higher rate of adverse events. Additionally, both groups reported similarly high levels of satisfaction with treatment outcomes, with more than three quarter of patients expressing satisfaction.

Conclusions: Our results show that EBV treatment provided similar favourable clinical improvements with comparable safety profiles, regardless of patients their comorbidity burden. These findings underscore the importance of considering patients with comorbidities for EBV evaluation and referral.

Keywords: Bronchoscopic lung volume reduction; COPD; Efficacy; Emphysema; Endobronchial valve treatment; Safety; comorbidities.

Conflict of interest statement

Declaration of competing interest The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:D.J. Slebos reports a relationship with PulmonX USA, MoreAir USA, Nuvaira USA, PulmAir USA, Ryme Medical USA, and Apreo USA that includes: consulting or advisory and funding grants. K. Klooster reports a relationship with PulmonX USA that includes: speaking and lecture fees. M. van Dijk reports a relationship with GSK, and Sanofi that includes: speaking and lecture fees. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Multicenter Study

J Glob Health

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. 2026 Jul 17:16:04205.

doi: 10.7189/jogh.16.04205.

The high-risk B-to-E transitional phenotype: a prospective multi-centre validation of patient reclassification under the updated GOLD 2026 criteria

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- **PMID: 42464959**

- **PMCID: PMC13377587**

- **DOI: 10.7189/jogh.16.04205**

Abstract

Background: The Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2026 criteria lowered the threshold for classifying Group E to ≥1 moderate or severe acute exacerbation in the last year. However, the scale of patient reclassification and its clinical justification in real-world settings have not been validated.

Methods: We utilised a prospective, multi-centre Chinese chronic obstructive pulmonary disease (COPD) cohort (n = 966), and applied the GOLD 2015, 2025, and 2026 criteria to the same cohort, focusing on patients who shifted from group B under GOLD 2025 to group E under GOLD 2026. The primary outcome was time to first moderate-to-severe acute exacerbation; secondary outcomes included symptom burden, health care resource utilisation, and clinical features of patients in the subgroups.

Results: Of 952 analysable participants, 242 were classified as shift-to-E. During an average follow-up of 10.3 months, the shift-to-E subgroup showed a 92% higher risk than stable B (hazard ratio (HR) = 1.92; 95% confidence interval (CI) = 1.14-3.23, P = 0.01441). Its adjusted follow-up scores of the COPD assessment test (CAT = 14.83) and the modified Medical Research Council dyspnoea scale (mMRC = 2.191) were comparable to stable E (CAT = 15.30 and mMRC = 2.214) and significantly higher than stable B. The subgroup also had longer baseline hospital stays (12.31 days) than stable B (8.246 days), supporting the utility of the GOLD 2026 for precise COPD stratification.

Conclusions: The GOLD 2026 update effectively identifies a substantial subgroup of patients with a distinct high-risk B-E transitional phenotype. Their exacerbation risk and symptom burden approximate those of the traditional high-risk group E, providing direct prognostic evidence for treatment escalation based on a history of just one moderate exacerbation. This supports the clinical utility of the new criteria for precise risk stratification.

Registration: Chinese Clinical Trial Registry (ChiCTR-POC-17010431).

Keywords: Global Initiative for Chronic Obstructive Lung Disease; acute exacerbation; chronic obstructive pulmonary disease; prospective cohort; risk stratification.

Conflict of interest statement

Disclosure of interest: The authors completed the ICMJE Disclosure of Interest Form (available upon request from the corresponding author) and disclose no relevant interests.

- 26 references
- 3 figures

Supplementary info

Publication types, MeSH termsExpand

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J Aerosol Med Pulm Drug Deliv

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. 2026 Jul 16:19412711261464842.

doi: 10.1177/19412711261464842. Online ahead of print.

Toward Next-Generation Propellants: Assessing Lung Deposition of Beclometasone Dipropionate, Formoterol, and Glycopyrrolate Formulated with HFA-152a Using Functional Respiratory Imaging

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- PMID: 42461266

- DOI: 10.1177/19412711261464842

Abstract

Background: Pressurized metered-dose inhalers (pMDIs) rely on hydrofluoroalkane (HFA) propellants that have a high global warming potential (GWP). Reformulation with next-generation, low-GWP propellants, such as HFA-152a, offers a strategy to reduce climate impact; however, changes in propellant composition can affect aerosol characteristics and potentially alter lung deposition, requiring robust demonstration of therapeutic equivalence.

Methods: Functional respiratory imaging, combining high-resolution computed tomography and computational fluid dynamics, was used to compare the lung deposition of a fixed triple combination of beclometasone dipropionate, formoterol

fumarate, and glycopyrronium bromide (BDP/FF/GB) delivered via a pMDI formulated with either HFA-134a (Reference) or HFA-152a (Test). Ten patients with chronic obstructive pulmonary disease (GOLD stages 2-4) were retrospectively selected. Patient-specific airway geometries, a standardized inhalation profile, and formulation-specific particle size distributions and plume characteristics were applied. Deposition was quantified in the intrathoracic, central + distal, and peripheral lung regions, and the (central + distal)/peripheral ([C + D]/P) deposition ratio was evaluated.

Results: Mean intrathoracic deposition was comparable between the Reference and Test formulations, ranging from 45.95% to 46.88% of the delivered dose (DD). Deposition in the central + distal airways accounted for 12% of DD for both formulations, whereas peripheral deposition predominated, with 33.7% of DD for the Test formulation and 34.5% of DD for the Reference formulation. The (C + D)/P ratios were similar across all active components (0.35-0.37), indicating consistent preferential deposition in the peripheral/small airways. Although inter-patient variability was observed, intra-subject comparisons showed close agreement between propellants.

Conclusion: Reformulation of the BDP/FF/GB pMDI with the low-GWP propellant HFA-152a preserved total and regional lung deposition characteristics relative to the current HFA-134a formulation. These findings support the maintenance of deposition performance while enabling a substantial reduction in environmental impact, reinforcing the potential of HFA-152a as a next-generation propellant for carbon minimal pMDI therapies.

Keywords: BDP/FF/GB; FRI; HFA; low GWP; lung deposition; pMDI.

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Editorial

Respirology

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. 2026 Jul 15.

doi: 10.1002/resp.70283. Online ahead of print.

Thinking Outside the Box (Lungs): Airway Mucus Plugs and Extrapulmonary Manifestations of Chronic Obstructive Pulmonary Disease

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Affiliations Expand

- PMID: 42458821

- DOI: 10.1002/resp.70283

No abstract available

Keywords: COPD; airway mucus plugs; chronic obstructive pulmonary disease; frailty; muscle wasting; muscle weakness; sarcopenia.

- 10 references

Supplementary info

Publication types, Grants and fundingExpand

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6

Respir Res

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. 2026 Jul 15.

doi: 10.1186/s12931-026-03687-2. Online ahead of print.

Exploring the mechanism of interleukin-24 in regulating eosinophil differentiation in chronic obstructive pulmonary disease

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- PMID: 42458434

- DOI: 10.1186/s12931-026-03687-2

Free article

Abstract

Chronic obstructive pulmonary disease (COPD) exacerbation is a common respiratory condition, particularly when accompanied by eosinophilia, which mediates inflammatory responses that significantly impair the integrity of the airway mucosal barrier. This study aims to elucidate the roles of interleukin-24 (IL-24) and eosinophils (EOS) in COPD-associated tissue remodeling, focusing on their effects on the expression of pro-inflammatory mediators and extracellular matrix (ECM) components in pulmonary fibroblasts, as well as the underlying molecular mechanisms. Based on the differential expression of IL-24 between healthy individuals and COPD patients and its correlation with EOS, we differentiated EOL-1 cells into EOS using butyrate and established a co-culture system with pulmonary fibroblasts. Concurrently, groups of fibroblasts were stimulated with varying concentrations of IL-24 alone. The regulatory effects on pro-inflammatory mediators and ECM expression were systematically analyzed using flow cytometry, real-time quantitative polymerase chain reaction, enzyme-linked immunosorbent assay, immunofluorescence, and Western blotting. Under the present experimental conditions, IL-24 treatment was associated with enhanced fibrotic responses in pulmonary fibroblasts. Furthermore, compared with butyrate treatment alone, the combination of IL-24 and butyrate further increased the differentiation rate of EOL-1 cells into EOS cells. Differentiated EOS further stimulated pulmonary fibroblasts to secrete pro-inflammatory factors IL-6 and IL-8, as well as the tissue remodeling-related factor vascular endothelial growth factor (VEGF), thereby exacerbating the fibrotic process. This study confirms that IL-24 promotes the maturation and differentiation of EOL-1 cells and can induce a fibrotic phenotypic transformation in pulmonary fibroblasts. This interaction participates in regulating inflammatory responses and tissue remodeling during COPD progression, highlighting the critical role of eosinophil-fibroblast crosstalk in the pathological mechanisms of the disease.

Keywords: Chronic obstructive pulmonary disease (COPD); Eosinophils; Fibrosis; IL-24; Pulmonary fibroblasts.

Conflict of interest statement

Declarations. Ethics approval and consent to participate: This study was approved by the Institutional Review Board of the Eighth Medical Center, Chinese PLA General Hospital, which also authorized the research. It was conducted in accordance with the ethics committee's approval (309202109091005). The patients/participants provided their written informed consent to participate in this study. Consent for publication: Not applicable. Competing interests: The authors declare no competing interests.

Supplementary info

Grants and fundingExpand

Full text links

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NPJ Prim Care Respir Med

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. 2026 Jul 15.

doi: 10.1038/s41533-026-00540-3. Online ahead of print.

Vaccination disparities and structural barriers among current smokers and adults with COPD: implications for comprehensive respiratory prevention

Ying Zhou [1], Yang Liu [1], Yue Ning [2]

Affiliations Expand

- PMID: 42457726

- DOI: 10.1038/s41533-026-00540-3

Free article

Abstract

Comprehensive respiratory health management for populations with elevated respiratory and lung cancer-related risk remains a guideline-recommended component of comprehensive respiratory prevention, yet uptake has not been systematically characterized. Using vaccination as a sentinel marker of healthcare engagement, we examined 2020-2024 BRFSS data on influenza and pneumococcal vaccination among U.S. adults classified as healthy controls, current smokers without COPD, individuals with COPD who were former or never smokers, and current smokers with COPD. Adults with both current smoking and COPD showed a substantial prevention gap. Despite high clinical vulnerability, this Dual Risk group had lower vaccination uptake than the COPD-only group, particularly among adults aged 45-64 years. In multivariable models, current smoking was associated with attenuation of the expected disease-prompting effect observed among non-smoking individuals with COPD. Mediation analysis suggested that healthcare access barriers, especially absence of a personal healthcare provider and lack of routine checkups, explained much of the vaccination disparity, whereas broader socioeconomic indicators explained less. Although vaccination uptake is not a direct measure of low-dose computed tomography screening, it may serve as a sentinel marker of primary care engagement and missed opportunities for respiratory prevention. Findings should be interpreted cautiously given the cross-

sectional design, potential age-related confounding for pneumococcal vaccination under pre-2024 CDC recommendations, and the broader BRFSS smoking definition compared with clinical screening criteria. Integrating vaccination assessment, smoking cessation services, and appropriate screening referral through primary care, pharmacies, and cessation clinics may reduce missed opportunities among high-risk adults.

Conflict of interest statement

Competing interests: The authors declare no competing interests.

Full text links

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Thorax

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. 2026 Jul 15:thorax-2026-225015.

doi: 10.1136/thorax-2026-225015. Online ahead of print.

Health inequalities in enrolment and completion of pulmonary rehabilitation: analysis of >88 000 individuals with COPD from a National Respiratory Audit Programme

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Affiliations Expand

- PMID: 42457634

- DOI: 10.1136/thorax-2026-225015

Free article

Abstract

Introduction: Pulmonary rehabilitation (PR) is an effective intervention for individuals with COPD, but enrolment and completion remain challenging. The impact of determinants of health and their intersectionality on enrolment and

completion is unknown.This study aimed to compare enrolment and completion of PR across determinants of health using a National Respiratory Audit Programme dataset from England and Wales.

Methods: 88 446 individuals with COPD attending a PR assessment in March 2019-September 2023 were included. Enrolment was defined as attending ≥1 PR session and completion as attending a discharge assessment. Data were analysed using generalised linear mixed models with a logit link function. Covariates included age, gender, ethnicity, Medical Research Council (MRC) dyspnoea grade and Index of Multiple Deprivation (IMD) quintile.

Results: 72 085 (82%) individuals enrolled and 52 669 (60%) completed. Determinants of health with significantly lower ORs (95% CI) of enrolment and completion were age <60 years (0.46 (0.42 to 0.51); 0.46 (0.39 to 0.53), respectively), female gender (0.92 (0.86 to 0.98); 0.91 (0.88 to 0.95), respectively), MRC 5 (0.72 (0.64 to 0.82); 0.46 (0.39 to 0.54), respectively) and IMD 1 (most deprived) (0.64 (0.56 to 0.72); 0.64 (0.60 to 0.68), respectively) (p<0.01). Individuals with a Black ethnicity had significantly greater odds of enrolling and completing than individuals with a White ethnicity (OR (95% CI) 2.16 (1.46 to 3.18); 1.50 (1.24 to 1.82), respectively, p<0.01). Intersectionality influenced PR completion, but not enrolment, with age modifying the relationship between MRC grade and completion.

Discussion: Through the world's largest PR dataset, we report potential health inequalities in enrolling and completing PR. Strategies to improve enrolment and completion by supporting key determinants of health are urgently needed.

Keywords: Pulmonary Rehabilitation.

Conflict of interest statement

Competing interests: RAE reports support by institutional research grants from the NIHR, UKRI, Wolfson Foundation, Genentech/Roche; and personal fees for consulting from AstraZeneca and lecture honouraria from Moderna. At the time of submission, SJS reports roles as NIHR Senior Investigator and the NRAP Clinical Lead for the Pulmonary Rehabilitation workstream. JKQ has been supported by institutional research grants from UKRI, NIHR, Health Data Research UK, BI, AZ, Insmed and received personal fees for advisory board participation, consultancy or speaking fees from GlaxoSmithKline, BI. She is the analysis lead for the NRAP. ED reports consultancy fees from the Royal College of Physicians and Chiesi. HD, MO, LW and MR report no conflicts of interest.

J Infect

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. 2026 Jul 15;93(2):106814.

doi: 10.1016/j.jinf.2026.106814. Online ahead of print.

Systemic inflammatory networks in HIV-associated chronic obstructive pulmonary disease

Lennart Riemann [1], Lena Böger [2], Carina Dahl [2], Timo Gemoll [3], Charisis Totsikas [4], Metodi V Stankov [2], Safura-Luise Heidari [5], Moises Alberto Suarez-Zdunek [5], Alexandra Dopfer-Jablonka [6], Susanne Dam Nielsen [7], Georg M N Behrens [8], Christine Happle [9]

Affiliations Expand

- PMID: 42456981

- DOI: 10.1016/j.jinf.2026.106814

Abstract

Objectives: People living with HIV (PLWH) carry increased risk of chronic obstructive pulmonary disease (COPD), yet the underlying mechanisms remain poorly understood. We investigated whether systemic inflammatory profiles differ between PLWH with and without COPD.

Methods: We analyzed serum samples from 87 PLWH: 38 with COPD and 49 without COPD, matched for age and sex. Inflammatory proteins were measured using the Olink Target 96 Inflammation panel. Modules of co-varying analytes were identified using CytoMod, and associations with clinical features were tested. Key findings were validated using ELISA. A replication analysis was conducted in 158 samples from an independent cohort.

Results: PLWH with COPD showed significantly elevated inflammatory markers. CytoMod analysis identified five modules when adjusting for background levels. Two modules were significantly associated with COPD, and comprised molecules involved in tissue damage and repair. Individual molecules including PD-L1, FGF-23, IL6, and others were significantly dysregulated. ELISA validation confirmed significantly elevated levels of IL-10RB, PD-L1, M-CSF, and IL-6 in PLWH-COPD. Key analytes and directional effects were confirmed in an independent cohort.

Conclusions: PLWH with COPD exhibit distinct inflammatory signatures characterized by enhanced tissue damage, immune activation, and dysregulated repair mechanisms, providing insights into HIV-related COPD.

Keywords: COPD; Cytokine modules; Cytokines; HIV; Inflammation; Multiplex.

Conflict of interest statement

Declaration of Competing Interest C.H. received research funding from Novartis and Pari, and lecturer fees and travel grants from Sanofi and Astra Zeneca unrelated to this work. G.M.N.B has received honoraria for lectures and advisory boards from Gilead, ViiV Healthcare, and MSD unrelated to this work. M.A.S.Z. reports fees from Gilead Sciences unrelated to this work. S.-L.H. has received a travel grant from GSK unrelated to this work. S.D.N received research funding from Novo Nordic Foundation, Independent research Fund Denmark, Svend Andersen Fonden, Augustinus Fonden, Kirsten og Freddy Johansens Fond and Gilead, and honoraria from Gilead, GSK, and Takeda. A.D.-J. was an adviser for Pfizer, which is unrelated to this work. C.T. received honoraria for lectures and travel grants from Gilead, ViiV Healthcare, and MSD, with no relation to the present work. The other authors have no competing interest to declare.

Cite

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Br J Pharmacol

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. 2026 Jul 14.

doi: 10.1111/bph.70588. Online ahead of print.

Safety, pharmacokinetics and pharmacodynamics of TQC3721, an innovative, dual PDE3 and PDE4 inhibitor, in healthy subjects and patients with chronic obstructive pulmonary disease: Randomised, double-blind, placebo-controlled phase I and IIa clinical trials

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Affiliations Expand

- PMID: 42449486

- DOI: 10.1111/bph.70588

Abstract

Background and purpose: TQC3721 is a novel inhaled dual phosphodiesterase (PDE3/4) inhibitor designed to provide bronchodilation and anti-inflammatory effects for chronic obstructive pulmonary disease (COPD).

Experimental approach: First-in-human randomised, double-blind, placebo-controlled phase I (SAD: 0.2 to 24 mg single dose; MAD: 12 mg once daily (QD) for 7 days in healthy subjects) and phase IIa studies (0.75 to 6 mg once or twice daily for 4 weeks in moderate-to-severe patients with COPD) were conducted. Primary outcomes included safety, pharmacokinetics (PKs) and pharmacodynamics (PDs), change from baseline of forced expiratory volume in the first second [FEV_1], and FEV_1 at 12 and 24 h post-dose on days 1 and 28.

Key results: TQC3721 was rapidly absorbed (median T_{max} of 0.25 to 0.5 h), mainly by pulmonary absorption rather than gastrointestinal absorption, along with low systemic exposure and lack of significant accumulation. TQC3721 demonstrated favourable safety profiles in healthy subjects and patients with COPD. In patients with COPD, TQC3721 produced rapid and outstanding bronchodilation effect sustained over 12 h post-administration, with FEV_1 peaking at approximately 2 h post-dose and returning to baseline levels by 12 h, which supports a twice-daily dosing regimen for the future, and peak FEV_1 improvements ranging from 186 to 272 ml across dose groups after 4 weeks of treatment. Moreover, twice-daily 3 and 6 mg regimens were recommended for further clinical study.

Conclusions and implications: Pharmacokinetic features, significant bronchodilation effects and overall favourable safety characteristics support further clinical development of TQC3721 as a potential dual-mechanism therapy for COPD.

Keywords: COPD; PDE3/4 inhibitor; TQC3721; pharmacodynamics; pharmacokinetics; phase I; phase IIa; safety.

- 39 references

Supplementary info

Grants and fundingExpand

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Cite

11

Meta-Analysis

BMJ Open Respir Res

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. 2026 Jul 14;13(1):e004234.

doi: 10.1136/bmjresp-2026-004234.

Biologic therapies targeting type 2 inflammation in chronic obstructive pulmonary disease: a systematic review and meta-analysis of randomised controlled trials

Camelia Pescaru [1], Alexandru Florian Crisan [2], Monica Marc [1], Ana Adriana Trusculescu [1], Septimiu Radu Susa [3], Adelina Maritescu [4], Cristian Oancea [1]

Affiliations Expand

- PMID: 42448376
- PMCID: PMC13374412
- DOI: 10.1136/bmjresp-2026-004234

Abstract

Background: Chronic obstructive pulmonary disease (COPD) is a heterogeneous disease, and a subset of patients exhibits type 2 (T2) inflammation. Biologic therapies targeting T2 inflammatory pathways have been evaluated in COPD, but their clinical efficacy remains variable. We performed a systematic review and meta-analysis to assess the efficacy and safety of biologic therapies targeting T2 inflammation in COPD.

Methods: Randomised controlled trials evaluating biologic therapies targeting interleukin (IL)-5, IL-5 receptor α, IL-4/IL-13 or thymic stromal lymphopoietin in patients with COPD and biomarker-defined T2 inflammation were systematically identified. Outcomes included moderate or severe COPD exacerbations, lung function (forced expiratory volume in 1 s (FEV_1)), health-related quality of life assessed by the St George's Respiratory Questionnaire (SGRQ) and serious adverse events. Random-effects meta-analyses were conducted when at least two comparable studies were available. Risk of bias was assessed using the Cochrane Risk-of-Bias 2 tool.

Results: Seven randomised controlled trials were included in the quantitative synthesis. Biologic therapies targeting T2 inflammation significantly reduced the rate of moderate or severe COPD exacerbations compared with placebo (rate ratio 0.77, 95% CI 0.72 to 0.83; p<0.001; I^2=0%). Lung function improved modestly with a pooled increase in FEV_1 of 43 mL (95% CI 12.5 to 73.6; p=0.006; I^2=55.3%). SGRQ total scores improved by -2.46 units (95% CI -3.43 to -1.49; p<0.001; I^2=0%). Subgroup analyses showed the greatest reduction in exacerbations with IL-4/IL-13-targeting therapy in patients with blood eosinophil counts ≥300 cells/µL. No significant increase in serious adverse events was observed.

Conclusions: Biologic therapies targeting T2 inflammation improve clinical outcomes in certain patients with COPD. The most consistent improvements were observed in studies that focused on inhibiting the IL-4/IL-13 pathway. However, variations in patient selection and in T2 enrichment strategies across trials make direct comparisons challenging. These results favour a biomarker-based, personalised approach over the routine use of biologics in unselected populations with COPD.

Keywords: COPD; Inflammation.

Conflict of interest statement

Competing interests: None declared.

- **41 references**
- **4 figures**

Supplementary info

Publication types, MeSH terms, SubstancesExpand

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Cite

12

Respir Investig

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. 2026 Jul 14;64(5):101482.

doi: 10.1016/j.resinv.2026.101482. Online ahead of print.

The JRS guideline for the management of chronic obstructive pulmonary disease 7th edition 2026

Hisatoshi Sugiura [1], Naoya Fujino [2], Yoko Shibata [3], Shigeo Muro [4], Kazuto Matsunaga [5], Nobuyuki Horita [6], Tomotaka Kawayama [7]

Affiliations Expand

- **PMID: 42447589**

- DOI: 10.1016/j.resinv.2026.101482

Abstract

Chronic obstructive pulmonary disease (COPD) remains a major cause of morbidity and mortality in Japan, with an estimated prevalence of 8.6% among adults over 40 years of age, yet fewer than 10% of affected individuals receive a formal diagnosis. The Japanese Respiratory Society (JRS) published the 7th edition of the JRS Guidelines for the Management of COPD in March 2026, approximately four years after the 6th edition. This article provides a translated summary of the guidelines, focusing on management goals and both stable- and exacerbation-phase management. The 7th edition incorporates several conceptual advances, including formal adoption of the GOLD 2023 etiotype classification, recognition of CT-detected mucus plugging as an independent prognostic factor, and incorporation of cellular senescence as a disease mechanism. Unique characteristics of Japanese patients including lean body composition, lower exacerbation rates and high prevalence of asthma-COPD overlap (ACO) are highlighted as drivers of Japan-specific management strategies. Comorbidity management, particularly cardiovascular risk during and after exacerbations, is elevated to a core management goal. The guidelines retain 15 clinical questions (CQs) from the prior edition and introduces 7 new CQs (CQ16-22), addressing long-term macrolide antibiotics, bronchoscopic lung volume reduction, and comprehensive exacerbation management, including bronchodilators, systemic corticosteroids, antibiotics, and respiratory support. Dupilumab is newly recommended for patients with type 2 inflammation and frequent exacerbations. Evidence grading follows the Minds/GRADE framework. These guidelines provide practical, evidence-based recommendations tailored to the Japanese clinical context, applicable to both respiratory specialists and general practitioners.

Keywords: Chronic obstructive pulmonary disease; Clinical questions; Japanese guidelines; Management; Meta-analysis.

Conflict of interest statement

Declaration of competing interest H.S. received honoraria for lectures from Sanofi, AstraZeneca, and Boehringer Ingelheim. N.F. received honoraria for lectures from AstraZeneca, Sanofi, and Insmed. Y.S. received honoraria for lectures from AstraZeneca, Kracie, and Boehringer Ingelheim. S.M. received honoraria for lectures from Sanofi, AstraZeneca, Boehringer Ingelheim and GlaxoSmithKline. K.M. received honoraria for lectures from Sanofi, AstraZeneca, and GlaxoSmithKline. N.H. has no COI to disclose. T.K. received honoraria for lectures from Sanofi, AstraZeneca, and GlaxoSmithKline.

13

ERJ Open Res

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. 2026 Jul 13;12(4):01397-2025.

doi: 10.1183/23120541.01397-2025. eCollection 2026 Jul.

The association between chronic rhinosinusitis, bronchiectasis and type 2 inflammation: an EMBARC registry analysis

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Affiliations Expand

- PMID: 42445230

- PMCID: PMC13358662

- DOI: 10.1183/23120541.01397-2025

Abstract

Introduction: Chronic rhinosinusitis (CRS) is a common comorbidity in bronchiectasis. Previous studies suggested that bronchiectasis with CRS is associated with elevated type 2 biomarkers, representing an "eosinophilic bronchiectasis" phenotype. However, whether the association with type 2 inflammation exists in rare aetiologies of bronchiectasis such as primary ciliary dyskinesia (PCD) or immune deficiency is unknown. Our aim was to explore the prevalence of CRS with and without nasal polyposis (CRSwNP and CRSnNP), their impact on bronchiectasis outcomes, and their association with type 2 inflammatory biomarkers in patients with bronchiectasis of various aetiologies.

Methods: Using data from the EMBARC bronchiectasis registry, we classified patients with bronchiectasis as having no CRS, CRSnNP or CRSwNP. Regression models were used to test the effect of CRS on symptom scores and long-term

outcomes. Multivariate models were created for elevated "type 2 biomarkers", defined as elevated blood eosinophil count or total IgE.

Results: Among 16 640 people with bronchiectasis, 2703 (20.9%) had CRSnNP and 1223 (7.3%) had CRSwNP. CRSwNP and CRSnNP were associated with worse symptoms and more frequent exacerbations, but lower hospitalisations and mortality. Type 2 biomarkers were elevated in people with comorbid CRSwNP in idiopathic bronchiectasis, but not in bronchiectasis secondary to PCD or immune deficiency. In multivariable analysis, CRSwNP was independently associated with elevated type 2 biomarkers.

Conclusions: CRS and nasal polyposis are common comorbidities in bronchiectasis, associated with worse symptoms and exacerbations. Elevated type 2 biomarkers are associated with CRS, but this finding is dependent on the aetiology of bronchiectasis.

Conflict of interest statement

Conflict of interest: M. Shteinberg reports grants or contract from the Tel Aviv League for Lung Disease and the G. Baum Foundation, paid to her institution; personal payments for consultation from AstraZeneca, Boehringer Ingelheim, Dexcel, Kamada, Synchrony Medical, Trumed and Zambon; personal payments or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from AstraZeneca, Boehringer Ingelheim, GSK, Kamada, Sanofi and Insmed; support for attending meetings and/or travel from Boehringer Ingelheim Israel, Astra Zeneca Israel, Kamada, Rafa and GSK Israel; personal fees for participation on a data safety monitoring or advisory board from Bonus Biotherapeutics, Boehringer Ingelheim, AstraZeneca and Insmed; personal payments as an American Journal of Respiratory and Critical Care Medicine associate editor; and voluntary roles as a Journal of Cystic Fibrosis associate editor, a management board member of the Israeli Pulmonology Society and the Israeli society for Tuberculosis and Mycobacterial Diseases, a management board member of EMBARC, an editorial board member of the European Respiratory Journal, and a member of the European Respiratory Society task forces on bronchiectasis guidelines and transitioning in bronchiectasis, all in the past 36 months. C.S. Haworth reports grants or contracts from AstraZeneca to his institution; personal fees for consulting from 30 Technology, AstraZeneca, BiomX, Chiesi, Infex, Insmed, LifeArc, Pneumagen, Vertex and Zambon; personal payments or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from Chiesi, Insmed, LifeArc, Vertex and Zambon; personal payment for expert testimony from Zambon; is a board member of the European Cystic Fibrosis Society; and owns stock or stock options in Pneumagen, all in the past 36 months. J. Pollock is a member of the early career mentoring programme of this journal. S. Cohen, J. Jrbashyan, N. Abo Helo, N. Stein, Y. Adir, M. Vendrell, H. Lind, K. Viligorska, K. Robertson, P. Kauppi, B. Milenkovic, R. Menendez, O. Munteanu, A. Torres, E. Van Braeckel, M. Anwar and W. Boersma have nothing to disclose. M.R. Loebinger reports consulting fees from Armata, 30T, AstraZeneca, Parion, Insmed, Chiesi, Zambon, Electromed, Recode, Boehringer Ingelheim, Ethris, Mannkind and AN2 Therapeutics; and payment or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from Insmed, all in the past 36 months. K. Dimakou reports payment or honoraria for

lectures, presentations, speakers' bureaus, manuscript writing or educational events from Novartis, Boehringer Ingelheim, GSK, NORMA Hellas, Chiesi, AstraZeneca and Zambon; direct payment in support for attending meetings and/or travel from Novartis, Boehringer Ingelheim, GSK, NORMA Hellas, Chiesi, AstraZeneca and Menarini; and direct payment for participation on a data safety monitoring or advisory board from Novartis, GSK and Chiesi, all in the past 36 months. S. Aliberti reports grants or contracts from GSK to his institution; personal fees for consulting from INSMED Incorporated, INSMED Italy, INSMED Ireland Ltd, INSMED Netherlands BV, ZAMBON Spa, AstraZeneca, Menarini, CSL Behring GmbH, Pfizer, Fondazione Internazionale Menarini, Moderna Italy, Moderna TX, Boehringer Ingelheim, Chiesi Farmaceutica Spa, MSD Italia S.r.l., Vertex Pharmaceuticals, BRAHMS GMBH, Physioassist SAS, AN2 Therapeutics, GlaxoSmithKline Spa and Verona; personal payments or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from GlaxoSmithKline Spa, Fondazione Internazionale Menarini, INSMED Italy, INSMED Ireland Ltd, Boehringer Ingelheim, Zambon and Vertex Pharmaceuticals; and personal payments for data safety monitoring or advisory boards from INSMED Incorporated, INSMED Italy, AstraZeneca UK Limited, MSD Italia S.r.l. and Verona pharma plc, all in the past 36 months. F.C. Ringshausen reports grants or contracts from the German Center for Lung Research (DZL), German Center for Infection Research (DZIF), IMI (EUEFPIA) and iABC Consortium (including Alaxia, Basilea, Novartis and Polyphor), Mukoviszidose Institute, Novartis and Insmed Germany to his institution; personal fees for consulting from Parion Sciences, Boehringer Ingelheim, Insmed and Chiesi; personal payments or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from I!DE Werbeagentur GmbH, Insmed, Grifols, University Hospital Hamburg, AstraZeneca, Cliniqo GmbH and Sanofi; personal fees for participation on a data safety monitoring or advisory board from Insmed, Boehringer Ingelheim, Parion Sciences and Chiesi; honorary positions as co-chair of the German Bronchiectasis Registry PROGNOSIS, a member of the SteerCo of the European Bronchiectasis Registry EMBARC and a principal investigator of the DZL; fees for clinical trial participation paid to his institution by AstraZeneca, Boehringer Ingelheim, Insmed, Novartis, Parion Sciences, ReCode, Ruhr University-Bochum, University of Dundee, UMC Utrecht and Vertex, all in the past 36 months. A. De Soyza reports grants or contracts from GSK, 30T and Sanofi to his institution; personal fees for consulting from 30T, Insmed, AstraZeneca and Sanofi; personal payments or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from AstraZeneca, Bayer, GSK, Insmed, Zambon, Sanofi, Fisher & Paykel and Inogen, all in the past 36 months. P.R. Burgel reports personal fees for consulting from AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, Insmed, MSD, Pfizer, Vertex and Viatris; and support for attending meetings and/or travel from AstraZeneca and Chiesi to his institution, in the past 36 months. O. Sibila reports consulting fees from Insmed and Boehringer Ingelheim in the past 36 months. A. Bossios reports that a grant from AstraZeneca was paid his my institution outside the submitted work; honoraria and lecture fees from Chiesi, GSK, and AstraZeneca paid to his institution outside the submitted work; and is Head of Assembly 5 (Airway diseases, asthma, COPD and chronic cough) of the European Respiratory Society (ERS), co-chair of the Nordic Severe Asthma Network, member of the steering committee of SHARP (ERS severe asthma Clinical Research Collaboration) and a member of the steering committee of the Swedish National Airway Register, all in the past 36 months. D. Obradovic reports support for attending the ERS Congress in 2024 and is President of the Serbian

Society of Intensive Care Medicine. A. Nowinski reports scientific grants received from the National Centre for Research and Development, the Medical Research Agency and the pharmaceutical industry (Boehringer Ingelheim, GSK and AstraZeneca) to their institutions in the past 36 months. A. Amorim reports grants or contracts from the European Cystic Fibrosis Society Patient Registry; and personal consulting fees and payment or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from Vertex Pharmaceuticals Inc.; support for attending meetings and/or travel from Zambon and Boehringer Ingelheim; and personal fees for participation on a data safety monitoring or advisory board from Chiesi, all in the past 36 months. N. Lorent is a member of the EMBARC management committee. S. Battalglia reports personal fees for advisory boards from GSK and Insmed; personal payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing or educational events from Insmed; and personal support for attending meetings and/or travel from Lusofarmaco and Sapio, all in the past 36 months. A. Shoemark reports that EMBARC3 is supported by Armata, AstraZeneca, Boehringer Ingelheim, Chiesi, CSL Behring, GlaxoSmithKline, Grifols, Insmed, LifeArc, Roche, Verona and Zambon; grants or contracts from AstraZeneca and LifeArc; consulting fees from Spirovant, Translate Bio and ReCode Therapeutics; payment or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from Translate Bio, Ethris and Insmed; unpaid involvement in European Respiratory Society Clinical Research Collaborations (EMBARC, BEATPCD and AMR Lung); and is supported by the Asthma and Lung UK Chair of Respiratory Research, all in the past 36 months. P.C. Goeminne reports payment or honoraria for lectures from Insmed, RMEI, AstraZeneca and GSK; support to attend conferences from GSK and AstraZeneca; participation on a data monitoring committee for Boehringer, and advisory boards for MSD and Pfizer, all in the past 36 months. F. Blasi reports grants from AstraZeneca, Chiesi and Insmed; personal fees for consulting from Menarini; and personal fees for lectures and advisory board from AstraZeneca, Chiesi, Boehringer Ingelheim, GSK, Guidotti, Grifols, Insmed, Menarini, Novartis, OM Pharma, Pfizer, Sanofi, Vertex and Zambon, in the past 36 months. E. Polverino reports consulting fees from Insmed, Grifols, Pari and CSL Behring; and payment or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from Insmed, Pari, Grifols and CSL Behring, in the past 36 months. J.D. Chalmers reports grants or contracts from AstraZeneca, Genentech, Boehringer Ingelheim, Gilead, Chiesi, Grifols, Insmed and Trudell; and consulting fees from Janssen, Antabio, Pfizer, Zambon, AstraZeneca, Chiesi, GlaxoSmithKline, Insmed, Grifols, Novartis and Boehringer Ingelheim, in the past 36 months and is the Chief Editor of ERJ Open Research.

BMC Pulm Med

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. 2026 Jul 13.

doi: 10.1186/s12890-026-04499-2. Online ahead of print.

Trends in mortality with chronic obstructive pulmonary disease as the underlying cause and chronic kidney disease as a contributing cause among US adults, 1999-2020: a CDC WONDER analysis

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Affiliations Expand

- **PMID: 42443858**

- **DOI: 10.1186/s12890-026-04499-2**

Free article

Abstract

Background: Chronic obstructive pulmonary disease (COPD) and chronic kidney disease (CKD) frequently coexist, yet mortality trends in patients with both conditions remain poorly characterized.

Methods: Using the CDC WONDER Multiple Cause of Death database, we analyzed death certificates from 1999 to 2020 for adults aged ≥ 25 years with COPD (ICD-10: J40-J44) as the underlying cause and CKD (N18) as a contributing cause. Age-adjusted mortality rates (AAMRs) per 100,000 population were calculated using 2000 US standard population. Trends were assessed via Joinpoint regression, with stratifications by sex, race/ethnicity, age, urbanization, census regions, and state.

Results: Deaths increased from 1,405 in 1999 to 5,277 in 2020. The AAMR increased from 0.79 in 1999 to 1.96 in 2020. The overall average annual percent change (AAPC) was + 4.71% (95% CI: 3.06-6.38). Mortality rates were higher in males (AAMR: 2.41) than females (AAMR: 1.65), though females had faster increases (AAPC + 5.86% vs. + 3.42%). The 85 + age group had the highest rates (27.98 per 100,000 population) and fastest growth (APC + 6.43%). non-Hispanic (NH) White individuals exhibited the steepest increase (AAPC + 5.25%), while NH Black individuals had no significant trend (AAPC - 0.22%). Nonmetropolitan areas had higher AAMRs (2.68) compared to metropolitan areas (1.82). Regionally, the Midwest recorded the highest AAPC (+ 5.32%) and 2020 AAMR (2.42). State-level AAPCs ranged from 1.5% to 7.0%.

Conclusion: Rising COPD-related mortality among adults with CKD highlights a need for integrated pulmonary-renal care, targeted interventions for high-risk populations, and policies addressing rural healthcare access and environmental risk factors. These estimates reflect deaths certified with COPD as the underlying

cause and CKD as a contributing cause, and therefore do not represent mortality among all individuals with coexisting COPD and CKD.

Keywords: CDC WONDER database; Chronic kidney disease; Chronic obstructive pulmonary disease; Health disparities; Mortality trends.

Conflict of interest statement

Declarations. Ethics approval and consent to participate: Institutional Review Board approval was not required for this study as it utilized deidentified, publicly available data from the CDC WONDER database. Because the analysis used only de-identified, aggregated, and publicly available data and did not involve any interaction with human participants or access to identifiable private information, it did not constitute human-subjects research; accordingly, the requirement for informed consent to participate was waived and was not applicable. The study was conducted in accordance with the Declaration of Helsinki and followed the STROBE reporting guidelines for observational studies. Consent for publication: Not applicable. This study used only de-identified, aggregated, and publicly available data obtained from the CDC WONDER database and does not contain any individual person's identifying images, personal information, or clinical details; therefore, consent for publication was not required. Competing interests: The authors declare no competing interests.

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Respirology

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. 2026 Jul 13.

doi: 10.1002/resp.70279. Online ahead of print.

Biomarkers of Pre-COPD Lung Function Trajectories in Middle Age: A Prospective Study From 1st to 6th Decade

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- PMID: 42442716

- DOI: 10.1002/resp.70279

Abstract

Background and objective: Identifying impaired lifetime lung function trajectories and their underlying biological pathways is key to characterising the preclinical phase of COPD (Pre-COPD) and its progression. However, this is challenging in practice as repeated spirometry measurements from childhood are rarely available. We investigated potential blood biomarkers associated with pre-COPD trajectories.

Methods: The Tasmanian Longitudinal Health Study has unique lung function data from 7 to 53 years, from which lifetime FEV_1/FVC trajectories were modelled (n = 2442). Serum levels of CC16, sRAGE, CRP, ECP, SPD, fibrinogen and a range of cytokines were quantified at 53 years of age. These were related to respective FEV_1/FVC trajectories. Classification And Regression Tree (CART) analysis was used to investigate biomarker combinations in relation to the distribution of pre-COPD FEV_1/FVC trajectories.

Results: Among six FEV_1/FVC trajectories, three trajectories at increased risk of COPD (pre-COPD trajectories) were 'Early Low-Rapid Decline', 'Early Normal-Rapid Decline' and 'Early Low-Normal Decline'. CC16, sRAGE, SPD, IL-17A, IL-5 and IL-10 differed significantly between these three pre-COPD and the normal trajectory. Notably, within the pre-COPD trajectories, these biomarkers also differentiated two rapid decline trajectories from the relatively stable one. CART analysis identified different combinations of biomarkers that distinguish different pre-COPD trajectories.

Conclusion: This is the first study to show that established COPD biomarkers are already active during the pre-COPD phase and could distinguish pre-COPD lung function trajectories. Biomarkers, particularly together with clinical history, may have the potential to identify those at risk and optimise management of both Pre-COPD and COPD.

Keywords: COPD; biomarker; lung function trajectory; obstruction; pre-COPD.

- 28 references

Supplementary info

Grants and fundingExpand

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16

Heart Lung

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. 2026 Jul 13:80:102888.

doi: 10.1016/j.hrtlng.2026.102888. Online ahead of print.

Holter-detected arrhythmias and early readmission risk in acute exacerbations of COPD

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Affiliations Expand

- PMID: 42442256

- DOI: 10.1016/j.hrtlng.2026.102888

Abstract

Background: Cardiac arrhythmias are frequent during acute exacerbations of chronic obstructive pulmonary disease (AECOPD) and may reflect cardiopulmonary instability. Their independent prognostic value, however, remains uncertain.

Objectives: This study evaluated the associations of in-hospital Holter-detected arrhythmias with readmission and length of hospital stay (LOS) in patients hospitalized for AECOPD.

Methods: This single-center retrospective cohort included 544 consecutive AECOPD hospitalizations (April 2022-September 2024) with ≥24 h Holter monitoring. Arrhythmias were categorized as supraventricular, atrial fibrillation/flutter, ventricular, or conduction block/pause. The primary outcome was hospital readmission during the year following discharge, stratified into 0-7-day, 8-30-day, 31-90-day, and 91-365-day readmission categories. Secondary outcomes included 30-day readmission and prolonged hospitalization (≥10 days). Associations were analyzed using multinomial, logistic, and negative binomial regression adjusted for demographic, clinical, and treatment variables.

Results: Arrhythmias occurred in 60.3% of patients, predominantly supraventricular (44.9%) and ventricular (30.9%). Ventricular arrhythmia was independently

associated with very early readmission (0-7 days; adjusted OR 10.49, 95% CI 1.55-71.17), whereas AF/AFL was inversely associated with late readmission (91-365 days; adjusted OR 0.10, 95% CI 0.01-0.88). No arrhythmia subtype predicted prolonged LOS. Incorporating Holter findings into multivariable models improved discrimination and clinical utility for early readmission prediction.

Conclusions: In-hospital arrhythmias are common in AECOPD but have limited overall prognostic impact. In this cohort, arrhythmia subtypes were not associated with prolonged length of stay. Early Holter monitoring may help identify patients at high risk of very early readmission and support pragmatic inpatient risk stratification.

Keywords: Cardiac arrhythmia; Chronic obstructive pulmonary disease; Holter monitoring; Prognosis; Readmission; Risk stratification.

Conflict of interest statement

Declaration of competing interest The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Cite

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Zhonghua Jie He He Hu Xi Za Zhi

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. 2026 Jul 12;49(7):717-722.

doi: 10.3760/cma.j.cn112147-20260504-00250.

[Chinese practice guideline for the diagnosis and treatment of chronic obstructive pulmonary disease (2026 revision): protocol]

[Article in Chinese]

Chinese Thoracic Society; Chinese Association of Chest Physicians

- PMID: 42373445

- DOI: 10.3760/cma.j.cn112147-20260504-00250

Abstract

in English, Chinese

This article represents the development protocol for the *Chinese Practice Guideline for the Diagnosis and Treatment of Chronic Obstructive Pulmonary Disease (2026 Revision)*. Since the publication of the 2021 Chinese guideline, new evidence has emerged regarding disease burden, early identification and active screening, lung function and imaging assessment, pharmacological and non-pharmacological management of stable disease, management of acute exacerbations, and comorbidity identification and management. Given the large patient population in China, persistent underdiagnosis, and the incorporation of COPD management into China's national basic public health services, an updated guideline is needed that integrates evidence-based findings from both domestic and international research over the past five years-particularly studies in Chinese populations-to produce a scientific, practical, and forward-looking guideline. The guideline is jointly initiated by the Chronic Obstructive Pulmonary Disease Group of the Chinese Thoracic Society and the Chronic Obstructive Pulmonary Disease Group of the Chinese Association of Chest Physicians, with methodological support from Peking University Third Hospital. The guideline has been registered at the International Practice Guidelines Registry Platform (registration No.: PREPARE-2026CN522). The guideline working group consists of a steering committee, advisory experts, clinical writing experts, an evidence appraisal group, a secretariat, and external reviewers. The work focuses on key domains including diagnosis, assessment, stable-phase management, acute exacerbation management, and comorbidity management of COPD, with 22clinical questions formulated and structurally deconstructed using the PICO framework. Evidence is symstematically retrieved from Chinese and English databases, appraised using the GRADE approach, and translated into recommendations through a modified Delphi consensus process and expert meetings. The full guideline will be drafted in accordance with the Reporting Items for Practice Guidelines in Healthcare (RIGHT) statement and is planned for publication in 2026, with the aim of improving the standardization of COPD diagnosis and treatment in China and reducing the disease burden.

Conflict of interest statement

所有作者均按照指南工作组要求填写利益冲突声明表；正式发表时将披露利益冲突声明及管理结果

Supplementary info

Publication types, MeSH terms, Grants and fundingExpand

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Br J Gen Pract

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. 2026 Jul 13:BJGP.2025.0593.

doi: 10.3399/BJGP.2025.0593. Online ahead of print.

Point-of-care biomarkers or laboratory-based tests to reduce antibiotic prescribing for COPD exacerbations: a literature review and meta-analysis in primary care

Mathieu Frénois [1], Roxane Fovet [1], David Wyts [1], Claire Collins [2 3], Matthieu Calafiore [4 5 6], Christophe Berkhout [7 4 8]

Affiliations Expand

- **PMID: 42097636**

- **DOI: 10.3399/BJGP.2025.0593**

Abstract

Background: Acute exacerbations of chronic obstructive pulmonary disease (AECOPD) are frequently treated with antibiotics in primary care, leading to antibiotic resistance and adverse effects. Assessing biomarkers might assist in reducing unnecessary antibiotic prescribing when used alongside clinical assessment.

Aim: To evaluate the benefit of reviewing biomarkers in point-of-care testing (POCT) within practices and through laboratory blood tests in efforts to decrease antibiotic prescribing for AECOPD.

Design and setting: Systematic review of randomised controlled trials (RCTs) and non-randomised studies conducted in primary care from January 2022 to November 2025 assessing POCTs for chronic obstructive pulmonary disease (COPD).

Method: The primary outcome was the rate of antibiotic prescribing or use, and secondary outcomes were biomarker thresholds for prescribing antibiotics and patient harm. Searches were conducted in four medical databases, six registers, and COPD academic societies. Data were extracted and assessed for quality and bias. A meta-analysis was performed whenever possible.

Results: A total of seven studies were included: one RCT and four non-randomised studies for C-reactive protein (CRP) POCT; and two RCTs on procalcitonin (PCT) in laboratories. The meta-analysis of CRP POCT indicated a statistically significant reduction in antibiotic prescribing (odds ratio 0.41, 95% confidence interval = 0.32 to 0.53; I^2 = 36%; low certainty of evidence). No meta-analysis for PCT was feasible.

Conclusion: CRP POCT reduced antibiotic prescribing for AECOPD in primary care settings when used alongside clinical assessment. There were insufficient data to draw conclusions about the PCT biomarker.

Keywords: C-reactive protein; COPD; antibiotic; biomarker; point-of-care testing; procalcitonin.

Full text links

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19

Editorial

Thorax

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. 2026 Jul 15;81(8):731-732.

doi: 10.1136/thorax-2025-224668.

What constitutes meaningful gain in skeletal muscle strength in COPD?

George Mills [1 2], Neil J Greening [3 2]

Affiliations Expand

- **PMID: 41644137**

- **DOI: 10.1136/thorax-2025-224668**

No abstract available

Keywords: Pulmonary Disease, Chronic Obstructive; Pulmonary Rehabilitation.

Conflict of interest statement

Competing interests: GM reports no competing interests. NJG reports personal and institutional grants and fees from Wellcome Leap, GlaxoSmithKline, Roche, AstraZeneca, Chiesi, Pulmonx, Roche, Sanofi and is chair of the British Thoracic Society COPD Specialist Advisory Group.

Supplementary info

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Thorax

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. 2026 Jul 15;81(8):784-790.

doi: 10.1136/thorax-2025-223799.

Minimal important difference of quadriceps maximal voluntary contraction (QMVC) in COPD: a prospective cohort study

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- PMID: 41593004

- DOI: 10.1136/thorax-2025-223799

Abstract

Background: Quadriceps maximal voluntary contraction (QMVC) reliably measures quadriceps muscle force and predicts mortality in chronic obstructive pulmonary disease (COPD). However, the minimal important difference (MID) of QMVC is not well-established.

Aim: To estimate the MID of QMVC parameters in people with COPD following pulmonary rehabilitation (PR).

Methods: QMVC was measured before and after 8 weeks of outpatient PR in people with COPD. Absolute and % change in QMVC, and change in normalised QMVC were calculated using paired t-tests. Anchor and distribution-based methods (0.5×SD change, SEM, minimal detectable change at 95% confidence, effect size and 1.96 SEM) were used to estimate the MID.

Results: Of 903 participants, 383 were excluded due to PR non-completion or missing QMVC data with 520 included in the analysis (37% female; mean (SD) age 70.2 (8.4) years; forced expiratory volume in 1 s 51.4 (21.4)% predicted). QMVC parameters increased with PR; mean (95% CI) or mean (SD) change: QMVC 2.0 kg (1.5 kg to 2.5 kg), 10.6% (27.7%) and normalised QMVC 5.0% predicted (3.9% to 6.2%). Anchor-based MID estimates were precluded due to weak/no correlation with external anchors. Using distribution-based methods, the MID for QMVC change, QMVC % change and normalised QMVC change were estimated as mean (range) 3.55 kg (1.84 kg to 5.11 kg), 18.34% (9.60% to 26.60%) and 7.78% (3.78% to 12.48%) for all participants. However, MID estimates for absolute and % change in QMVC differed markedly between men and women. Normalised QMVC estimates demonstrated smaller sex-based discrepancies.

Conclusion: We provide MID estimates for QMVC parameters. Sex-specific or normalised MID estimates for QMVC should be used to facilitate the interpretation of change.

Keywords: COPD epidemiology; Exercise; Pulmonary Rehabilitation.

Conflict of interest statement

Competing interests: TOJ reports grants from the Royal Brompton and Harefield Hospital Charity and the National Institute for Health Research outside of the submitted work. GDE, SP, JC, SK, REB, SJ, JAW and KI report no grants outside of the submitted work, or to undertake the submitted work. MM reports grants from the National Institute for Health Research and UKRI Innovate UK outside of the submitted work. MIP is a paid consultant for Roche; however, Roche had no role in this study. CMN reports grants from the National Institute of Health and Care Research outside of the submitted work. WM reports grants from the National Institute for Health Research outside of the submitted work.

Supplementary info

MeSH termsExpand

Full text links

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21

Thorax

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. 2026 Jul 15;81(8):791-793.

doi: 10.1136/thorax-2024-222790.

Sex differences in expiratory airflow among survivors born before 28 weeks' gestation or under 1000 g birthweight, and normal birthweight controls

Lex William Doyle [1 2 3], Anjali Haikerwal [3], Rheanna M Mainzer [4 5], Sarath Ranganathan [5 6], Jeanie Cheong [7 2 3]

Affiliations Expand

- PMID: 41444005

- DOI: 10.1136/thorax-2024-222790

Abstract

Expiratory airflow was measured by spirometry at ages 8 years, 18 years and 25 years in 297 survivors born extremely preterm (EP; <28 weeks' gestation) or extremely low birth weight (ELBW; <1000 g) and 260 normal birth weight (>2499 g) controls. At 8 years, expiratory airflows were similar between males and females in both EP/ELBW and control groups. Worsening expiratory airflows with increasing age were noted in the EP/ELBW group but not controls. Specifically, males born EP/ELBW had z-scores for forced expired volume in 1 s which were lower by a mean of -0.17 SD per decade (95% CI -0.27 to -0.07), p=0.001.

Keywords: COPD epidemiology; Infant, Newborn; Paediatric Lung Disease.

Conflict of interest statement

Competing interests: None declared.

Supplementary info

MeSH termsExpand

"Multimorbidity"[Mesh Terms] OR Multimorbidity[Text Word]

1

Heart Rhythm

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. 2026 Jul 18:S1547-5271(26)02596-8.

doi: 10.1016/j.hrthm.2026.07.028. Online ahead of print.

Accumulation of chronic conditions in patients <65 years of age diagnosed with atrial fibrillation

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Affiliations Expand

- PMID: 42471207

- DOI: 10.1016/j.hrthm.2026.07.028

Abstract

Background: Multimorbidity is common in atrial fibrillation (AF), particularly in older patients who generally have multiple cardiovascular (CV) and non-CV conditions.

Objective: To describe how chronic conditions accumulate in younger patients with AF.

Methods: Patients aged <65 with incident AF from 2013-2019 (N=3462) were matched 1:1 on age (±5 years) and sex to referents from the same community. Onset of 20 chronic conditions (6 CV-related and 14 non-CV) was ascertained from 3 years prior to index through 12/31/2022. Andersen-Gill models estimated associations between AF/referent status and accumulation of conditions.

Results: The mean age was 55.1 (8.8) years for both patients with AF and referents; 70.9% were male. Prior to index, 24.8% of patients with AF had no chronic conditions, whereas 32.3% of referents had 0 conditions. The accumulation of conditions was accelerated in patients with AF compared to referents, with the strongest associations within the first year after diagnosis/index for both CV-related (HR 3.80, 95% CI 3.30-4.37) and non-CV conditions (HR 2.42, 95% CI 2.14-2.74). Stronger associations were observed for CV-related conditions, in women, and in the youngest age group. After 1 year, increased accumulation of CV-related conditions for patients with AF was observed in women (HR 1.36, 95% CI 1.13-1.63) but not men, and for those aged <50 (HR 1.50, 95% CI 1.13-1.99) and 50-54 years (HR 1.43, 95% CI 1.09-1.86) only.

Conclusion: Patients <65 years with AF have an increased accumulation of chronic conditions compared to those without AF, in particular within the first year after AF diagnosis.

Keywords: atrial fibrillation; atrial flutter; cardiovascular; chronic conditions; electronic health records; multimorbidity.

Cite

2

Multicenter Study

BMC Cardiovasc Disord

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. 2026 Jul 18;26(1):609.

doi: 10.1186/s12872-026-06311-9.

The impact of diabetes on clinical outcomes in acutely ill patients - a study on patients admitted to the emergency department

Per Wändell [# 1 2], Kean Tang [# 3], Emma Kwon [3], Marcelina Wierzbicka [4 5], Karolina Sigurdsson [4 5], Caroline Wachtler [6 7], Axel C Carlsson [6 7], Torgny Wessman [4 5 8], Olle Melander [4 5], Ulf Ekelund [9], Anders Björkelund [10], Peter M Nilsson [8], Patrik Rydén [3], Toralph Ruge [4 5]

Affiliations Expand

- PMID: 42469624

- DOI: 10.1186/s12872-026-06311-9

Abstract

Background: Individuals with diabetes have an increased risk of cardiovascular disease, infection, hospitalization, and premature mortality. However, less is known about how diabetes shapes the broader pattern of emergency department (ED) presentations, acute care use, clinical complexity, and short-term mortality in an unselected ED population. We aimed to describe ED presentation patterns and outcomes among individuals with and without diabetes in a large regional cohort.

Methods: We conducted a population-based cohort study including all adult ED visits to nine hospitals in Region Skåne, Sweden, between 2017 and 2018. ED visits for patients with a registered diabetes diagnosis (n = 60,654) were compared with those without diabetes (n = 502,800). We analysed ED visit frequency, recurrent ED use, arrival by ambulance, triage priority, length of stay, comorbidity burden, presenting complaints, and mortality after ED presentation.

Results: The most common presenting complaints were broadly similar in both groups, with dyspnoea, chest pain, and abdominal pain among the leading causes of ED presentation. However, diabetes visits were characterized by greater acute care complexity. Compared with visits by individuals without diabetes, visits by individuals with diabetes more often involved a previous ED visit within 90 days, higher triage priority, ambulance arrival, longer ED stay, and substantially higher comorbidity burden. Early mortality after ED presentation was also higher among individuals with diabetes and occurred at younger ages, particularly among men. Mortality diagnoses differed between groups, with cardiovascular causes more prominent among individuals with diabetes.

Conclusions: In this large population-based ED cohort, individuals with diabetes presented with broadly similar symptom categories as those without diabetes, but with markedly greater clinical complexity, higher acuity, recurrent acute care use, and earlier mortality. Diabetes in emergency care may therefore identify a patient group with substantial multimorbidity, reduced physiological reserve, and increased vulnerability during acute illness.

Keywords: Diabetes; Emergency medicine; Mortality; Multimorbidity; Prediction.

Conflict of interest statement

Declarations. Ethics approval and consent to participate: This study was conducted in accordance with the Declaration of Helsinki. The study design and consent process were approved by the Regional Ethical Board in Lund, Lund University, Sweden (DNR: 2013/635). Participants provided informed and written consent. Consent for publication: Not applicable. Competing interests: The authors declare no competing interests.

- **40 references**

Supplementary info

Publication types, MeSH termsExpand

Full text links

Cite

3

Curr Opin HIV AIDS

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. 2026 Jul 17.

doi: 10.1097/COH.0000000000001057. Online ahead of print.

Rethinking aging biomarkers in HIV: from measures to meaning

Ekta Singh [1], Alan L Landay [1 2], Matthew L Mendoza [3 4]

Affiliations Expand

- PMID: 42467935

- DOI: 10.1097/COH.0000000000001057

Abstract

Purpose of review: People with HIV (PWH) on effective antiretroviral therapy continue to experience a disproportionate burden of age-related comorbidities and multimorbidity. This review explores HIV-associated aging as a systems-level dysregulation and loss of resilience and evaluates emerging biomarker strategies for capturing its biological and clinical heterogeneity.

Recent findings: Recent evidence indicates that aging in HIV is driven by interacting immune, metabolic, regenerative, structural, and inter-organ pathways that generate measurable signatures across biological scales. Composite biomarker approaches integrating molecular, physiological, and functional measures are increasingly being applied to cardiovascular, neurocognitive, physical, and co-infection-related outcomes. Large cohort studies, risk prediction models, and intervention trials support their clinical relevance, while emerging gerotherapeutic studies suggest that biologic aging markers may serve as responsive treatment endpoints.

Summary: No single biomarker adequately captures HIV-associated aging. Future progress will depend on multimodal, outcome-anchored composites that integrate biological and functional domains and are coupled with artificial intelligence- and machine learning-based approaches to improve risk stratification, therapeutic monitoring, and evaluation of geroscience-informed interventions in PWH.

Keywords: HIV; aging; biomarkers; geroscience; multiaxial network; people with HIV.

- 56 references

Full text links

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Cite

4

Aging (Albany NY)

. 2026 Jul 16;18(1):854-867.

doi: 10.18632/aging.206402. Epub 2026 Jul 16.

Towards integration of healthspan strategies into the Italian National Health Service

Nicola Marino [1 2], Matteo Fiore [3], Aureliano Stingi [1], Andrea Cipriano [4 5], Antonella Santuccione Chadha [2], Camillo Ricordi [6], David Della-Morte [7 8], Fabrizio d'Adda di Fagagna [9 10], Marco Demaria [11], Marco Quarta [12 13], Vittorio Sebastiano [14 15], Luigi Ferrucci [16], Ennio Tasciotti [17 18]

Affiliations Expand

- PMID: 42467494

- DOI: 10.18632/aging.206402

Abstract

Italy currently ranks among the world's oldest nations, with adults aged ≥65 years accounting for 24.1% of the population - the highest proportion in the EU - and a projected median age of 51 years by 2050. While life expectancy at birth reaches 85.4 years for women and 81.4 for men, Healthy Life Years amount to only 69.6 and 68.5, respectively, documenting a substantial lifespan-healthspan divide. The prevalence of multimorbidity and disability exceeds 60% in adults aged ≥75 years; women bear a disproportionate share of this burden, both as patients and as caregivers. Meanwhile, the Italian National Health Service (Servizio Sanitario Nazionale, SSN) remains hospital-centric, regionally fragmented, and predominantly reactive, with prevention accounting for a historically modest share of total expenditure. Against this background, longevity medicine is an emerging, prevention-oriented discipline that aims to extend healthspan - defined here as the portion of life lived in good health, with preserved physical and cognitive function and without significant disability or multimorbidity. It integrates multi-omic biomarkers, digital monitoring, adaptive trial methodology, and life-course risk stratification within a translational framework. Although most constituent tools remain at an exploratory or surrogate stage, and clinical utility has yet to be established, the emphasis on early intervention and precision prevention offers potential to reduce the accumulation of age-related disease and ease long-term pressure on the SSN. This position paper analyzes Italy's demographic and epidemiological trajectory, examines the structural constraints of the SSN, and outlines the scientific foundations of longevity medicine. It advocates for multidisciplinary translational research and identifies five strategic investment priorities: (i) clinically validated biomarkers of biological age; (ii) interoperable digital monitoring platforms; (iii) Bayesian adaptive multimodal trials; (iv) explainable-AI risk stratification tools; and (v) longevity-informed curricula in medical training. These proposals should be regarded as a staged agenda for

evaluation; their relevance will depend on whether they deliver measurable gains in patient-relevant outcomes, feasibility, and cost-effectiveness within the SSN.

Keywords: biomarkers; health span; longevity; national health system; preventive.

Supplementary info

MeSH termsExpand

Full text links

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5

Res Social Adm Pharm

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. 2026 Jul 15:S1551-7411(26)00165-8.

doi: 10.1016/j.sapharm.2026.07.005. Online ahead of print.

Exploring factors influencing medication adherence in people with coexisting diabetes and hypertension: A qualitative study

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Affiliations Expand

- PMID: 42463382
- DOI: 10.1016/j.sapharm.2026.07.005

Abstract

Background: Medication adherence is a primary determinant of treatment success in the management of coexisting diabetes and hypertension. Most existing literature focuses on disease-specific medication adherence, neglecting factors arising from managing coexisting chronic conditions. Pinpointing factors influencing medication adherence in people with coexisting diabetes and hypertension is crucial for developing multimorbidity focused interventions.

Methods: This study aimed to explore factors influencing medication adherence in people with coexisting diabetes and hypertension. A qualitative study was conducted with adults on medications for coexisting diabetes and hypertension, residing in Australia. In-depth interviews were conducted using a semi-structured

guide to explore factors influencing medication adherence. NVivo software was used to organise and code transcripts. Thematic analysis was used to analyze the data and identify key factors influencing medication adherence.

Results: Thirty participants were interviewed. The factors influencing medication adherence fell into five themes, which aligned with the WHO dimensions of adherence, with most comments highlighting patient and therapy-related themes. Adherence was reported to be lower when medications were taken at times that did not align with individual preferences. Intentional non-adherence was mainly driven by the burden of managing long-term medications for two chronic conditions, which resulted in frustration and emotional fatigue.

Conclusions: Medication non-adherence in people with coexisting hypertension and diabetes is driven by diverse and interrelated factors, reflecting its complexity. Addressing these multifaceted factors requires a holistic approach that actively engages all key stakeholders (patients, healthcare providers, policy makers) to design sustainable medication adherence interventions tailored for people managing coexisting chronic conditions.

Keywords: Diabetes; Hypertension; Medication adherence; Qualitative interviews.

Conflict of interest statement

Conflicts of interest The authors declare that they have no competing interests.

Full text links

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Cite

6

Review

Geriatr Nurs

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. 2026 Jul 16:72:104179.

doi: 10.1016/j.gerinurse.2026.104179. Online ahead of print.

Non-pharmacological interventions for older adults with comorbid hypertension and type 2 diabetes: A systematic review of randomized controlled trials

Guanzhou Wang [1], Weijing Song [2], Naifei Xue [3], Hairan Zhao [4], Yizhou Ma [5], Tianyue Zhang [6], Jingyi Wei [7], Lixin Sun [8], Julian T Hertz [9], Mei Chen Yap [10], Shangzhi Xiong [11], Lu Yang [12], Xuejun Yin [13], Peng Bao [14], Enying Gong [15], Yanming Li [16], Lijing L Yan [17]

Affiliations Expand

- PMID: 42462335

- DOI: 10.1016/j.gerinurse.2026.104179

Abstract

Background: Multimorbidity is rising and comorbid hypertension and type 2 diabetes is the most common among older adults. Although pharmacological therapy is the mainstay, non-pharmaceutical interventions are essential for disease control. We conducted a systematic review to synthesize evidence from randomized controlled trials in older adults on non-pharmacological approaches by intervention strategy and delivery setting.

Methods: Following PRISMA 2020, we searched PubMed, Embase, and Cochrane CENTRAL (until October 2024) for randomized controlled trials enrolling adults ≥60 years with both conditions. Risk of bias was assessed with RoB 2; heterogeneity precluded meta-analysis and findings were synthesized narratively.

Results: A total of 3449 studies were screened, and 16 trials were included in final analyses. Interventions were classified as exercise (n = 3), diet (n = 2), self-monitoring (n = 1), multi-strategy (n = 3), or comprehensive lifestyle modification (n = 7), delivered via hospital (n = 6), community (n = 6), or telehealth (n = 4) models. Most trials (~75%) reported a statistically significant effect on their prespecified primary outcomes, mainly blood pressure or HbA1c. Effects were most consistent for comprehensive lifestyle modification, especially those combining individualized planning with technology-assisted support. By setting, hospital interventions tended to yield short-term physiological gains, whereas community and telehealth models emphasized adherence and sustained engagement. Only two trials included post-intervention follow-up.

Conclusion: Comprehensive behaviorally informed interventions combining individualized planning with technology-assisted support were the most effective for older adults with hypertension and diabetes multimorbidity. Studies targeting this population remain limited with no long-term follow-up. Innovations in strategy optimization and adaptation to contexts and assessment of sustained effects are needed in multimorbidity management.

Keywords: Hypertension; Multimorbidity; Non-pharmacological interventions; Older adults; Randomized controlled trials; Type 2 diabetes.

Conflict of interest statement

Declaration of competing interest The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Supplementary info

Publication typesExpand

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Cite

7

Infect Dis Ther

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. 2026 Jul 15.

doi: 10.1007/s40121-026-01410-8. Online ahead of print.

Hospitalisation Burden of Human Metapneumovirus and Respiratory Syncytial Virus in Adults by Age and Comorbidity Status in Scotland: A Retrospective Analysis

[Durga Kulkarni][1], [Richard Osei-Yeboah][1], [Kate Templeton][2], [Harish Nair][3][4][5]

Affiliations Expand

- **PMID: 42449073**

- **DOI: [10.1007/s40121-026-01410-8]**

Abstract

Introduction: Respiratory syncytial virus (RSV) is well recognised as an important contributor to respiratory tract infections (RTIs) in adults in Scotland. However, there is a lack of recognition of the role of human metapneumovirus (hMPV) in RTIs in this population. We compared RSV- and hMPV-associated hospital burden in Scottish adults according to age and comorbidity status before RSV vaccine introduction.

Methods: We conducted a retrospective cohort study of adults (≥ 18 years) using routinely collected and linked national laboratory, hospital, ICU, and mortality data in Scotland (1 July 2017-30 June 2023). Comorbidity status was defined using UK influenza clinical risk groups mapped from Systematised Nomenclature of Medicine-Clinical Terms (SNOMED-CT) to International Classification of Diseases (ICD)-10

codes. Negative binomial regression was used to estimate adjusted relative hospitalisation rates by virus, age, comorbidity burden (0, 1, > 1), and season. Logistic regression examined associations between virus and long length of stay (LOS), ICU or high-dependency unit (HDU) admission, and 90-day mortality, adjusting for demographic characteristics, number of underlying comorbidities, and COVID-19 pandemic.

Results: RSV was associated with higher laboratory-detected hospitalisation rates than hMPV (relative rate ratio 2.31, 95% confidence interval [CI] 2.20-2.43). Hospitalisation rates increased with advancing age, particularly among adults aged ≥ 65 years and with increasing comorbidity burden. Rates varied substantially by season, with marked reductions during the COVID-19 pandemic and a resurgence in 2022/23. Compared with hMPV, RSV was associated with lower odds of prolonged length of stay and ICU/HDU admission, while no substantial difference was observed in 90-day mortality. Across both viruses, increasing age and comorbidity burden were the strongest correlates of adverse clinical outcomes.

Conclusions: RSV and hMPV are associated with a substantial hospital burden in adults. Incidence differences likely reflect testing variation. Clinical severity among hospitalised patients was broadly similar between the viruses. Age and multimorbidity were stronger correlates of severe outcomes than virus. The findings highlight the importance of host factors and the need for improved, consistent surveillance to generate robust estimates.

Keywords: Morbidity; Respiratory tract infections; Routine healthcare data; United Kingdom.

Conflict of interest statement

Declarations. Conflict of Interest: Richard Osei-Yeboah reports research contract from AstraZeneca. Harish Nair reports grants to institution from MSD, Pfizer, Icosavax/ Astrazeneca, consulting fees to institution from WHO, Pfizer, Bill and Melinda Gates Foundation, and Sanofi, payments for lectures made to institution from AstraZeneca, GSK, and Pfizer, support for meetings from Sanofi and Pfizer, and board participation at GSK, Sanofi, Icosavax/ AstraZeneca, Pfizer, ResViNET, and WHO, with payments to institution and the latter two unpaid. Durga Kulkarni and Kate Templeton declared that they have no competing interests. Ethical Approval: The Public Benefit and Privacy Panel for Health and Social Care (PBPP-HSC) approved data access to the required data in the National Safe Haven (Approval number 2223-0019). This research examined pseudonymised data that did not require patients' active consent. The data were collected routinely through NHS Scotland, with patients informed of potential use and their rights through various PHS and NHS Scotland privacy notices.

- 35 references

Cite

8

Review

Expert Opin Drug Saf

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. 2026 Jul 14:1-13.

doi: 10.1080/14740338.2026.2701663. Online ahead of print.

Safety and efficacy of DOACs in clinically complex phenotypes of patients with atrial fibrillation: focus on frailty, multimorbidity and polypharmacy

Panteleimon E Papakonstantinou [1], Gregory Y H Lip [2 3 4]

Affiliations Expand

- PMID: 42433070

- DOI: 10.1080/14740338.2026.2701663

Abstract

Introduction: Direct oral anticoagulants (DOACs) are widely used for stroke prevention in atrial fibrillation (AF); however, patients encountered in real-world practice frequently exhibit frailty, multimorbidity, and polypharmacy, phenotypes underrepresented in randomized clinical trials.

Areas covered: This narrative review addresses the safety and efficacy of DOACs in clinically complex AF populations. Targeted searches of PubMed/MEDLINE, Embase, and major cardiology society documents (ESC/EHRA) were performed from inception to May 2025, prioritizing randomized trials and complemented by large observational studies and registries. Available evidence indicates that DOACs demonstrate similar or superior efficacy and safety compared with vitamin K antagonists in frail and multimorbid patients. Although polypharmacy increases the risk of drug-drug interactions, DOACs are associated with fewer interactions and simplified dosing strategies. Observational data support the real-world effectiveness of DOACs when treatment is individualized according to frailty status, comorbidity burden, renal function, and medication review.

Expert opinion: DOACs can be used safely and effectively in complex AF patients when care is individualized. Integration of frailty screening, structured polypharmacy review, and holistic management approaches, such as the ABC

pathway, may improve outcomes. Future research should focus on prospective studies and implementation strategies in underrepresented high-risk populations.

Keywords: Atrial fibrillation; DOACs; frailty; multimorbidity; polypharmacy; stroke.

"asthma"[MeSH Terms] OR asthma[Text Word]

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Mucosal Immunol

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. 2026 Jul 18:100385.

doi: 10.1016/j.mucimm.2026.100385. Online ahead of print.

Dysregulated MUC5B and MUC5AC impair epithelial barrier function and alter granulocyte frequency and activation in the lung and distal sites

Neeraj Patil [1], Jonas Ambjörnsson [1], Sofia Kallin [2], Duaa Malla [1], Hiba Sayedali [2], Emilia Åkesson [2], Madeleine Rådinger [2], Gunnar C Hansson [3], Kristina Johansson [4]

Affiliations Expand

- PMID: 42471095

- DOI: 10.1016/j.mucimm.2026.100385

Abstract

Background: Mucus obstructs the airways in respiratory diseases where MUC5B is the major gel-forming mucin in COPD and MUC5AC-rich mucus dominates in asthma. Mucin production changes in response to inflammatory signals, but whether mucin dysregulation drives inflammation is less studied.

Objective: We sought to identify if MUC5B and MUC5AC affect immune cell composition during homeostasis and inflammation.

Methods: Immune cells in airways and distal compartments from wild type (WT), Muc5ac$^{-/-}$ and Muc5b$^{-/-}$ mice were assessed by flow cytometry and morphological examination. Epithelial permeability was assessed via intranasal dextran administration, and inflammation was induced by IL-33. Gene expression and inflammatory mediators were analyzed by qPCR and ELISA, respectively.

Results: Mucin expression increased with age in WT mice, where Muc5b remained 40 times more abundant than Muc5ac, however, single-mucin deficiency resulted in

compensatory increase of the other. MUC5B protected mice from increased bacterial load with neutrophil infiltration in airways, but MUC5B and MUC5AC were similarly important to prevent eosinophilia in lungs and distal compartments. Airway inflammation correlated with epithelial shedding, aberrant expression of epithelial integrity genes, increased epithelial permeability, and altered alarmins along with activation of innate lymphoid cells upon mucin disruption. Finally, IL-33 airway challenge increased Muc5b and Muc5ac where both mucins were required for normal granulocyte recruitment to lungs.

Conclusion: MUC5B and MUC5AC play nonredundant yet complementary roles in maintaining airway immune homeostasis and regulating inflammation. Loss or imbalance of either mucin disrupts normal epithelial responses and compromises barrier integrity, potentially driving downstream changes in immune cell composition locally and systemically. It highlights an underappreciated immunomodulatory function of airway mucus which sheds new light on its role in asthma and COPD.

Keywords: Eosinophil; IL-33; Inflammation; MUC5AC; MUC5B; Mucus; Neutrophil.

Conflict of interest statement

Declaration of competing interest The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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BMC Infect Dis

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. 2026 Jul 17.

doi: 10.1186/s12879-026-14038-3. Online ahead of print.

The association between Helicobacter pylori infection and asthma risk: an updated systematic review and meta-analysis

Yiyi Fu [1], Wanjia Zhang [1], Zuqiang Li [2], Zhenghao Cai [2], Yihui Deng [3], Dingxiang Li [4]

Affiliations Expand

- **PMID: 42469618**

- **DOI: 10.1186/s12879-026-14038-3**

Abstract

Background: Although Helicobacter pylori (H. pylori) has been hypothesized to modulate immune responses in the context of asthma, recent epidemiological evidence has yielded contradictory results. This updated meta-analysis systematically re-evaluates the association between H. pylori infection and asthma risk to clarify these discrepancies.

Methods: A systematic review and meta-analysis were conducted following PRISMA 2020 guidelines. We systematically searched PubMed, Web of Science, Cochrane Library, and Embase up to February 2026 to identify eligible observational studies. To evaluate the risk association, pooled odds ratios (ORs) and hazard ratios (HRs) with 95% confidence intervals (CIs) were calculated, utilizing either fixed- or random-effects models contingent upon the degree of statistical heterogeneity.

Results: 43 studies encompassing 240,715 individuals were included. Stratification by study design yielded diverging results: retrospective case-control studies indicated a significant inverse association (OR 0.78, 95% CI 0.63-0.95), whereas prospective cohort data suggested a positive association with asthma incidence (HR 1.13, 95% CI 1.07-1.19). Furthermore, subgroup analyses identified a robust inverse association in individuals infected with high-virulence CagA-positive strains (OR 0.75, 95% CI 0.62-0.90), which remained consistent across different study designs. In contrast, the inverse association observed in pediatric populations (OR 0.60, 95% CI 0.46-0.79) appeared sensitive to the underlying study design and diagnostic framework.

Conclusion: In conclusion, the H. pylori-asthma association is highly dependent on study design and clinical context. While overall results remain uncertain due to diverging retrospective and prospective findings, we identified a robust inverse association in CagA-positive groups that is consistent across study designs. In contrast, findings in pediatric populations are sensitive to methodological variations, necessitating cautious interpretation. These results indicate H. pylori does not exert a uniform effect; rather, the relationship is likely moderated by pathogen virulence and host factors. Consequently, our findings warrant significant caution, and future prospective research is essential to determine their clinical relevance.

Keywords: Asthma; CagA; Helicobacter pylori; Hygiene hypothesis; Meta-analysis; Observational studies.

Conflict of interest statement

Declarations. Ethics approval and consent to participate: Not applicable. Consent for publication: Not applicable. This manuscript does not contain any individual person's data. Competing interests: The authors declare no competing interests.

Supplementary info

Publication typesExpand

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Cite

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Review

Clin Med (Lond)

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. 2026 Jul 17:100623.

doi: 10.1016/j.clinme.2026.100623. Online ahead of print.

Update in Asthma Management: A Narrative Review of Recent Advances, Challenges, and Future Directions

Ziad Alhaj [1], Ruth H Green [2]

Affiliations Expand

- PMID: 42468759

- DOI: 10.1016/j.clinme.2026.100623

Abstract

Background: Asthma is a heterogeneous chronic respiratory disease with persistent morbidity and mortality despite effective therapies. The UK continues to report high asthma-related deaths, underscoring the need for improved care.

Objective: To review recent advances in asthma management, identify ongoing challenges, and outline future directions for clinical practice.

Methods: This narrative review integrates recent guideline updates (BTS/SIGN 2024, GINA 2024), audit data (NACAP), and emerging evidence on diagnostics, phenotype-driven therapy, and novel treatments.

Findings: Innovations include biomarker-guided phenotyping, anti-inflammatory reliever (AIR) therapy, biologics targeting Type 2 inflammation, and structured frameworks like A2BCD. Foundational care-such as adherence, inhaler technique,

and self-management-remains essential. Systemic improvements, including virtual wards and the BTS Asthma4 bundle, enhance continuity of care. The NHS Green Agenda supports sustainable asthma practices.

Conclusions: Asthma care is evolving toward personalised, integrated, and environmentally conscious approaches. Clinicians should combine precision therapies with system-level strategies to optimise outcomes.

Conflict of interest statement

Declaration of Competing Interest The authors declare no known competing financial interests or personal relationships that could have appeared to influence the work reported in this manuscript.

Supplementary info

Publication typesExpand

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J Allergy Clin Immunol Pract

. 2026 Jul 17:S2213-2198(26)00592-1.

doi: 10.1016/j.jaip.2026.07.012. Online ahead of print.

Frequency and Clinical Relevance of Residual Bronchodilator Responsiveness in Adults with Asthma

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- PMID: 42468621

- DOI: 10.1016/j.jaip.2026.07.012

Abstract

Background: Bronchodilator responsiveness (BDR) reflects airflow variability in asthma and is typically assessed after withholding therapy. However, its relevance under ongoing maintenance therapy remains unclear.

Objective: To investigate the frequency and clinical relevance of residual bronchodilator responsiveness (rBDR) in patients with asthma receiving maintenance therapy.

Methods: In 248 adults with moderate-to-severe asthma receiving inhaled corticosteroids (ICS), with or without long-acting bronchodilators, rBDR was assessed according to ERS/ATS 2005 and 2022 criteria. Maintenance therapy was continued, while short-acting bronchodilators were withheld for at least 12 hours before spirometry. Type-2 biomarkers, lung function including small airway function, patient-reported outcomes, and exacerbation rates were analysed according to rBDR status.

Results: rBDR was present in approximately 23% of patients and was consistent across both ERS/ATS criteria. Maintenance therapy did not differ by rBDR status. Patients with rBDR had higher type-2 biomarkers, despite high-dose ICS, including sputum eosinophils and FeNO, more frequent fixed airflow obstruction, and greater small airway dysfunction. They also exhibited increased clinical disease burden, with poorer asthma control and frequent exacerbations, independent of underlying lung function and type-2 inflammation.

Conclusion: Residual bronchodilator responsiveness is frequent and identifies patients with refractory type 2 inflammation and poor disease control. rBDR integrates inflammatory activity and functional impairment into a simple, widely available measure and may serve as a practical marker to identify residual disease burden and guide treatment optimization in routine clinical care.

Keywords: ERS/ATS criteria; airway obstruction; asthma; bronchodilator responsiveness; lung function variability; small airway disease; spirometry; type 2 inflammation.

. 2026 Jul 17;53(1):1185.

doi: 10.1007/s11033-026-12357-x.

Precision medicine in asthma: endotype stratification, biomarker-guided biologics, and emerging therapeutic strategies

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- PMID: 42467299

- DOI: 10.1007/s11033-026-12357-x

Abstract

Asthma is a disease that has a high morbidity and health care burden impacting more than 300 million people worldwide, but the heterogeneity of the disease cannot be adequately handled through conventional stepwise management using inhaled corticosteroids and bronchodilators. This critical review explores the changing face of asthma care with a particular focus on precision medicine with endotype-informed stratification and biomarker-targeted choice of therapies. The existing traditional therapies, such as inhaled corticosteroids, long-acting beta-agonists, and leukotriene modifiers, are still considered baseline but have limited effects in moderate-to-severe cases with heterogeneous inflammatory phenotypes. Groundbreaking biologic therapies based on type-2 inflammatory pathways have changed the management outcomes. Guided by biomarkers such as blood eosinophils, fractional exhaled nitric oxide, and serum IgE levels, anti-IgE, anti-IL-5/IL-5R, anti-IL-4/IL-13, and anti-TSLP agents show significant reductions in exacerbations and oral corticosteroid-sparing effects. A combination of accurate endotype typing algorithms with biomarker-based treatment selection guidelines will allow optimization of personalized therapy and forecasting of biologic response. New treatments of IL-33, JAK-STAT, and new delivery models will lead to better outcomes regardless of patient phenotypes. Nevertheless, constraint heterogeneity of treatment, safety in particular groups, high-cost barriers, and improper adherence limit other applications to the real world. This review is a synthesis of the existing knowledge and future perspectives, with the main focus being put upon personalized medicine approaches, combination strategies, and novel drug delivery systems as the key factors in the enhancement of long-term performance, minimization of disease burden, as well as clinical remission in asthma patients.

Keywords: Asthma; Biomarkers; Future perspectives; New treatments; Traditional therapies.

Conflict of interest statement

Declarations. Conflict of interest: None of the authors has any conflicts of interest regarding their financial and non-financial resources.

- **106 references**

Supplementary info

Publication types, MeSH terms, SubstancesExpand

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Cite

6

Review

J Allergy Clin Immunol Pract

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. 2026 Jul 16:S2213-2198(26)00591-X.

doi: 10.1016/j.jaip.2026.07.011. Online ahead of print.

Defining minimal clinical disease activity and remission in severe asthma: a modified Delphi consensus

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- **PMID: 42463041**

- **DOI: 10.1016/j.jaip.2026.07.011**

Abstract

The introduction of biologics in the treatment of severe asthma, has led to improved patient outcomes and increased discussions around remission. Due to varying descriptions of remission, there is a clear need for a standardised definition of remission as a target for patients. Remission has stringent criteria to achieve the best possible outcomes for patients; however not all patients achieve remission dependent on their disease severity and duration. Therefore, less stringent criteria

should also be considered such as a patient state of minimal clinical disease activity (MCDA). To explore these definitions, a Steering Committee of respiratory healthcare professionals (HCPs) employed a systematic literature review (SLR) and modified Delphi consensus. Outputs of the SLR were used to draft consensus statements that underwent two rounds of review with the Steering Committee and one round of review with a wider group of HCPs. Initial definitions of MCDA and remission were drafted based on the consensus statements and finalised in a Steering Committee meeting. The definitions include criteria for asthma exacerbations, steroid use, lung function, and quality of life. These definitions serve as a starting point for improving disease management in patients with severe asthma and should be validated in real-world settings.

Keywords: Asthma; asthma exacerbations; consensus; lung function; minimal clinical disease activity; oral corticosteroids; quality of life; remission; severe asthma.

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Am J Respir Cell Mol Biol

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. 2026 Jul 15:aanag149.

doi: 10.1093/ajrcmb/aanag149. Online ahead of print.

Innate Immune Cell and Epithelial Subsets Coordinate Airway Responses to Allergen

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Affiliations Expand

- **PMID: 42458790**

- DOI: 10.1093/ajrcmb/aanaq149

Abstract

Rationale: The mechanisms responsible for promoting allergic asthma remain incompletely understood, particularly the role of the crosstalk between innate immune cells and airway epithelium in coordinating the response to inhaled allergen.

Objective: Identify transcriptional responses to allergen exposure in human airway samples and ex vivo airway epithelial cell (AEC) model systems.

Methods: RNA-sequencing (RNA-seq) analyses were performed on induced sputum samples from individuals with allergic asthma that underwent inhaled allergen challenge. We integrated these results with a single cell RNA-seq (scRNA-seq) data set of epithelial brushings obtained before and after segmental allergen challenge (SAC). Finally, we performed RNA-seq analyses of primary AECs following house dust mite exposure in the context of priming with IL-13 (simulating a type-2 (T2) environment) or IFN-γ (simulating a type-1 (T1) environment).

Results: Distinct kinetic patterns were identified in the diverse inflammatory response to allergen in induced sputum samples, including activation of mast cell (MC) and AEC genes. Using the SAC scRNA-seq data set, we demonstrated that MCs modestly increase in the airways following SAC and are a key source of IL5 and IL18 expression. In contrast, basophils are near absent in the airways at baseline but are present in the airways following allergen challenge and are key sources of IL4 and IL13 expression. RNA-seq analyses of AECs in ex vivo culture demonstrate a core AEC allergen response enriched in genes associated with glycolysis and cadherin binding but is significantly altered in the presence of either IL-13 or IFN-γ exposure. Finally, we integrate these data sets to demonstrate that basophil chemotaxis to the airways in allergic asthma is partly mediated by epithelial-derived CCL26.

Conclusion: Allergen challenge promotes diverse pro-inflammatory transcriptional responses in the airways, and MCs, basophils, and AECs play distinct but critical roles in coordinating this response. However, airway responses to allergen may vary considerably based on the baseline airway inflammatory endotype.

Keywords: RNA-sequencing; T2 inflammation; airway epithelium; allergen challenge; allergic asthma; basophil; interferon gamma; mast cell.

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Respir Res

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. 2026 Jul 15.

doi: 10.1186/s12931-026-03742-y. Online ahead of print.

Impact of benralizumab on airway structure/function in severe eosinophilic asthma

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- PMID: 42458446

- DOI: 10.1186/s12931-026-03742-y

Free article

Abstract

Background: The BURAN study (ClinicalTrials.gov: NCT05552508) was a multicenter open-label study evaluating airway structure/function changes in adults with severe eosinophilic asthma (SEA) following eosinophil depletion by benralizumab. We assessed the changes in airway structure/function following treatment with benralizumab in adults with SEA.

Methods: We recruited adults (18-70 years) with SEA inadequately controlled with inhaled corticosteroids plus long-acting β2-agonists. Patients received subcutaneous benralizumab 30 mg every 4 weeks (three doses total). Computed tomography scans of the lungs were analyzed using Functional Respiratory Imaging (FRI). The primary endpoint was change from baseline to Week 13 in total mucus volume at total lung capacity. Secondary endpoints included change from baseline to Week 13 in mucus plug score and airway structure/function, and correlations between change in FRI endpoints and spirometry assessments (forced expiratory volume in 1 s [FEV_1] and forced vital capacity [FVC]).

Results: The primary analysis set included 39 patients (mean [standard deviation] age, 54.5 [11.4] years; 59.0% female, 92.3% White). Total mucus volume from baseline to Week 13 was significantly reduced (Δ - 0.13 mL; P = .033), with more pronounced reduction in those with ≥ 4 mucus plugs at baseline (Δ -0.18; P = .036). Similarly, mucus plug scores were significantly reduced (Δ - 11.0; P = .042). Mucus burden reduction was accompanied by lung function improvement. No significant changes from baseline were observed in air trapping, airway wall volume, specific airway volume, and lung volume. At Week 13, changes in total mucus volume (r = -

.501; P < .001) and total mucus plug scores (r = - .600; P < .001) were correlated with improvements in pre-bronchodilator FEV_1 and FVC.

Conclusion: Mucus burden was significantly reduced following treatment with benralizumab in patients with SEA.

Trial registration: ClinicalTrials.gov ID: NCT05552508 (registration date: 23 September 2022).

Keywords: Asthma treatment; Eosinophilia; Lung imaging; Mucus; Severe asthma.

Conflict of interest statement

Declarations. Ethics approval and consent to participate: The protocol and any amendments were approved by applicable independent ethics committees or institutional review boards at each participating site and by the appropriate regulatory agency. Consent for publication: Informed consent for publication was obtained. Competing interests: DDC, KR, RF, and FT are or were employees or contractors of AstraZeneca at the time of study conduct and reporting and may own stock/stock options. WDB is a medical advisor for FLUIDDA. PM, BRL, and SYEC are employees of FLUIDDA. FLUIDDA received funding from AstraZeneca to conduct this study. RP Jr has received research support from and conducted advisory boards for AstraZeneca, Sanofi, Regeneron, Genentech, and Novartis.

Supplementary info

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BMC Prim Care

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. 2026 Jul 15.

doi: 10.1186/s12875-026-03443-x. Online ahead of print.

Barriers and facilitators to practitioner prescribing and patient adoption of anti-inflammatory maintenance and reliever therapy (MART) for adult asthma: a qualitative study

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Affiliations Expand

- PMID: 42458285

- DOI: 10.1186/s12875-026-03443-x

Abstract

Background: Asthma was traditionally treated with separate corticosteroid (ICS) containing ('preventer') and short-acting beta-agonist (SABA; 'reliever') inhalers. But overuse of SABA-reliever inhalers is common and associated with poor outcomes. Clinical guidelines increasingly recommend using combined ICS and formoterol (ICS-formoterol) as an anti-inflammatory reliever. While ICS-formoterol use as a reliever only, without maintenance doses, has only recently been licenced in the United Kingdom; use as both preventer and reliever (Maintenance and Reliever Therapy; MART) has been recommended for many years. Despite the evidenced benefits of this approach, MART uptake in the UK has been low.

Methods: We studied the barriers and facilitators to primary care practitioners' prescribing and adult asthma patients' adoption of MART. We recruited practitioners and patients from a network of general practices that had participated in the SENTINEL programme to address SABA over-use and support MART adoption. Semi-structured, theoretically underpinned interviews were conducted with both groups. Data analysis involved deductive coding to the theoretical domains framework (a comprehensive framework including all potential determinants of practitioner and health behaviours) followed by inductive coding within domains.

Results: Fourteen themes were identified, with novel findings. Facilitators were practitioner knowledge and skills, and practice prescribing and appointment systems. Practitioner barriers mostly related to available resources, changes to treatment following emergency hospital presentations, and managing patient barriers to MART adoption and maintenance. Patient barriers included: psychological dependence on SABA-relievers and associated fear of discontinuation lack of understanding of the rationale for change to MART; and reluctance to change caused by concerns about difficulty getting an appointment if their asthma control deteriorated. Some practitioner barriers reported by previous studies (e.g., guideline knowledge and asthma management skills) were identified as facilitators in our study, potentially due to SENTINEL Programme participation.

Conclusions: The Global Initiative for Asthma (GINA) endorse ICS-formoterol as the preferred reliever in asthma, making it vital to understand barriers and facilitators to clinician and patient adoption in practice. We identified unique and previously unreported barriers and facilitators for both groups with potential to inform strategies to support practitioner and patient concordance with anti-inflammatory reliever-based asthma treatment and implementation of evidence-based, guideline-recommended care.

Keywords: Asthma; Healthcare Practitioners; Implementation; Inhaler use; Innovation; Patients.

Conflict of interest statement

Declarations. Ethics approval and consent to participate: Ethical approval was achieved from Health Research Authority (reference 22/EM/0281) on 1 st February 2023. Written informed consent was obtained from all participants. Consent for publication: All participants provided written consent to their anonymised data being presented in journal publications, case reports and presentations. Competing interests: AstraZeneca UK were study sponsor and had input into the study design. The study was conceived and executed independently by UoH and BCU. JD has received a fee for delivering a conference presentation for AstraZenica and honoraria for offering advice independent study design support to Astellas Pharma Inc. GW None to declare. HC received Honoraria from AstraZeneca, Chiesi, Sanofi/Regeneron and GSK; conference fees from AstraZeneca and Chiesi, Asthma service joint working agreement with AstraZeneca 2024. VG, TM, and MW are employees of AstraZeneca. VG and TM also own shares in AstraZeneca. MC has received grants from the National Institute for Health and Care Research, Asthma + Lung UK, AstraZeneca, Boehringer Ingelheim, Chiesi, Phillips, and Pfizer; honoraria, fees and/or non-financial support from AstraZeneca, Boehringer Ingelheim, Chiesi, GlaxoSmithKline, Orion, Novartis, Pfizer, Synairgen and Sanofi.

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. 2026 Jul 15;204(1):47.

doi: 10.1007/s00408-026-00913-y.

FeNO as a Treatable Trait in Chronic Cough: Insights from the PROCOUGH Study

Mustafaa Wahab [1], Elena Kum [1 2], Nermin Diab [3], Danica Brister [4], Ana Oliveira [5 6], Wafa Hassan [1 2], Sue Beaudin [1], Catie Stevens [1], Jennifer Wattie [1], Lesley Wiltshire [1], Karen Howie [1], Kieran Killian [1], Roma Sehmi [1 7], Gail M Gauvreau [1], Paul M O'Byrne [1 7], Imran Satia [8 9 10]

Affiliations Expand

- **PMID: 42458103**

- DOI: 10.1007/s00408-026-00913-y

Abstract

Purpose: Type 2 (T2) inflammatory biomarkers are established therapeutic targets in asthma and non-asthmatic eosinophilic bronchitis (NAEB), but their relevance in chronic cough remains unclear. Therefore, the objective of our study was to evaluate the relationship between T2 biomarkers and cough outcomes, and to determine their ability to predict treatment response and cough control.

Methods: This post-hoc analysis of the prospective PROCOUGH cohort included 100 patients with chronic cough. Patients underwent comprehensive phenotyping and were classified as chronic cough secondary to asthma/NAEB ($CC_{Ast/EB}$) or refractory chronic cough (RCC). Patients with $CC_{Ast/EB}$ received inhaled corticosteroid/long-acting β_2-agonist (ICS/LABA) therapy, while those without evidence of T2 inflammation or who had failed ICS/LABA were treated with neuromodulators. Cough outcomes included 24-h cough frequency, Leicester cough questionnaire (LCQ), and cough severity visual analogue scale (VAS). Baseline and post-treatment FeNO, blood eosinophils, and sputum eosinophils were measured. Correlation, logistic regression, and receiver operating characteristic (ROC) analyses were performed.

Results: Baseline FeNO and sputum eosinophils were higher in $CC_{Ast/EB}$ than RCC. In $CC_{Ast/EB}$, ICS/LABA treatment reduced FeNO and sputum eosinophils and improved cough frequency, LCQ, and VAS. However, only changes in FeNO correlated with changes in cough frequency ($r = 0.43$, $p = 0.007$). In multivariable analysis, baseline FeNO independently predicted cough control (OR 1.03, 95% CI 1.00-1.05). FeNO demonstrated modest discriminatory ability for predicting treatment response (AUC = 0.73) and cough control (AUC = 0.75), with an optimal threshold of approximately 26 ppb.

Conclusion: FeNO represents a modest predictor of treatment response and cough control in chronic cough but not RCC. These findings support its role as a treatable trait.

Keywords: Biomarkers; Chronic cough; Fractional exhaled nitric oxide; Refractory chronic cough; Treatable traits; Type 2 inflammation.

Conflict of interest statement

Declarations. Conflict of interest: I.S is supported by the Canada Research Chair program and reports grants from Merck, MITACS, GSK, Bellus, Trevi Therapeutics, Bayer and Genentech, consultancy fees from Merck, GSK, Bellus, Sanofi-Regeneron and Methapharm and payment or honoraria for lectures, presentations, manuscript writing or educational events from Merck, GSK, AstraZeneca and Sanofi-Regeneron. N.D was supported by the Canadian Asthma, Allergy, and Immunology Foundation, Sanofi Genzyme, Canada and the Canadian Lung Association-Canadian Institutes of Health Research Fellowship awards and reports payment or honoraria for lectures, presentations, manuscript writing or educational events from AstraZeneca and Sanofi-Regeneron outside the submitted work. D.B reports consultancy fees from Khure Health, payment or honoraria for lectures, presentations, manuscript writing

or educational events from AstraZeneca, Glaxo Smith Kline and Sanofi—Regeneron, support for attending meetings from GSK, participation on a data safety monitoring board or advisory board with GSK and Sanofi and is a participating member of the Chronic Cough Working Group. GMG reports research funding from AstraZeneca, Genentech, Third Harmonics Bio, Biohaven and Jasper paid to the institution and personal fees from AstraZeneca, Third Harmonics Bio, Allakos, Biohaven, Jasper and Blueprint. R.S received grants from AstraZeneca, Biohaven, Third Harmonics Bio and Jasper; consultancy fees from AstraZeneca and Areteia Therapeutics Inc and payment or honoraria for lectures, presentations, manuscript writing or educational events from AstraZeneca and GSK. POB reports grants from AstraZeneca, Merck, Biohaven and Jasper, consultancy fees from AstraZeneca, GSK, Sage, Teva and Affibody, payment or honoraria for lectures, presentations, manuscript writing or educational events from AstraZeneca, GSK and Covis and is a Section Editor for the European Respiratory Journal. MW, EK, WH, AO, KK, SB, CO, KH, JW, LW, KW report no conflicts of interest. Ethical Approval: This study represents a secondary analysis of the PROCOUGH cohort, a prospective, single-centre observational study of patients with CC conducted at McMaster University Medical Centre between December 2021 and May 2025. The study protocol was approved by the Hamilton Integrated Research Ethics Board (REB No: 11231) and conducted in accordance with the Declaration of Helsinki and Good Clinical Practice guidelines. Informed consent was obtained from all individual participants included in the study.

- **45 references**

Supplementary info

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11

Review

J Neuroinflammation

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. 2026 Jul 15.

doi: 10.1186/s12974-026-03955-4. Online ahead of print.

Unknotting the nexus of asthma and neuroinflammation: from brain network alterations to therapeutic implications

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Affiliations Expand

- PMID: 42449394

- DOI: 10.1186/s12974-026-03955-4

Free article

Abstract

Asthma is increasingly recognized as a systemic inflammatory syndrome that extends beyond the respiratory tract, with emerging evidence highlighting its relevance to neuroinflammation. The lung-brain axis-via interconnected inflammatory, vascular, metabolic, neural, and microbial pathways-provides a framework for understanding how chronic pulmonary disease may sustain or exacerbate neuroinflammatory processes. Mechanistically, asthma promotes blood-brain barrier disruption, systemic inflammation that seeds central neuroinflammation, oxidative stress, mitochondrial dysfunction, gut-lung-brain microbial crosstalk, and sleep fragmentation, all of which are biologically plausible drivers of sustained neuroinflammatory states and consequent neurodegenerative vulnerability. Epidemiological studies link asthma to increased risks of all-cause dementia and Alzheimer's disease, though cohort findings vary. Neuroimaging and biomarker evidence further support neuroinflammatory involvement, revealing altered hippocampal metabolism, white matter abnormalities, elevated plasma glial fibrillary acidic protein and neurofilament light chains, and cerebrospinal fluid markers of synaptic injury in severe or poorly controlled asthma-each reflecting neuroinflammatory or neurodegenerative sequelae. Links with Parkinson's disease and other neurodegenerative disorders remain more preliminary. Notably, asthma severity, phenotype, exacerbation frequency, and corticosteroid burden modulate neurological risk, suggesting that optimal disease control-potentially enhanced by biologic therapies-may confer neuroprotective benefits by dampening neuroinflammation. In conclusion, asthma should not be viewed solely as an airway disorder but as a potentially modifiable contributor to long-term brain vulnerability via neuroinflammatory pathways within the lung-brain axis. Future longitudinal studies integrating detailed phenotyping, biomarkers, and neuroimaging are needed to establish causality and guide anti-neuroinflammatory therapeutic strategies.

Keywords: Asthma; Blood–Brain Barrier; Lung-brain axis; Neuroinflammation; Neuropsychiatric disorders.

Conflict of interest statement

Declarations. Ethics approval and consent to participate: Not applicable. Consent for publication: Not applicable. Competing interests: The authors declare no competing interests.

Supplementary info

Publication types, Grants and fundingExpand

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12

Review

Pulm Ther

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. 2026 Jul 15.

doi: 10.1007/s41030-026-00374-x. Online ahead of print.

Respiratory Support in Pediatric Critical and Near-Fatal Asthma: A Narrative Review

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Affiliations Expand

- PMID: 42449090

- DOI: 10.1007/s41030-026-00374-x

Free article

Abstract

Pediatric asthma remains a leading cause of emergency department visits and hospitalizations worldwide. Patients with critical asthma represents a subset of patients requiring respiratory support beyond standard pharmacologic therapy. Management of respiratory support in these patients has evolved dramatically, with intubation rates decreasing from 6.9% to 3.4% between 2009 and 2019 while noninvasive ventilation use doubled and high-flow nasal cannula utilization increased from 11% to 52%. This narrative review examines current evidence and practical considerations for respiratory support strategies across the spectrum of pediatric critical asthma care. The pathophysiology of critical asthma creates unique challenges fundamentally different from other causes of respiratory failure. Dynamic hyperinflation from progressive air trapping and intrinsic positive end-

expiratory pressure (PEEP) development represents the cornerstone derangement, requiring ventilation strategies that seems divergent from those utilized in acute respiratory distress syndrome. High-flow nasal cannula provides benefit primarily through dead space washout and gas conditioning, while noninvasive ventilation offers comprehensive support by augmenting ventilation and offsetting intrinsic PEEP effects. When mechanical ventilation becomes necessary, controlled hypoventilation with acceptance of hypercapnia while maintaining pH > 7.20 has dramatically reduced mortality compared with historical approaches targeting normocapnia. Pressure-controlled ventilation may offer physiologic advantages over volume-controlled modes by providing more uniform gas distribution in airways with varying degrees of obstruction. A structured three-phase ventilation approach emphasizes initial hyperinflation clearance, followed by acidosis resolution, then careful weaning with attention to dynamic hyperinflation monitoring. Current survival rates exceed 96% for children reaching medical care, representing substantial improvement from historical mortality rates of 20-30%. Optimal respiratory support in critical asthma requires understanding that mechanical ventilation strategies in asthma differs from other respiratory failure etiologies, with dynamic hyperinflation management taking precedence over traditional lung-protective strategies. Future research priorities include developing severity prediction tools, optimizing noninvasive protocols, and investigating personalized approaches on the basis of emerging understanding of asthma phenotypes and endotypes.

Keywords: Critical asthma; Dynamic hyperinflation; High flow nasal cannula; Mechanical ventilation; Near-fatal asthma; Noninvasive respiratory support; Pediatrics; Status asthmaticus.

Conflict of interest statement

Declarations. Conflict of Interest: Andrew Miller has received honorarium from Fisher and Paykel, research grant from the American Association for Respiratory Care, salary support from the National Institutes of Health and he is in the Scientific Advisory Board for Aergoen. Alexandre T. Rotta has received consulting fees from Breas US, and royalties from Elsevier and Springer Nature. Jan Hau Lee is the Editorial Board member of Pulmonary Therapy journal. Jan Hau Lee was not involved in the selection of peer reviewers for the manuscript nor any of the subsequent editorial decisions. Long Xiang and Herng Lee Tan have no conflicts to declare. Ethical Approval: This article is based on previously conducted studies and does not contain any new studies with human participants or animals performed by any of the authors.

- 95 references

Supplementary info

Publication typesExpand

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Cite

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J Pediatr (Rio J)

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. 2026 Jul 14:101583.

doi: 10.1016/j.jped.2026.101583. Online ahead of print.

The pediatric respiratory assessment measure as a predictor of hospitalization in the management of asthma exacerbations: an observational study☆

Leopoldo Silocchi Pergo [1], Paula Adamo de Almeida [1], Gabriel Bordignon [2], Luis Eduardo Martins Bertoli [1], Solena Ziemer Kusma Fidalski [3], Débora Carla Chong-Silva [4], Rebeca Amelia Toassa Gomes Mousquer [1]

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- PMID: 42448296

- DOI: 10.1016/j.jped.2026.101583

Free article

Abstract

Objective: To evaluate the Pediatric Respiratory Assessment Measure (PRAM) score for hospital admission and prolonged stay risk stratification in the emergency department (ED) at different time points.

Method: Retrospective cohort study using prospectively collected protocol data (August 2023-March 2025) at a tertiary pediatric ED. Patients aged 2-17 years with acute asthma exacerbations were included; those with systemic comorbidities, other chronic lung diseases, or confounding acute conditions were excluded. PRAM was assessed hourly (PRAM 0 to 4). Outcomes were hospital admission and prolonged ED stay (> 3 h).

Results: A total of 428 visits were analyzed (35.0% hospital admission rate). PRAM demonstrated satisfactory discriminatory capacity for admission at triage (AUC: 0.791; 95% CI: 0.745-0.836; p < 0.001), with optimized accuracy during serial assessments, performing best at the second hour (PRAM 2; AUC: 0.829; 95% CI: 0.773-0.885; p < 0.001). For predicting prolonged ED stay, the score showed moderate accuracy at the second hour (AUC: 0.677; p < 0.001), with no significant correlation between sequential scores and time to admission decision (p > 0.05).

Conclusions: PRAM is a valuable, dynamic risk-stratification tool for pediatric asthma exacerbations. Serial assessments provide superior prognostic accuracy compared to a single static measurement at admission by actively reflecting therapeutic response. Although its ability to predict operational outcomes is restricted by non-clinical factors, the score demonstrates consistent utility for standardizing clinical assessment and supporting medical disposition in the ED.

Keywords: Asthma; Bronchial spasm; Emergency medicine; Patient outcome assessment; Pediatrics; Risk assessment.

Conflict of interest statement

Conflicts of interest The authors declare no conflicts of interest.

Full text links

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Ann Allergy Asthma Immunol

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. 2026 Jul 14:S1081-1206(26)00336-4.

doi: 10.1016/j.anai.2026.07.006. Online ahead of print.

High Systemic Corticosteroids Burden Among Moderate-to-Severe Asthma Patients in the United States

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Affiliations Expand

- **PMID: 42448101**

- **DOI: 10.1016/j.anai.2026.07.006**

Abstract

Background: Systemic corticosteroids (SCS) effectively control acute asthma exacerbations. However, repeated SCS use causes significant side effects, necessitating escalation to steroid-sparing biologics.

Objective: To assess SCS utilization patterns in patients with moderate-to-severe asthma in real-world settings.

Methods: Patients with asthma initiating biologics between January 1, 2023, and December 31, 2024, were identified from the Komodo Health database. The index date was defined as the date of the first biologic claim. Patients (≥12 years) with ≥1 asthma diagnosis claim within 90 days pre-index or at index, and no biologic claim in the 12-month pre-index period were included. Patients with other indications requiring SCS during the 12-month pre-index period were excluded. SCS utilization patterns were assessed within the 12-month pre-index period. SCS utilization was also assessed in patients with uncontrolled moderate-to-severe asthma but had not initiated biologics.

Results: Overall, 30,652 patients-initiated biologics. During the 12-month pre-index period, 63.9% (mean: 5.0 fills) of patients received ≥2 SCS prescriptions, with 36.3% receiving 2-4 and 27.6% (mean: 7.7 fills) receiving ≥5 prescriptions. The mean (standard deviation) cumulative SCS dosage was 1,100.4 (862.3) mg and 1,709.0 (933.6) mg, respectively, and the corresponding SCS days covered were 38.3 (30.3) and 58.9 (32.8) days in patients with ≥2 and ≥5 prescriptions, respectively. Consistent SCS utilization patterns were observed in patients who had not initiated biologics.

Conclusion: This analysis reveals that a substantial proportion of patients with moderate-to-severe asthma receive frequent SCS prescriptions, necessitating continued education on guideline-recommended steroid-sparing strategies to achieve asthma control without SCS bursts.

Keywords: Biologics; Moderate-to-severe asthma; Overutilization; Real-world; SCS; systemic corticosteroids.

Conflict of interest statement

Declaration of competing interest Lugogo NL: Received consulting fees from AbbVie, Amgen, Apogee, AstraZeneca, Avillion, Foresee, Genentech, GSK, Inctye, Niox, Novartis, Pfizer, Regeneron, Sanofi, and Teva; honoraria for nonspeakers bureau presentations from GSK, TEVA, SANOFI / Regeneron and Astra Zeneca; and travel support from Astra Zeneca, SANOFI, TEVA, Regeneron and GSK; her institution received research support from Amgen, AstraZeneca, Avillion, Bellus, Evidera, Gossamer Bio, Genentech, GSK, Janssen, Pfizer, Regeneron, Roche, Sanofi, Novartis and Teva. She is an honorary faculty member of Observational and Pragmatic Research Institute (OPRI) but does not receive compensation for this role. Peters AT: Research and consulting — Areteia, AstraZeneca, Insmed, Regeneron Pharmaceuticals Inc., Sanofi, and Eli Lily; Consulting — Chiesi and GSK; Participation on a Data Safety Monitoring Board or Advisory Board — Regeneron Pharmaceuticals Inc., Sanofi, BluePrint; Leadership or fiduciary role — AAAAI (Board) and Euforea (Board). Katial R: Consulting fees – Sanofi, Regeneron Pharmaceuticals Inc., AstraZeneca, Grifols, and GSK; Payment or honoraria –

Grifols and AstraZeneca; Participation on a Data Safety Monitoring Board or Advisory Board – BluePrint. Chen C, Song X, Soliman M, Kwah J, and Wang Z: Employees — Regeneron Pharmaceuticals, Inc. and may hold stocks and/or stock options in the company. Subramaniam A and Tardy A-L: Employees — Sanofi and may hold stocks and/or stock options in the company.

Cite

15

Respir Med

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. 2026 Jul 14:109009.

doi: 10.1016/j.rmed.2026.109009. Online ahead of print.

The PEACE-24 Study: Tezepelumab Improves Functional Exercise Capacity and Asthma Control in Severe Asthma

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Affiliations Expand

- PMID: 42448002

- DOI: 10.1016/j.rmed.2026.109009

Abstract

Background: Tezepelumab is effective in improving disease control and reducing exacerbations, regardless of the T2 inflammatory profile [1-5]. With its ability to mitigate bronchial hyperresponsiveness and mucus hypersecretion, improve respiratory function, and modulate the inflammatory response [1,6,7], this drug could play a role in increasing exercise tolerance.

Objective: Our study aims to evaluate the improvement in exercise tolerance, a less-explored aspect, in patients treated with Tezepelumab using the six-minute walking test (6MWT).

Methods: Patients treated with Tezepelumab at Respiratory and Allergy Clinic of Genoa Metropolitan Hospital were included in the study. Patients were assessed at baseline and at 24 weeks using spirometry, exhaled nitric oxide measurement, asthma control and quality of life questionnaires (ACT, AQLQ, SNOT22, RAPP), and 6MWT. Pre- and post-treatment data were analyzed using the paired samples t-test and Spearman's correlation.

Results: After 24 weeks, a significant improvement was observed in the distance covered in the 6MWT, both in absolute terms (409m vs. 478m, p=0.031) and in terms of % of the predicted theoretical value (73% vs. 82%, p=0.034), with improvement in pre-test dyspnea (Borg 3.55 vs. 1.47, p=0.002) and the average score of the domains related to physical exercise in the AQLQ questionnaire (4.24 vs. 5.80, p=0.01). There was also a positive correlation between improvement in FEV_1 and distance covered (ρ=0.658, p=0.028).

Conclusion: Tezepelumab, with its effects, increases exercise tolerance in patients with severe asthma, highlighting this as a potentially treatable trait to consider in the management of such patients.

Keywords: TSLP; Tezepelumab; effort; real life; severe asthma; walking test.

Conflict of interest statement

Declaration of Competing Interest The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Cite

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Expert Opin Pharmacother

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. 2026 Jul 15:1-11.

doi: 10.1080/14656566.2026.2702385. Online ahead of print.

Current perspectives on β_2-adrenergic receptor agonists in asthma: navigating from track to track within GINA recommendations

Luigino Calzetta [1], Paola Rogliani [2]

Affiliations Expand

- **PMID: 42444391**

- **DOI: 10.1080/14656566.2026.2702385**

Abstract

Introduction: Asthma treatment has long relied on short-acting β_2-adrenergic receptor (β_2-AR) agonists (SABA) such as salbutamol for as-needed relief, often without concurrent anti-inflammatory therapy. Emerging data link frequent SABA use to higher exacerbation rates and mortality. Current recommendations organize asthma treatment into Track 1, with as-needed inhaled corticosteroid (ICS)/formoterol used also as maintenance-and-reliever therapy, and Track 2, with SABA or ICS/SABA reliever plus separate maintenance; Track 1 is identified as the preferred option.

Areas covered: This review evaluates β_2-AR agonist use within the Track 1/Track 2 context. Randomized trials show as-needed ICS/formoterol reduces severe exacerbations more than SABA-based regimens, without a detectable mortality signal. Large observational evidence indicates that 3-5 SABA canisters per year already associates with increased mortality, with higher risk at 6-10 and ≥11 canisters per year. Contemporary trials and real-world studies reveal many patients on SABA-centered or fluticasone furoate/vilanterol regimens may reach these exposure levels, whereas ICS/formoterol regimens produce lower reliever use and fewer exacerbations.

Expert opinion: Where ICS/formoterol is accessible, Track 1 should be the default strategy. Clinicians should minimize SABA overuse, prioritize ICS/formoterol regimens, and advocate policies improving access to reduce preventable morbidity and mortality.

Keywords: Asthma; GINA; MART; SMART; formoterol; mortality; salbutamol; tachyphylaxis.

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Immunotherapy

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. 2026 Jul 12:1-10.

doi: 10.1080/1750743X.2026.2700927. Online ahead of print.

The long-term effectiveness of specific immunotherapy in cat allergy: a real-life study

Nilay Orak Akbay [1 2], Dilşad Mungan [2], Betül Ayşe Sin [2]

Affiliations Expand

- PMID: 42438286

- DOI: 10.1080/1750743X.2026.2700927

Abstract

Aims: Cat allergy has emerged as a significant health concern, particularly for individuals with persistent allergic rhinitis and/or asthma. We aimed to assess the long-term efficacy of immunotherapy with cat allergen.

Patients & methods: 41 patients who received cat SCIT were included. Long-term follow-up data were obtained from 22 of 41 patients who could be contacted after completion of immunotherapy.

Results: Among 41 patients, 35 were female and six were male, with a median age of 35 years (IQR: 31-42). The median time after stopping AIT was 51.5 months (IQR 32.5). In the 22 patients available for long-term follow-up, the overall mean score of the RQLQ improved to 1.76 ± 1.33 from 3.52 ± 1.23 after AIT (p <0.001). AQLQ scores significantly improved in 13/16 (81.3%) patients diagnosed with asthma (p = 0.02). The visual analog score for rhinitis symptoms decreased after AIT (p = 0.001). In total, 12 of 41 patients (29.3%) experienced a local injection site reaction, two (4.9%) of them had severe asthma worsening and two (4.9%) had a systemic reaction.

Conclusion: Our findings suggest that allergen-specific immunotherapy (AIT) is effective in improving symptoms of rhinitis and asthma in patients with cat dander allergy. It also provides sustained clinical benefit in patients who can be evaluated in long-term follow-up; however, larger studies are needed.

Keywords: Cat allergy; asthma; efficacy; immunotherapy; rhinitis.

Plain language summary

Cat allergy is a common cause of allergic rhinitis and asthma. Often, avoiding cats is recommended as a definitive solution, but many people consider them as family members. In addition, cat allergens can remain in homes, schools, and public places even when cats are not present. Medicines such as antihistamines or inhalers may help control symptoms, but long term use can be exhausting.Allergen immunotherapy (AIT), also known as allergy vaccination, is the only treatment that may reduce the body's allergic response over time. However, there is limited information about how effective cat immunotherapy remains years after treatment ends.In this real-life study, adults with cat allergy who received subcutaneous cat immunotherapy were evaluated. We examined their symptoms, quality of life, medication use, side effects, and whether they continued living with cats after treatment. Many patients were assessed several years after completing therapy.We

found that patients experienced significant improvements in nasal and asthma symptoms, quality of life, and need for medication after treatment. Importantly, these benefits continued for several years after immunotherapy had ended. Many patients were still living with cats while maintaining improved symptom control. Most side effects were mild, although some patients experienced more serious allergic reactions that required stopping treatment.Our findings suggest that cat allergen immunotherapy may provide long-term benefits for selected patients with cat allergy, even when avoiding cat exposure is not possible.

18

J Asthma

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. 2026 Jul 15:1-8.

doi: 10.1080/02770903.2026.2701401. Online ahead of print.

Negative association between asthma and tuberculosis: the mediating effect of albumin

Ling-Yan Chen [1], Hai-Bo Hua [1], Yuan-Yuan Chen [1]

Affiliations Expand

- PMID: 42429064

- DOI: 10.1080/02770903.2026.2701401

Abstract

Objective: This study aimed to assess the relationship between asthma and tuberculosis (TB) risk and to explore whether oxidative stress-related serum markers available in National Health and Nutrition Examination Survey (NHANES) mediate this association.

Methods: Data were obtained from NHANES. Multivariate logistic regression was used to examine the association between asthma and TB and between oxidative stress-related serum markers and TB. Generalized linear regression was used to analyze the association between asthma and oxidative stress-related serum markers. Mediation analysis was used to evaluate the role of albumin, as the only

marker that remained significant, in the association between asthma and TB. A core propensity score matching (PSM) sensitivity analysis was performed.

Results: Asthma was associated with TB risk in 3 different models (all odds ration [OR] < 1, all $p < 0.05$). Among oxidative stress indicators, only albumin concentration was associated with TB risk, and higher albumin concentrations were associated with lower TB risk (all $p < 0.05$). Furthermore, asthma was associated with albumin concentration in 3 models (all $\beta < 0$, all $p < 0.05$). Finally, albumin was identified as a mediator in the association between asthma and TB risk. In a core PSM-matched sample, the inverse asthma-TB association remained significant in the final model, whereas the matched-sample albumin-TB and indirect mediation estimates were attenuated.

Conclusion: Asthma was negatively associated with TB risk, and albumin, among the evaluated oxidative stress-related serum markers, appeared to exert a significant mediating effect on this association. This direction was generally preserved in the matched sensitivity analysis.

Keywords: NHANES; Tuberculosis; albumin; association; asthma; mediating effect.

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Review

FASEB J

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. 2026 Jul 15;40(13):e72094.

doi: 10.1096/fj.202505048R.

Gene-Environment Interactions in Childhood Asthma: From Prenatal Exposures to Targeted Interventions

Sigi Li [1], Wanru Shang [1], Hongbing Luo [1], Bingyue Sun [1], Yang Li [1], Fanzheng Meng [1 2], Man Gao [1 2]

Affiliations Expand

- PMID: 42384431

- DOI: 10.1096/fj.202505048R

Abstract

Asthma is one of the most common chronic respiratory diseases affecting both children and adults worldwide. Its pathogenesis is driven by complex interactions between genetic susceptibility and environmental exposures. Investigating gene-environment (G × E) interactions holds significant potential to elucidate the regulatory genetic architecture underlying individual responses to environmental risk factors in childhood asthma. In this review, we systematically summarize the environmental exposure factors during prenatal and postnatal periods and analyze their independent effects on the risk of childhood asthma. Secondly, we explore the role of G × E interactions in asthma from three perspectives: statistical interaction, mechanistic interaction, and epigenetic-mediated interaction. Finally, we evaluate current treatment and intervention strategies, distinguish established recommendations for the general population from emerging and exploratory methods, and point out existing limitations. Our analysis reinforces that investigating G × E interactions is a robust approach for uncovering the molecular mechanisms underlying childhood asthma. Despite substantial technical challenges and unresolved questions regarding generalizability and heterogeneity, such investigative strategies are expected to enhance our understanding of asthma endotypes and the development of more effective, precision-based preventive and therapeutic interventions.

Keywords: asthma; genetics; gene-environment interactions; prenatal and postnatal environmental exposures.

- 182 references

Supplementary info

Publication types, MeSH terms, Grants and fundingExpand

Full text links

20

J Asthma

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. 2026 Jul 15:1-12.

doi: 10.1080/02770903.2026.2696573. Online ahead of print.

Nasal eosinophilia as a noninvasive biomarker of type 2 inflammation and treatment response in children with asthma

Martina Neuschlova [1], Peter Kunc [1 2], Marian Grendar [3], Renata Pecova [1]

Affiliations Expand

- PMID: 42377212

- DOI: 10.1080/02770903.2026.2696573

Abstract

Methods: A total of 202 children aged 7-18 years were included in the study and stratified according to the treatment type and fractional exhaled nitric oxide (FeNO) values. Absolute peripheral blood eosinophil counts, nasal eosinophil percentages, FeNO levels and age were assessed.

Results: Antihistamines and leukotriene receptor antagonists were associated with a significant reduction in nasal eosinophilia ($p = 0.004$ and $p = 0.001$, respectively), whereas inhaled corticosteroids showed no significant effect ($p = 0.928$). A significant positive association was demonstrated between FeNO levels and nasal eosinophilia ($p < 0.001$), while age showed a significant negative effect ($p < 0.001$).

Conclusion: Nasal cytology may represent an easily applicable, and ethically acceptable tool for noninvasive monitoring local eosinophilic inflammation in pediatric asthma. Nasal eosinophilia appears to reflect dynamic airway inflammatory changes more directly than peripheral blood eosinophils and may be useful adjunctive marker for monitoring treatment-related changes and guiding personalized therapy.

Keywords: FeNO; biomarkers; nasal cytology; nasal eosinophilia; noninvasive marker; pediatric asthma.

21

Review

J Asthma

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. 2026 Jul 13:1-16.

doi: 10.1080/02770903.2026.2696575. Online ahead of print.

Effectiveness of short-acting beta-2 agonists delivered by metered-dose inhaler with spacer versus nebulizer in acute asthma exacerbations: a systematic review and meta-analysis

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Affiliations Expand

- PMID: 42370850

- DOI: 10.1080/02770903.2026.2696575

Abstract

Objective: This systematic review and meta-analysis aimed to compare the clinical effectiveness of short-acting β_2-agonist (SABA) delivery *via* metered-dose inhaler with spacer versus nebulizer in patients with acute asthma exacerbations.

Methods: A comprehensive search was conducted in PubMed, Embase, Web of Science, and the Cochrane Library from inception to July 14, 2025. Randomized controlled trials (RCTs) involving patients aged 2 years or older comparing SABA administration via metered-dose inhaler with spacer versus nebulizer were included. The primary outcome was hospital admission; secondary outcomes included length of stay, return visit within 72 h, peak expiratory flow, forced expiratory volume in one second, oxygen saturation, respiratory rate, heart rate, and tremor. Two reviewers independently selected studies, extracted data, and assessed risk of bias using the RoB 2 tool. Random-effects meta-analyses were conducted, with separate analyses for pediatric and adult populations. The certainty of evidence was assessed using the GRADE approach. The protocol was registered in PROSPERO (CRD42023445698).

Results: Twenty RCTs (2235 participants) were included. No significant difference in hospital admission was observed overall (RR = 0.90; 95% CI [0.69 to 1.18]; I^2 = 0%), nor in adults, children, or severe exacerbations. Secondary outcomes showed no significant differences overall. In children, however, MDI with spacer was associated with shorter ED stays and a lower risk of tremor. Certainty of evidence ranged from moderate to very low.

Conclusion: SABA delivery *via* MDI with spacer showed comparable clinical outcomes to nebulization for acute asthma exacerbations, with potential pediatric advantages in reducing ED length of stay and the risk of tremor.

Keywords: Nebulizers and vaporizers; asthma; bronchodilator agents; emergency department; holding chamber; meta-analysis; metered-dose inhaler; spacer; systematic review.

Supplementary info

Publication typesExpand

Full text links

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Cite

22

Neuroscience

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. 2026 Jul 17:607:76-87.

doi: 10.1016/j.neuroscience.2026.04.017. Epub 2026 May 6.

Asthma's impact on brain function: an investigation of changes in functional connectivity and network topology

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Affiliations Expand

- **PMID: 42103074**

- **DOI: 10.1016/j.neuroscience.2026.04.017**

Abstract

Asthma is a reversible condition characterized by airflow limitation and chronic airway inflammation. Previous neuroimaging studies have confirmed brain structural and functional abnormalities associated with asthma, primarily occurring in regions such as the anterior cingulate cortex, superior frontal gyrus, occipital lobe, postcentral gyrus, and corpus callosum. These changes may be attributable to asthma-related systemic inflammation. This study investigates modifications in the topological organization of functional brain networks in individuals with asthma using functional magnetic resonance imaging (fMRI) and graph theory techniques. Thirty-one asthma patients and thirty-one healthy controls participated, with resting-state fMRI data collected through MRI scanning. Data preprocessing was conducted using DPABI and SPM12 software, and functional brain networks were

constructed and analyzed using the GRETNA toolbox. We computed global and nodal indices to evaluate network characteristics, identifying significant connectivity changes through network-based statistics (NBS). Results revealed notable differences in global network efficiency and small-world properties between individuals with asthma and controls, as well as significant distinctions in specific brain regions related to visual processing and cognitive functions. NBS analysis indicated that asthma patients exhibited substantial alterations in connectivity across various essential brain networks, suggesting effects on cognitive and emotional processing. Overall, the findings emphasize the significant impact of asthma on brain functional connectivity, influencing both global and nodal network properties, with potential implications for patients' cognitive and emotional well-being. Further research is required to understand the clinical implications of these alterations and to develop targeted interventions.

Conflict of interest statement

Declaration of competing interest The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Supplementary info

MeSH termsExpand

Full text links

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Cite

23

Editorial

Thorax

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. 2026 Jul 15;81(8):727-728.

doi: 10.1136/thorax-2026-224744.

An asthma-related anxiety intervention appropriate for the shift to digitalised care

Adam Lewis [1], Judit Varkonyi-Sepp [2], Nathan Healey [3], Ben Ainsworth [3]

Affiliations Expand

- PMID: 41850775

- DOI: 10.1136/thorax-2026-224744

No abstract available

Keywords: Asthma; Perception of Asthma/Breathlessness; Psychology.

Conflict of interest statement

Competing interests: None declared.

Supplementary info

Publication typesExpand

Full text links

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Cite

24

Thorax

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. 2026 Jul 15;81(8):736-737.

doi: 10.1136/thorax-2025-224508.

Aligning management of chronic cough in asthma with BTS/NICE/SIGN guidance

Paul Marsden [1 2], Jaclyn Ann Smith [3 2], Surinder S Birring [4], Kevin Gruffydd-Jones [5], Jemma Haines [3 2], Lorcan P McGarvey [6], Matthew Martin [7], Alyn Morice [8 9], James O'Hara [10], Mike Thomas [11], Sean M Parker [12 13]

Affiliations Expand

- PMID: 41825860

- DOI: 10.1136/thorax-2025-224508

No abstract available

Keywords: Asthma; Cough/Mechanisms/Pharmacology.

Conflict of interest statement

Competing interests: PM reports research grant funding from MSD, NIHR Manchester BRC, consulting fees from Trevi, GSK. PM is a member of the BTS Cough Specialist Advisory Group. JAS reports research grant funding from Wellcome, MSD, MRC, Natural Environment Research Council, Moulton Charitable Trust, NIHR Manchester BRC, consulting fees from MSD, Bellus Health, Nocion, Shionogi, Algernon, AZ, BI, Chiesi, GSK, Trevi, Alxalbion, Seyltx and lecture fees from MSD, GSK. JAS is an inventor on a patent for a cough algorithm licensed to her institution, which receives royalty payments from Vitalograph. JAS reports support for attending meetings from GSK and Trevi. SB reports no competing interests. KGJ reports consulting fees from GSK, AZ, Insmed, lecture fees from RCGP, Guidelines in Practice, AZ. He is a trustee of PCRS. LM reports research grant funding from MSD, Bellus Health, Chiesi, GSK and Bionorica and consulting fees from MSD, Chiesi, Nocion, Genentech, AZ, Bellus Health, Shionogi, GSK, Trevi, Reckitt Benckiser. LM reports lecture fees from Chiesi, Bellus Health, GSK, Merck, NeRRe Therapeutics, Nocion, Trevi, Reckitt Benckiser, Boehringer Ingelheim, Bionorica and is CI of the ERS NEuroCOUGH Clinical Research Collaboration. JH reports consulting and lecture fees from GSK. MM reports research grant funding from NIHR School for Primary Care Research, lecture fees from Chiesi and support to attend meetings from Chiesi, AZ. AM reports research grant funding from GSK, Axalbion, Trevi, consulting fees from GSK, lecture fees from MSD, GSK. AM participates in a data safety monitoring board for BI and is a member of the ERS taskforce on cough nomenclature, ERS Neurocough CRC and holds stock in SIVA Health AG. JOJ reports research funding from Reckitt. MT has no conflicts of interest to declare. SP reports lecture fees from Primary Care 2025 Event, consulting fees from Trevi and support for attending a conference from Chiesi.

Full text links

"rhinitis"[MeSH Terms] OR rhinitis[Text Word]

1

BMC Pediatr

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. 2026 Jul 18.

doi: 10.1186/s12887-026-07332-1. Online ahead of print.

Follow-up study on factors influencing the persistence of asthma in discharged children

Huimin Zou [#1], Peng Han [#1,2], Ju Yin [1], Kunling Shen [3,4]

Affiliations Expand

- PMID: 42471639

- DOI: 10.1186/s12887-026-07332-1

Abstract

Background: The process of asthma, after its onset, is featured by periods of persistence, relapse and remission. This follow-up study is aim to investigate the landscape of asthma management and personal factors associated with persistence and remission in children aged 0-18 years at Beijing Children's Hospital.

Methods: This was a retrospective cohort study. Children hospitalized in Beijing Children's Hospital from 2019 to 2021 due to acute asthma attacks were included as study participants. A questionnaire was used to collect information on both asthma management and the occurrence of any asthma attacks following discharge. We defined asthma remission as the absence of asthma symptoms for one year, in contrast to persistent asthma. Logistic regression analyses were performed to identify factors associated with asthma remission and persistence.

Results: A total of 210 children with asthma were enrolled in this study. Of these, 152 (72.4%) completed the follow-up and were included in the final analysis. The median follow-up time was 2.76 years (interquartile range (IQR), 2.18-3.95). Among these patients, the frequency of asthma attacks after discharge varied with different follow-up duration. 31.6% of children with asthma had regular follow-up visits, 36.8% had regular use of inhaled corticosteroids (ICS) for 3 months or more, and 42.8% used ICS only for asthma symptoms. There were 75 children with remission of asthma and 77 children with persistence. Multivariate logistic regression analysis identified three factors associated with asthma persistence: allergic rhinitis (odds ratio (OR) = 3.88, 95% confidence interval (CI): 1.54-9.75), ≥ 3 exacerbations in Early Period (OR = 12.34, 95% CI: 4.74-32.14) and unplanned healthcare attendances in Early Period (OR = 8.61, 95% CI: 2.51-29.51).

Conclusions: After discharge, some children had acute asthma attacks. About 30% were engaged in regular follow-up and anti-asthma treatment. 50.7% of the children with asthma have experienced persistent asthma symptoms in the past year. Allergic rhinitis, ≥ 3 acute asthma attacks in Early Period, and unplanned healthcare attendances in Early Period were associated with asthma persistence.

Keywords: Asthma; Child; Discharge; Follow-up; Persistence.

Conflict of interest statement

Declarations. Ethics approval and consent to participate: The study was approved by the Institutional Ethics and Review Committees of Beijing Children’s Hospital affiliated to Capital Medical University (approval number:2023-E-078-Y). The informed consent was waived due to the retrospective nature of the study. The study complied with the Declaration of Helsinki and its amendments. Consent for

publication: Not applicable. Competing interests: The authors declare no competing interests.

Full text links

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Cite

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Review

Curr Med Res Opin

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. 2026 Jul 17:1-16.

doi: 10.1080/03007995.2026.2700973. Online ahead of print.

A quarter-century of montelukast: clinical lessons for adult and pediatric asthma and allergic rhinitis care

Jan S Redfern [1], Megan A Smith [2]

Affiliations Expand

- PMID: 42466635

- DOI: 10.1080/03007995.2026.2700973

Abstract

Montelukast entered routine respiratory practice in the late 1990s and remains widely used for asthma, allergic rhinitis (AR), and exercise-induced bronchoconstriction (EIBC). Its continued use has been driven largely by once-daily oral administration, ease of implementation, broad indications, and perceived advantages in patients with poor adherence to or difficulty using inhaled therapies. However, over time, the role of montelukast has evolved as comparative efficacy data, long-term safety findings, and treatment guidelines have modified expectations regarding its clinical value. This review re-examines the contemporary role of montelukast *via* integrating evidence on its mechanism of action, comparative clinical efficacy, prescribing patterns, safety outcomes, and future directions for individualized therapy. Clinical evidence demonstrates measurable benefit across asthma, AR, and EIBC; however, treatment effects are generally

modest and variable and typically inferior to inhaled corticosteroid (ICS)-based regimens or intranasal corticosteroids (INCS). Nevertheless, patients, with poor inhaler adherence, exercise-related symptoms, aspirin-exacerbated respiratory disease, concomitant AR, or preference for oral therapy, may derive clinically meaningful benefit. Post-marketing surveillance has altered the therapeutic positioning of montelukast. Recognition of infrequent, but potentially serious, neuropsychiatric adverse events culminated in strengthened regulatory warnings and more cautious prescribing practices. Current management, therefore, emphasizes patient selection, pre-treatment counseling, shared decision-making, monitoring for behavioral changes, and timely review of treatment response. Current guidelines generally position montelukast as an alternative or add-on controller rather than a preferred first-line therapy. In the future, advances in pharmacogenomics, biomarker development, and phenotype-guided treatment strategies may improve the identification of patients most likely to benefit from montelukast.

Keywords: Montelukast; allergic rhinitis; asthma; cysteinyl leukotriene receptor antagonists; neuropsychiatric adverse events; safety.

Plain language summary

Why was this review written?Montelukast has been used for more than 25 years to treat asthma, allergic rhinitis (hay fever), and exercise-induced breathing problems. It is taken as a once-daily tablet, which makes it attractive for people who prefer not to use inhalers or have difficulty using them. However, as more research and long-term safety information became available, doctors' understanding of when montelukast should be used has changed.What did this review look at?This review examined published research from January 1998 to May 2026 to understand how montelukast works, how effective it is, how safe it is, and how its role in treatment has changed over time. The review focused on asthma, allergic rhinitis, and exercise-induced bronchoconstriction and also considered recent treatment guidelines and prescribing trends.What is montelukast and how does it work?Montelukast blocks the action of substances called leukotrienes and can help improve breathing symptoms and reduce inflammation in some patients.What were the main findings?Montelukast can improve symptoms in asthma, allergic rhinitis, and exercise-related breathing problems, but its overall effects are usually modest. For asthma, inhaled corticosteroids generally provide greater improvement and remain the preferred treatment in most patients. For allergic rhinitis, nasal corticosteroid sprays are usually more effective than montelukast.Despite this, montelukast may still be useful in selected situations.Over time, concerns about rare but potentially serious mental health side effects have changed how montelukast is used. These concerns led regulators to strengthen safety warnings and encouraged more cautious prescribing.What does this mean for patients and healthcare professionals?Current treatment guidelines generally recommend montelukast as an alternative or add-on treatment rather than a first-choice option. Patients and caregivers should be informed about possible neuropsychiatric side effects and should seek medical advice if behavioral or mood changes occur. Future research may help identify which patients are most likely to benefit from montelukast through biomarkers and personalized treatment approaches.

Supplementary info

Publication typesExpand

3

BMC Public Health

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. 2026 Jul 16.

doi: 10.1186/s12889-026-28580-x. Online ahead of print.

Ambient PM2.5 and respiratory tract disorder-related outpatient visits among healthcare workers: an ecological time-series study

Chaturon Tangsangwornthamma [1], Sivakorn Suntinipanon [2], Chathaya Wongrathanandha [3], Natnaree Aimyong [4]

Affiliations Expand

- PMID: 42464267

- DOI: 10.1186/s12889-026-28580-x

Abstract

Introduction: Ambient fine particulate matter (PM2.5) is associated with adverse respiratory outcomes, yet evidence among healthcare workers remains limited. This study examined temporal associations between weekly ambient PM2.5 concentrations and respiratory tract disorder (RTD)-related outpatient visits among healthcare workers, an occupationally active urban population potentially affected by ambient air pollution.

Methods: An ecological time-series study was conducted among healthcare workers at a 1,000-bed tertiary-care hospital in Bangkok, Thailand, from November 2018 to April 2019. RTD- and respiratory tract symptom (RTS)-related outpatient visits were identified using ICD-10 codes (J00-J99) from electronic medical records. Weekly average ambient PM2.5 concentrations were obtained from the nearest national monitoring station. Weekly outpatient visit counts were analysed using Poisson or negative binomial regression models and expressed as incidence rate ratios (IRRs) per 10 μg/m³ increase in PM2.5 concentration, adjusted for temporal trends.

Results: Among 12,458 healthcare workers, short-term increases in weekly ambient PM2.5 concentrations were associated with higher outpatient visit counts for overall RTDs (IRR 1.139, 95% CI 1.059-1.225), common cold (1.164, 1.082-1.252), allergic rhinitis (1.240, 1.126-1.365), sinusitis (1.168, 1.017-1.342), and asthma (1.429, 1.003-2.037). Significant associations were also observed for upper respiratory symptoms including sneezing, sore throat, cough, and shortness of breath.

Conclusions: Short-term increases in ambient PM2.5 concentrations were temporally associated with higher respiratory outpatient visits among healthcare workers. These findings extend evidence regarding air pollution and respiratory health to an understudied occupational population and reinforce the public health importance of continued air quality management in urban environments.

Keywords: Air pollution; Healthcare workers; Occupational health; PM2.5 exposure; Respiratory tract disorders.

Conflict of interest statement

Declarations. Ethics approval and consent to participate: Ethical approval was obtained on May 8, 2024, from the Human Research Ethics Committee, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Thailand (reference: COA No. MURA2024/307, Ref. 2025/516). The requirement for informed consent was waived by the IRB due to the retrospective nature of the study and the use of de-identified electronic medical record data. The study was conducted in accordance with the Declaration of Helsinki and relevant institutional ethical guidelines. Consent for publication: Not applicable. Competing interests: The authors declare no competing interests.

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Laryngoscope Investig Otolaryngol

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. 2026 Jul 12;11(4):e70468.

doi: 10.1002/lio2.70468. eCollection 2026 Aug.

Blue-Laser Posterior Nasal Neurolysis via Dual Layer Nerve Modulation for Chronic Rhinitis

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- PMID: 42438472

- PMCID: PMC13356868

- DOI: 10.1002/lio2.70468

Abstract

Objective: Chronic rhinitis (CR) may be allergic (AR), nonallergic (NAR), or mixed, and depending on the etiology and severity, patients experience various degrees of rhinorrhea, obstruction, itching, and sneezing. Chronic AR is estimated to impact over 26.3% of the people in Taiwan. Inferior turbinate reduction can improve nasal obstruction symptoms, and posterior nasal nerve neurolysis can reduce symptoms caused by neurogenic hypersecretion. Blue-laser posterior nasal neurolysis via dual-layer nerve modulation provides a precise operation for chronic AR.

Methods: In this retrospective study, conducted at Shuang Ho Hospital in 2025, we compared the efficacy and safety of blue-laser inferior turbinate reduction (BITR) combined with blue-laser posterior nasal nerve neurolysis (BPN3). In total, 42 adult patients with CR who had not responded adequately to at least 3 months of drug therapy (≥ 3 months) were included. The primary outcomes were the 24-h reflective Total Nasal Symptoms Score (rTNSS) and the Nasal Obstruction Symptoms Evaluation (NOSE) scale score, which were compared and analyzed at the baseline, and 1 and 6 months postoperatively.

Results: At 1 month, all patients exhibited significant improvements. Mean rTNSS had decreased from 7.9 ± 2.1 to 1.7 ± 1.6 (-78.5%) and NOSE scores improved from 69.3 ± 11.4 to 7.0 ± 6.5 (-89.9%). At 6 months, the mean rTNSS had decreased from 7.9 ± 2.1 to 1.9 ± 1.8 (-76.0%) and NOSE scores had improved from 69.3 ± 11.4 to 6.6 ± 5.3 (-92.0%). Overall, no serious complications occurred during the study period.

Conclusions: BPN3 combined with inferior turbinate reduction provides superior symptom relief, particularly for rhinorrhea, with excellent safety and tolerability. This dual layer nerve modulation operation offers a promising minimally invasive treatment for medication-refractory chronic AR.

Level of evidence: IV.

Keywords: blue laser; chronic rhinitis; neurolysis; posterior nasal nerve; rTNSS; turbinate reduction.

Conflict of interest statement

The authors declare that no generative artificial intelligence technologies were used in the writing, data analysis, or preparation of this manuscript.The authors declare no conflicts of interest.

- 7 references
- 3 figures

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Immunotherapy

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. 2026 Jul 12:1-10.

doi: 10.1080/1750743X.2026.2700927. Online ahead of print.

The long-term effectiveness of specific immunotherapy in cat allergy: a real-life study

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Affiliations Expand

- PMID: 42438286

- DOI: 10.1080/1750743X.2026.2700927

Abstract

Aims: Cat allergy has emerged as a significant health concern, particularly for individuals with persistent allergic rhinitis and/or asthma. We aimed to assess the long-term efficacy of immunotherapy with cat allergen.

Patients & methods: 41 patients who received cat SCIT were included. Long-term follow-up data were obtained from 22 of 41 patients who could be contacted after completion of immunotherapy.

Results: Among 41 patients, 35 were female and six were male, with a median age of 35 years (IQR: 31-42). The median time after stopping AIT was 51.5 months (IQR 32.5). In the 22 patients available for long-term follow-up, the overall mean score of the RQLQ improved to 1.76 ± 1.33 from 3.52 ± 1.23 after AIT (p <0.001). AQLQ scores

significantly improved in 13/16 (81.3%) patients diagnosed with asthma (p = 0.02). The visual analog score for rhinitis symptoms decreased after AIT (p = 0.001). In total, 12 of 41 patients (29.3%) experienced a local injection site reaction, two (4.9%) of them had severe asthma worsening and two (4.9%) had a systemic reaction.

Conclusion: Our findings suggest that allergen-specific immunotherapy (AIT) is effective in improving symptoms of rhinitis and asthma in patients with cat dander allergy. It also provides sustained clinical benefit in patients who can be evaluated in long-term follow-up; however, larger studies are needed.

Keywords: Cat allergy; asthma; efficacy; immunotherapy; rhinitis.

Plain language summary

Cat allergy is a common cause of allergic rhinitis and asthma. Often, avoiding cats is recommended as a definitive solution, but many people consider them as family members. In addition, cat allergens can remain in homes, schools, and public places even when cats are not present. Medicines such as antihistamines or inhalers may help control symptoms, but long term use can be exhausting.Allergen immunotherapy (AIT), also known as allergy vaccination, is the only treatment that may reduce the body's allergic response over time. However, there is limited information about how effective cat immunotherapy remains years after treatment ends.In this real-life study, adults with cat allergy who received subcutaneous cat immunotherapy were evaluated. We examined their symptoms, quality of life, medication use, side effects, and whether they continued living with cats after treatment. Many patients were assessed several years after completing therapy.We found that patients experienced significant improvements in nasal and asthma symptoms, quality of life, and need for medication after treatment. Importantly, these benefits continued for several years after immunotherapy had ended. Many patients were still living with cats while maintaining improved symptom control. Most side effects were mild, although some patients experienced more serious allergic reactions that required stopping treatment.Our findings suggest that cat allergen immunotherapy may provide long-term benefits for selected patients with cat allergy, even when avoiding cat exposure is not possible.

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Int Immunopharmacol

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. 2026 Jul 15:181:116734.

doi: 10.1016/j.intimp.2026.116734. Epub 2026 Apr 29.

The role and significance of YKL-40 in mucopathological remodeling in eosinophilic chronic rhinosinusitis

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- PMID: 42061140

- DOI: 10.1016/j.intimp.2026.116734

Abstract

Objective: Medical and surgical treatments for eosinophilic chronic rhinosinusitis (ECRS) yield suboptimal efficacy, and the disease carries a high postoperative recurrence rate. Currently, there is a lack of histopathological and molecular markers for early identification of its characteristics. YKL-40, a chitinase-like protein, has been shown to be significantly elevated in ECRS patients and it is correlated with disease severity in previous studies. However, the role and mechanism of YKL-40 in promoting inflammation and tissue pathological changes in ECRS remain unclear. This study aimed to investigate the expression and correlation of YKL-40, TGF-β1, and fibrosis-related markers in ECRS patients and mouse models, and explore their regulatory mechanism in mucosal pathological remodeling, with unified diagnostic criteria for ECRS applied throughout.

Methods: An ECRS mouse model was established using ovalbumin (OVA) + Aspergillus protease (PA). ELISA, HE/Masson staining, immunohistochemistry, RT-qPCR, and Western Blot were used to detect inflammatory and remodeling-related indicators in mouse and human nasal mucosal tissues. Primary human ECRS nasal mucosal epithelial cells were isolated, and YKL-40 knockdown combined with TGF-β1 inhibitor intervention was performed to verify the regulatory relationship between YKL-40 and TGF-β1 signaling.

Results: ECRS with nasal polyps (ECRSwNP) patients showed higher preoperative and postoperative VAS scores, blood eosinophil indicators, and YKL-40 expression than non-ECRS patients. YKL-40 was positively correlated with disease severity, blood eosinophils, and submucosal collagen volume fraction (CVF) in ECRSwNP. The protein levels of TGF-β1, α-SMA, Collagen I, and Collagen III were significantly upregulated in ECRSwNP nasal polyps and positively correlated with YKL-40 expression. ECRS mice exhibited increased eosinophil infiltration, collagen deposition, and elevated levels of IL-4, IL-13, YKL-40, and TGF-β1. Antagonizing YKL-40 or TGF-β1 in mice attenuated Th2 inflammation, eosinophil infiltration, and collagen deposition. In primary ECRS epithelial cells, YKL-40 knockdown significantly downregulated TGF-β1, α-SMA, Collagen I, and Collagen III expression, with further inhibition observed after combined TGF-β1 blockade.

Conclusions: YKL-40 is highly expressed in ECRS and positively correlated with disease severity and tissue fibrosis. YKL-40 synergizes with TGF-β1 to promote Th2-type inflammation and nasal mucosal pathological remodeling in ECRS.

Targeted inhibition of the YKL-40/TGF-β1 axis alleviates mucosal inflammation and fibrosis, suggesting that YKL-40 may serve as a promising biomarker and therapeutic target for ECRS.

Keywords: Chronic rhinosinusitis; Eosinophil; Tissue remodeling; YKL-40.

Conflict of interest statement

Declaration of competing interest The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Supplementary info

MeSH terms, SubstancesExpand

Full text links

chronic cough

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Int J Infect Dis

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. 2026 Jul 17:108988.

doi: 10.1016/j.ijid.2026.108988. Online ahead of print.

Community-Acquired Pneumonia Outside the Intensive Care Unit: Clinical Characteristics and Impact of Rapid Molecular Diagnostics in the Italian SIS-NET Study

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Affiliations Expand

- **PMID: 42468735**

- DOI: 10.1016/j.ijid.2026.108988

Abstract

Objectives: To describe the clinical, radiological, and microbiological characteristics of community-acquired pneumonia (CAP) managed outside the ICU and evaluate the impact of rapid microbiological diagnostics on hospital outcomes in a multicenter Italian cohort.

Methods: In this prospective observational study conducted across seven Italian centers (October 2024-October 2025), 176 adults hospitalized with CAP outside the ICU and a PaO_2/FiO_2 ratio <300 were enrolled. Demographic, clinical, laboratory, radiological, microbiological, therapeutic, and outcome data were collected. Syndromic respiratory panels were performed in a subset of patients. Secondary outcomes included factors associated with in-hospital mortality and time to live discharge within 28 days.

Results: Patients were predominantly elderly (mean age 69.7±14.4 years) with high comorbidity burden (Charlson Comorbidity Index 4.9±2.1). Dyspnea, fever, and cough were the most frequent symptoms. Microbiological testing was performed in 48% of cases; viral pathogens were detected more often than bacteria (42.3% vs 27.0%), with viral-bacterial co-detection in 14.1%. In-hospital mortality was 2%, and 3% required ICU transfer. Rapid microbiological testing was independently associated with earlier discharge (HR 1.67, 95%CI 1.17-2.38; p=0.005), while chronic corticosteroid therapy predicted longer hospitalization.

Conclusions: CAP outside the ICU mainly affects elderly multimorbid patients. Rapid molecular diagnostics may facilitate earlier discharge by supporting clinical decision-making.

Keywords: Community-acquired pneumonia; Italy; hospital length of stay; non-ICU hospitalization; rapid molecular diagnostics.

Conflict of interest statement

Declaration of competing interest The authors have declared no conflict of interest

. 2026 Jul 16.

doi: 10.1186/s12941-026-00876-1. Online ahead of print.

Clinical features of nontuberculous mycobacteria and diagnosis with nanopore targeted sequencing: a retrospective cohort study

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- PMID: 42464307

- DOI: 10.1186/s12941-026-00876-1

Abstract

Background: Diagnosing pulmonary non-tuberculous mycobacterial (NTM) disease remains challenging, not only because its clinical manifestations often overlap with those of tuberculosis (TB), but also because its symptoms and signs-such as chronic cough, sputum production, fatigue, and weight loss-can closely resemble those of other common respiratory conditions, including chronic obstructive pulmonary disease (COPD), recurrent pulmonary infections, and chronic bronchitis. This symptomatic overlap often leads to delayed or misdiagnosis, a problem exacerbated by the time-consuming nature of confirmatory culture, which further impedes timely diagnosis.Against the backdrop of a rising incidence of NTM pulmonary disease, Nanopore Targeted Sequencing (NTS) emerges as a promising solution, enabling rapid and comprehensive pathogen detection. This study aims to evaluate the clinical utility of NTS, with a focus on its diagnostic performance, ability to delineate the pathogen spectrum, and reveal polymicrobial co-infections.

Methods: In this retrospective study, we analyzed 350 patients suspected with pulmonary NTM infection at Nanjing Second Hospital between 2023 and 2025. We evaluated clinical characteristics, pathogen profiles and co-infections. Bronchoalveolar lavage fluid (BALF), sputum, and tissue specimens were subjected to NTS. The diagnostic performance of NTS was assessed by comparing it with traditional methods, including acid-fast bacillus (AFB) smear, mycobacterial species identification, and conventional culture.

Results: Among 350 enrolled patients, 293 were diagnosed with NTM pulmonary disease. The NTM group was significantly older (median age: 61.0 vs. 43.5 years) compared to the non-NTM group (n = 57). NTM patients demonstrated significant cellular immune dysfunction, including lower $CD3^+$, $CD4^+$ T-cell levels, and $CD4^+/CD8^+$ ratio, alongside a more protracted disease course compared to controls. No significant difference in BMI was observed between the two groups.The most common clinical symptom was productive cough, and imaging predominantly showed patchy parenchymal and nodular shadows. Evaluation of diagnostic performance demonstrated that NTS showed the highest sensitivity (95.9%) and the highest AUC (0.892) among the methods evaluated, although its specificity (82.5%) was slightly lower than that of Mycobacterial culture (84.2%). In contrast, traditional methods such as Mycobacterial culture showed critically low sensitivity (50.5%),

despite high specificity. Venn diagram analysis confirmed that NTS detected the highest number of positive cases, supporting its role as a comprehensive diagnostic tool. Furthermore, analysis of co-infections revealed a high frequency (56.0%) of polymicrobial infections among NTM patients, with Mycobacterium tuberculosis and Human Herpesvirus being the most common co-pathogens. Other frequent co-infections included Aspergillus, Candida, and Pseudomonas aeruginosa. Complex polymicrobial combinations were also observed, highlighting the intricate microbial landscape in NTM pulmonary disease and underscoring the need for comprehensive diagnostic strategies.

Conclusion: NTS is a rapid, highly sensitive tool that may improve the diagnosis of pulmonary NTM by enabling simultaneous species identification and co-infection profiling; however, its optimal application requires integration with clinical, radiological, and immunological findings to accurately distinguish true infection from colonization and guide effective management.

Keywords: Antibiotic resistance genes; Bronchoalveolar lavage; Co-infection; Diagnosis; Nanopore targeted sequencing (NTS); Non-tuberculous mycobacteria (NTM).

Conflict of interest statement

Declarations. Ethics approval and consent to participate: The study received approval from the Human Research Ethics and System Review Committee of the Second Hospital of Nanjing (ID: 2025-LS-ky112). Informed consent was obtained from all the participants. Consent for publication: Informed consent was obtained from all the participants in this study as well as the co-authors. Competing interests: The authors declare no competing interests.

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Chronic Obstr Pulm Dis

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. 2026 Jul 15.

doi: 10.15326/jcopdf.2026.0806. Online ahead of print.

Low Incidence of High Frequency Chest Wall Oscillation in Bronchiectasis Registry Data Despite Indications and Reimbursement

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Affiliations Expand

- PMID: 42460997

- DOI: 10.15326/jcopdf.2026.0806

Free article

Abstract

Background: Airway clearance techniques (ACTs) are required in international bronchiectasis (BE) management guidelines, and high frequency chest wall oscillation (HFCWO) is the only ACT with a Centers for Medicare and Medicaid Services (CMS) reimbursement guideline.

Objective: Compare patient demographics and clinical characteristics between BE patients using HFCWO to BE patients not using HFCWO.

Methods: Bronchiectasis and Nontuberculous Mycobacteria Research Registry (BRR) (2008-2025) data were retrospectively analyzed. Patients were grouped by baseline HFCWO use and non-users were further stratified by selected CMS eligibility criteria (productive cough or more than two exacerbations per year) and subsequent HFCWO utilization.

Results: Of 5,673 patients (median age 69 years), 518 used HFCWO and 5,155 did not. HFCWO users had higher rates of asthma (31.7 vs. 25.3%, P=0.002), gastroesophageal reflux disease (48.5 vs. 41.9%, P=0.004), primary ciliary dyskinesia (5.8 vs. 2.1%, P<0.001), allergic bronchopulmonary aspergillosis (3.3 vs. 1.7%, P=0.013) and nontuberculous mycobacteria (20.1 vs. 15.7%, P=0.011). Symptoms more common in HFCWO users included dyspnea (72.1 vs. 38.5%), fatigue (61.5 vs. 46.8%), cough (90.9 vs. 76.6%,), and hemoptysis (27.1 vs 19.8%) (all P<0.001). Median modified bronchiectasis severity index (mBSI) score was higher in HFCWO users (8 vs. 7, P<0.001), and HFCWO users more frequently received antibiotics, bronchodilators, hypertonic saline, inhaled and oral corticosteroids, indicating greater disease burden. Notably, 58% (2,703/4,679) of non-HFCWO users appeared to meet selected CMS symptom/exacerbation criteria and their characteristics resembled HFCWO users.

Conclusion: These findings suggest areas to explore to standardize BE management and motivate clearer treatment guidelines to optimize patient health outcomes.

Keywords: Bronchiectasis and Nontuberculous Mycobacteria Research Registry; CMS criteria; bronchiectasis; high frequency chest wall oscillation; nontuberculous mycobacteria.

Supplementary info

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. 2026 Jul 15;204(1):47.

doi: 10.1007/s00408-026-00913-y.

FeNO as a Treatable Trait in Chronic Cough: Insights from the PROCOUGH Study

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- PMID: 42458103

- DOI: 10.1007/s00408-026-00913-y

Abstract

Purpose: Type 2 (T2) inflammatory biomarkers are established therapeutic targets in asthma and non-asthmatic eosinophilic bronchitis (NAEB), but their relevance in chronic cough remains unclear. Therefore, the objective of our study was to evaluate the relationship between T2 biomarkers and cough outcomes, and to determine their ability to predict treatment response and cough control.

Methods: This post-hoc analysis of the prospective PROCOUGH cohort included 100 patients with chronic cough. Patients underwent comprehensive phenotyping and were classified as chronic cough secondary to asthma/NAEB ($CC_{Ast/EB}$) or refractory chronic cough (RCC). Patients with $CC_{Ast/EB}$ received inhaled corticosteroid/long-acting β_2-agonist (ICS/LABA) therapy, while those without evidence of T2 inflammation or who had failed ICS/LABA were treated with neuromodulators. Cough outcomes included 24-h cough frequency, Leicester cough questionnaire (LCQ), and cough severity visual analogue scale (VAS). Baseline and post-treatment FeNO, blood eosinophils, and sputum eosinophils were

measured. Correlation, logistic regression, and receiver operating characteristic (ROC) analyses were performed.

Results: Baseline FeNO and sputum eosinophils were higher in $CC_{Ast/EB}$ than RCC. In $CC_{Ast/EB}$, ICS/LABA treatment reduced FeNO and sputum eosinophils and improved cough frequency, LCQ, and VAS. However, only changes in FeNO correlated with changes in cough frequency (r = 0.43, p = 0.007). In multivariable analysis, baseline FeNO independently predicted cough control (OR 1.03, 95% CI 1.00-1.05). FeNO demonstrated modest discriminatory ability for predicting treatment response (AUC = 0.73) and cough control (AUC = 0.75), with an optimal threshold of approximately 26 ppb.

Conclusion: FeNO represents a modest predictor of treatment response and cough control in chronic cough but not RCC. These findings support its role as a treatable trait.

Keywords: Biomarkers; Chronic cough; Fractional exhaled nitric oxide; Refractory chronic cough; Treatable traits; Type 2 inflammation.

Conflict of interest statement

Declarations. Conflict of interest: I.S is supported by the Canada Research Chair program and reports grants from Merck, MITACS, GSK, Bellus, Trevi Therapeutics, Bayer and Genentech, consultancy fees from Merck, GSK, Bellus, Sanofi-Regeneron and Methapharm and payment or honoraria for lectures, presentations, manuscript writing or educational events from Merck, GSK, AstraZeneca and Sanofi-Regeneron. N.D was supported by the Canadian Asthma, Allergy, and Immunology Foundation, Sanofi Genzyme, Canada and the Canadian Lung Association-Canadian Institutes of Health Research Fellowship awards and reports payment or honoraria for lectures, presentations, manuscript writing or educational events from AstraZeneca and Sanofi-Regeneron outside the submitted work. D.B reports consultancy fees from Khure Health, payment or honoraria for lectures, presentations, manuscript writing or educational events from AstraZeneca, Glaxo Smith Kline and Sanofi—Regeneron, support for attending meetings from GSK, participation on a data safety monitoring board or advisory board with GSK and Sanofi and is a participating member of the Chronic Cough Working Group. GMG reports research funding from AstraZeneca, Genentech, Third Harmonics Bio, Biohaven and Jasper paid to the institution and personal fees from AstraZeneca, Third Harmonics Bio, Allakos, Biohaven, Jasper and Blueprint. R.S received grants from AstraZeneca, Biohaven, Third Harmonics Bio and Jasper; consultancy fees from AstraZeneca and Areteia Therapeutics Inc and payment or honoraria for lectures, presentations, manuscript writing or educational events from AstraZeneca and GSK. POB reports grants from AstraZeneca, Merck, Biohaven and Jasper, consultancy fees from AstraZeneca, GSK, Sage, Teva and Affibody, payment or honoraria for lectures, presentations, manuscript writing or educational events from AstraZeneca, GSK and Covis and is a Section Editor for the European Respiratory Journal. MW, EK, WH, AO, KK, SB, CO, KH, JW, LW, KW report no conflicts of interest. Ethical Approval: This study represents a secondary analysis of the PROCOUGH cohort, a prospective, single-centre observational study of patients with CC conducted at McMaster University Medical Centre between December 2021 and May 2025. The study protocol was

approved by the Hamilton Integrated Research Ethics Board (REB No: 11231) and conducted in accordance with the Declaration of Helsinki and Good Clinical Practice guidelines. Informed consent was obtained from all individual participants included in the study.

- **45 references**

Supplementary info

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. 2026 Jul 13;12(4):01397-2025.

doi: 10.1183/23120541.01397-2025. eCollection 2026 Jul.

The association between chronic rhinosinusitis, bronchiectasis and type 2 inflammation: an EMBARC registry analysis

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Affiliations Expand

- **PMID: 42445230**

- **PMCID: PMC13358662**

- DOI: 10.1183/23120541.01397-2025

Abstract

Introduction: Chronic rhinosinusitis (CRS) is a common comorbidity in bronchiectasis. Previous studies suggested that bronchiectasis with CRS is associated with elevated type 2 biomarkers, representing an "eosinophilic bronchiectasis" phenotype. However, whether the association with type 2 inflammation exists in rare aetiologies of bronchiectasis such as primary ciliary dyskinesia (PCD) or immune deficiency is unknown. Our aim was to explore the prevalence of CRS with and without nasal polyposis (CRSwNP and CRSnNP), their impact on bronchiectasis outcomes, and their association with type 2 inflammatory biomarkers in patients with bronchiectasis of various aetiologies.

Methods: Using data from the EMBARC bronchiectasis registry, we classified patients with bronchiectasis as having no CRS, CRSnNP or CRSwNP. Regression models were used to test the effect of CRS on symptom scores and long-term outcomes. Multivariate models were created for elevated "type 2 biomarkers", defined as elevated blood eosinophil count or total IgE.

Results: Among 16 640 people with bronchiectasis, 2703 (20.9%) had CRSnNP and 1223 (7.3%) had CRSwNP. CRSwNP and CRSnNP were associated with worse symptoms and more frequent exacerbations, but lower hospitalisations and mortality. Type 2 biomarkers were elevated in people with comorbid CRSwNP in idiopathic bronchiectasis, but not in bronchiectasis secondary to PCD or immune deficiency. In multivariable analysis, CRSwNP was independently associated with elevated type 2 biomarkers.

Conclusions: CRS and nasal polyposis are common comorbidities in bronchiectasis, associated with worse symptoms and exacerbations. Elevated type 2 biomarkers are associated with CRS, but this finding is dependent on the aetiology of bronchiectasis.

Conflict of interest statement

Conflict of interest: M. Shteinberg reports grants or contract from the Tel Aviv League for Lung Disease and the G. Baum Foundation, paid to her institution; personal payments for consultation from AstraZeneca, Boehringer Ingelheim, Dexcel, Kamada, Synchrony Medical, Trumed and Zambon; personal payments or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from AstraZeneca, Boehringer Ingelheim, GSK, Kamada, Sanofi and Insmed; support for attending meetings and/or travel from Boehringer Ingelheim Israel, Astra Zeneca Israel, Kamada, Rafa and GSK Israel; personal fees for participation on a data safety monitoring or advisory board from Bonus Biotherapeutics, Boehringer Ingelheim, AstraZeneca and Insmed; personal payments as an American Journal of Respiratory and Critical Care Medicine associate editor; and voluntary roles as a Journal of Cystic Fibrosis associate editor, a management board member of the Israeli Pulmonology Society and the Israeli society for Tuberculosis and Mycobacterial Diseases, a management board member of EMBARC, an editorial board member of the European Respiratory Journal, and a member of the European Respiratory Society task forces on

bronchiectasis guidelines and transitioning in bronchiectasis, all in the past 36 months. C.S. Haworth reports grants or contracts from AstraZeneca to his institution; personal fees for consulting from 30 Technology, AstraZeneca, BiomX, Chiesi, Infex, Insmed, LifeArc, Pneumagen, Vertex and Zambon; personal payments or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from Chiesi, Insmed, LifeArc, Vertex and Zambon; personal payment for expert testimony from Zambon; is a board member of the European Cystic Fibrosis Society; and owns stock or stock options in Pneumagen, all in the past 36 months. J. Pollock is a member of the early career mentoring programme of this journal. S. Cohen, J. Jrbashyan, N. Abo Helo, N. Stein, Y. Adir, M. Vendrell, H. Lind, K. Viligorska, K. Robertson, P. Kauppi, B. Milenkovic, R. Menendez, O. Munteanu, A. Torres, E. Van Braeckel, M. Anwar and W. Boersma have nothing to disclose. M.R. Loebinger reports consulting fees from Armata, 30T, AstraZeneca, Parion, Insmed, Chiesi, Zambon, Electromed, Recode, Boehringer Ingelheim, Ethris, Mannkind and AN2 Therapeutics; and payment or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from Insmed, all in the past 36 months. K. Dimakou reports payment or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from Novartis, Boehringer Ingelheim, GSK, NORMA Hellas, Chiesi, AstraZeneca and Zambon; direct payment in support for attending meetings and/or travel from Novartis, Boehringer Ingelheim, GSK, NORMA Hellas, Chiesi, AstraZeneca and Menarini; and direct payment for participation on a data safety monitoring or advisory board from Novartis, GSK and Chiesi, all in the past 36 months. S. Aliberti reports grants or contracts from GSK to his institution; personal fees for consulting from INSMED Incorporated, INSMED Italy, INSMED Ireland Ltd, INSMED Netherlands BV, ZAMBON Spa, AstraZeneca, Menarini, CSL Behring GmbH, Pfizer, Fondazione Internazionale Menarini, Moderna Italy, Moderna TX, Boehringer Ingelheim, Chiesi Farmaceutica Spa, MSD Italia S.r.l., Vertex Pharmaceuticals, BRAHMS GMBH, Physioassist SAS, AN2 Therapeutics, GlaxoSmithKline Spa and Verona; personal payments or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from GlaxoSmithKline Spa, Fondazione Internazionale Menarini, INSMED Italy, INSMED Ireland Ltd, Boehringer Ingelheim, Zambon and Vertex Pharmaceuticals; and personal payments for data safety monitoring or advisory boards from INSMED Incorporated, INSMED Italy, AstraZeneca UK Limited, MSD Italia S.r.l. and Verona pharma plc, all in the past 36 months. F.C. Ringshausen reports grants or contracts from the German Center for Lung Research (DZL), German Center for Infection Research (DZIF), IMI (EUEFPIA) and iABC Consortium (including Alaxia, Basilea, Novartis and Polyphor), Mukoviszidose Institute, Novartis and Insmed Germany to his institution; personal fees for consulting from Parion Sciences, Boehringer Ingelheim, Insmed and Chiesi; personal payments or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from I!DE Werbeagentur GmbH, Insmed, Grifols, University Hospital Hamburg, AstraZeneca, Cliniqo GmbH and Sanofi; personal fees for participation on a data safety monitoring or advisory board from Insmed, Boehringer Ingelheim, Parion Sciences and Chiesi; honorary positions as co-chair of the German Bronchiectasis Registry PROGNOSIS, a member of the SteerCo of the European Bronchiectasis Registry EMBARC and a principal investigator of the DZL; fees for clinical trial participation paid to his institution by AstraZeneca, Boehringer Ingelheim, Insmed, Novartis, Parion Sciences, ReCode, Ruhr University-Bochum, University of Dundee, UMC Utrecht and Vertex, all in the past 36 months. A. De Soyza reports grants or contracts from GSK, 30T and Sanofi

to his institution; personal fees for consulting from 30T, Insmed, AstraZeneca and Sanofi; personal payments or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from AstraZeneca, Bayer, GSK, Insmed, Zambon, Sanofi, Fisher & Paykel and Inogen, all in the past 36 months. P.R. Burgel reports personal fees for consulting from AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, Insmed, MSD, Pfizer, Vertex and Viatris; and support for attending meetings and/or travel from AstraZeneca and Chiesi to his institution, in the past 36 months. O. Sibila reports consulting fees from Insmed and Boehringer Ingelheim in the past 36 months. A. Bossios reports that a grant from AstraZeneca was paid his my institution outside the submitted work; honoraria and lecture fees from Chiesi, GSK, and AstraZeneca paid to his institution outside the submitted work; and is Head of Assembly 5 (Airway diseases, asthma, COPD and chronic cough) of the European Respiratory Society (ERS), co-chair of the Nordic Severe Asthma Network, member of the steering committee of SHARP (ERS severe asthma Clinical Research Collaboration) and a member of the steering committee of the Swedish National Airway Register, all in the past 36 months. D. Obradovic reports support for attending the ERS Congress in 2024 and is President of the Serbian Society of Intensive Care Medicine. A. Nowinski reports scientific grants received from the National Centre for Research and Development, the Medical Research Agency and the pharmaceutical industry (Boehringer Ingelheim, GSK and AstraZeneca) to their institutions in the past 36 months. A. Amorim reports grants or contracts from the European Cystic Fibrosis Society Patient Registry; and personal consulting fees and payment or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from Vertex Pharmaceuticals Inc.; support for attending meetings and/or travel from Zambon and Boehringer Ingelheim; and personal fees for participation on a data safety monitoring or advisory board from Chiesi, all in the past 36 months. N. Lorent is a member of the EMBARC management committee. S. Battalglia reports personal fees for advisory boards from GSK and Insmed; personal payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing or educational events from Insmed; and personal support for attending meetings and/or travel from Lusofarmaco and Sapio, all in the past 36 months. A. Shoemark reports that EMBARC3 is supported by Armata, AstraZeneca, Boehringer Ingelheim, Chiesi, CSL Behring, GlaxoSmithKline, Grifols, Insmed, LifeArc, Roche, Verona and Zambon; grants or contracts from AstraZeneca and LifeArc; consulting fees from Spirovant, Translate Bio and ReCode Therapeutics; payment or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from Translate Bio, Ethris and Insmed; unpaid involvement in European Respiratory Society Clinical Research Collaborations (EMBARC, BEATPCD and AMR Lung); and is supported by the Asthma and Lung UK Chair of Respiratory Research, all in the past 36 months. P.C. Goeminne reports payment or honoraria for lectures from Insmed, RMEI, AstraZeneca and GSK; support to attend conferences from GSK and AstraZeneca; participation on a data monitoring committee for Boehringer, and advisory boards for MSD and Pfizer, all in the past 36 months. F. Blasi reports grants from AstraZeneca, Chiesi and Insmed; personal fees for consulting from Menarini; and personal fees for lectures and advisory board from AstraZeneca, Chiesi, Boehringer Ingelheim, GSK, Guidotti, Grifols, Insmed, Menarini, Novartis, OM Pharma, Pfizer, Sanofi, Vertex and Zambon, in the past 36 months. E. Polverino reports consulting fees from Insmed, Grifols, Pari and CSL Behring; and payment or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from Insmed, Pari, Grifols and CSL Behring, in the past 36

months. J.D. Chalmers reports grants or contracts from AstraZeneca, Genentech, Boehringer Ingelheim, Gilead, Chiesi, Grifols, Insmed and Trudell; and consulting fees from Janssen, Antabio, Pfizer, Zambon, AstraZeneca, Chiesi, GlaxoSmithKline, Insmed, Grifols, Novartis and Boehringer Ingelheim, in the past 36 months and is the Chief Editor of ERJ Open Research.

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- 7 figures

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6

Review

Health Qual Life Outcomes

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. 2026 Jul 13.

doi: 10.1186/s12955-026-02585-x. Online ahead of print.

Cough burden in progressive pulmonary fibrosis: a systematic review with narrative synthesis

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Affiliations Expand

- PMID: 42443914

- DOI: 10.1186/s12955-026-02585-x

Free article

Abstract

Background: Cough is a common and burdensome symptom in patients with progressive pulmonary fibrosis (PPF), yet existing evidence remains fragmented. This systematic review provides a synthesis of available evidence on cough in PPF,

specifically examining its association with health-related quality of life (HRQoL), the instruments used to assess cough, current treatment evidence, and identifies priorities for future research.

Methods: We searched the Embase, PubMed, Cochrane, and Web of Science (WOS) databases from their inception to January 12, 2026, for studies focusing on the burden of cough in patients with PPF. We extracted information on study details, participant features, and outcome measures, and assessed the risk of bias in the included studies. A narrative synthesis was then performed to summarize the evidence.

Results: Of 11,683 records, 9 studies met inclusion criteria. Cough was most frequently assessed using VAS and LCQ, while HRQoL was primarily measured with SGRQ and L-PF. Two studies highlighted wearable devices for objective cough monitoring. Antifibrotic therapy showed no consistent or statistically significant benefit on cough in descriptive synthesis. Qualitative studies revealed substantial cough-related burden, including daily activity limitations, fatigue, and social embarrassment. Regarding economic impact, although no dedicated studies exist, one study indicated that cough severity was associated with workplace productivity loss.

Conclusions: Cough negatively impacts HRQoL in PPF, but evidence is limited by heterogeneous tools and lack of economic studies. Standardized assessment and targeted research on cough management and its economic impact are urgently needed.

Keywords: Burden; Cough; Health-related quality of life; Interstitial lung disease; Progressive pulmonary fibrosis.

Conflict of interest statement

Declarations. Ethics approval and consent to participate: Not applicable. Consent for publication: Not applicable. Competing interests: The authors declare no competing interests.

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7

Thorax

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. 2026 Jul 15;81(8):736-737.

doi: 10.1136/thorax-2025-224508.

Aligning management of chronic cough in asthma with BTS/NICE/SIGN guidance

Paul Marsden [1 2], Jaclyn Ann Smith [3 2], Surinder S Birring [4], Kevin Gruffydd-Jones [5], Jemma Haines [3 2], Lorcan P McGarvey [6], Matthew Martin [7], Alyn Morice [8 9], James O'Hara [10], Mike Thomas [11], Sean M Parker [12 13]

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- PMID: 41825860

- DOI: 10.1136/thorax-2025-224508

No abstract available

Keywords: Asthma; Cough/Mechanisms/Pharmacology.

Conflict of interest statement

Competing interests: PM reports research grant funding from MSD, NIHR Manchester BRC, consulting fees from Trevi, GSK. PM is a member of the BTS Cough Specialist Advisory Group. JAS reports research grant funding from Wellcome, MSD, MRC, Natural Environment Research Council, Moulton Charitable Trust, NIHR Manchester BRC, consulting fees from MSD, Bellus Health, Nocion, Shionogi, Algernon, AZ, BI, Chiesi, GSK, Trevi, Alxalbion, Seyltx and lecture fees from MSD, GSK. JAS is an inventor on a patent for a cough algorithm licensed to her institution, which receives royalty payments from Vitalograph. JAS reports support for attending meetings from GSK and Trevi. SB reports no competing interests. KGJ reports consulting fees from GSK, AZ, Insmed, lecture fees from RCGP, Guidelines in Practice, AZ. He is a trustee of PCRS. LM reports research grant funding from MSD, Bellus Health, Chiesi, GSK and Bionorica and consulting fees from MSD, Chiesi, Nocion, Genentech, AZ, Bellus Health, Shionogi, GSK, Trevi, Reckitt Benckiser. LM reports lecture fees from Chiesi, Bellus Health, GSK, Merck, NeRRe Therapeutics, Nocion, Trevi, Reckitt Benckiser, Boehringer Ingelheim, Bionorica and is CI of the ERS NEuroCOUGH Clinical Research Collaboration. JH reports consulting and lecture fees from GSK. MM reports research grant funding from NIHR School for Primary Care Research, lecture fees from Chiesi and support to attend meetings from Chiesi, AZ. AM reports research grant funding from GSK, Axalbion, Trevi, consulting fees from GSK, lecture fees from MSD, GSK. AM participates in a data safety monitoring board for BI and is a member of the ERS taskforce on cough nomenclature, ERS Neurocough CRC and holds stock in SIVA Health AG. JOJ reports research funding from Reckitt. MT has no conflicts of interest to declare. SP reports lecture fees from Primary Care 2025 Event, consulting fees from Trevi and support for attending a conference from Chiesi.

"bronchiectasis"[MeSH Terms] OR bronchiectasis[Text Word]

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J Magn Reson Imaging

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. 2026 Jul 17.

doi: 10.1002/jmri.70397. Online ahead of print.

Pulmonary MRI in Interstitial Lung Disease: A Systematic Review and Meta-Analysis

Thiago de Gaultier Paulo [1], João Martins da Fonseca [2], Liana F Corrêa [3], Lucas Gabriel Rodrigues Pinheiro [3], Rubens G F Andrade [3], Gabriele C Forte [3], Borna Mehrad [2], Carina A Ruano [4], Stephan Altmayer [5], Liisa Bergmann [6], Juergen Biederer [7 8 9 10], Jeanne B Ackman [11], Bruno Hochhegger [2]

Affiliations Expand

- PMID: 42468519

- DOI: 10.1002/jmri.70397

Abstract

Background: Magnetic resonance imaging (MRI) has emerged as a radiation-free alternative for evaluating interstitial lung disease (ILD), but its diagnostic performance relative to computed tomography (CT) remains variably reported.

Purpose: To evaluate the diagnostic performance of pulmonary MRI for ILD detection and identification of key imaging hallmarks, using CT as the primary reference standard.

Study type: Systematic review and meta-analysis of observational studies.

Population: Twenty-five studies including 959 participants were included in the qualitative synthesis; nine studies (n = 473) were eligible for quantitative meta-analysis.

Field strength/sequence: MRI field strengths ranged from 0.55 to 3.0 T and included ultrashort echo-time (UTE), zero echo-time (ZTE), T2-weighted fast spin-echo, and gradient-echo-based sequences with slice thickness ranging from 1 to 20 mm.

Assessment: MRI performance was evaluated against CT for global ILD detection and imaging hallmarks including ground-glass opacities, nodules, traction bronchiectasis, reticulations, and honeycombing.

Statistical tests: Pooled sensitivity and specificity were estimated jointly using a bivariate hierarchical model of Reitsma et al.; heterogeneity was assessed with I^2 statistics ($p < 0.10$). Leave-one-out sensitivity analyses were performed.

Results: Pooled sensitivity was 0.91 (95% CI: 0.84-0.95; I^2: 42.1%) and pooled specificity was 0.86 (95% CI: 0.73-0.93; I^2: 62.6%) and summary SROC AUC of 0.939. In a predefined subanalysis restricted to UTE/ZTE thin-slice protocols (four studies), sensitivity was 0.93 (95% CI: 0.87-0.97; I^2: 0.0%) and specificity was 0.92 (95% CI: 0.78-0.98; I^2: 51.3%).

Data conclusion: Pulmonary MRI demonstrates high diagnostic performance for ILD detection, with results suggesting protocol-dependent performance and improved consistency under optimized UTE/ZTE thin-slice acquisitions.

Evidence level: 3.

Technical efficacy: Stage 2.

Keywords: computed tomography; interstitial lung disease; magnetic resonance imaging.

Plain language summary

Interstitial lung diseases (ILDs) cause scarring and inflammation of the lungs. Computed tomography (CT) is the standard diagnostic imaging tool, but uses ionizing radiation, a concern for patients needing repeated scans. This study reviewed 25 published studies involving 959 patients to evaluate how accurately magnetic resonance imaging (MRI), a radiation-free technique, detects ILD using CT as the reference. MRI correctly identified ILD in approximately 91% of cases and ruled it out in 86% of cases. Newer MRI techniques performed particularly well. These findings suggest MRI may serve as a complementary tool for evaluating lung disease in selected clinical contexts.

- **50 references**

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BMC Pulm Med

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. 2026 Jul 16.

doi: 10.1186/s12890-026-04508-4. Online ahead of print.

An interpretable prognostic model for early unfavorable outcomes after bronchiectasis surgery

Yichen Hou [1], Qibatu Wu [1], Long Ma [1], Liwei Zhang [1], Yanchao Deng [2]

Affiliations Expand

- PMID: 42464227

- DOI: 10.1186/s12890-026-04508-4

Abstract

Background: Bronchiectasis is a heterogeneous airway disorder characterized by irreversible bronchial dilatation, chronic sputum production, recurrent infections, and acute exacerbations. Although lung resection remains a valuable option for patients with localized, refractory disease despite optimized medical therapy, early postoperative recovery varies substantially among individuals. An interpretable tool for individualized risk stratification remains lacking in clinical practice.

Methods: This retrospective study enrolled patients who underwent bronchiectasis-related lung resection at our center between January 2020 and August 2025 (n = 142). The primary endpoint was a composite outcome assessed at approximately 1 month postoperatively. A favorable outcome was defined as the absence of Clavien-Dindo grade II or higher complications in conjunction with a Quality of Life Questionnaire-Bronchiectasis Respiratory Symptoms Scale (QoL-B-RSS) score > 50; all other cases were classified as unfavorable outcomes. Candidate predictors (n = 40) were prespecified before model development. Elastic Net-penalized logistic regression was employed as the primary modeling approach, based on which a nomogram was constructed. Nested cross-validation was used for hyperparameter tuning and internally unbiased performance evaluation. Out-of-fold (OOF) predicted probabilities were used to assess discrimination (area under the curve [AUC]), overall accuracy (Brier score), calibration, and clinical utility via decision curve analysis (DCA). A random forest (RF) model, using identical outer-fold partitions, was developed as a direct comparator, and a conventional multivariable logistic regression model was additionally fitted using the predictors retained in the primary model.

Results: The incidence of early unfavorable outcomes was 57.7% (82/142). The final Elastic Net model retained five predictors: pCO_2, left ventricular ejection fraction (LVEF), forced expiratory volume in 1 s as a percentage of predicted (FEV1%pred), maximal voluntary ventilation as a percentage of predicted (MVV%pred), and total Bronchiectasis Severity Index (BSI) score. Internal OOF validation yielded an AUC of 0.820 and a Brier score of 0.173 for the primary model, compared with an AUC of 0.831 and a Brier score of 0.179 for the RF model. Overall, the RF model did not demonstrate a meaningful performance advantage over the primary model. Calibration analysis indicated good agreement between predicted and observed

probabilities, and DCA suggested potential net clinical benefit across a range of threshold probabilities.

Conclusions: This internally validated Elastic Net-based nomogram showed good discrimination, acceptable calibration, and potential clinical utility for predicting early unfavorable outcomes after bronchiectasis surgery. Based on routinely available preoperative variables, the model may provide quantitative support for individualized perioperative risk stratification and early follow-up planning. Prospective external validation and clinical impact assessment are warranted to confirm its generalizability and inform future clinical implementation.

Keywords: Bronchiectasis; Clavien-Dindo classification; Internal validation; Lung resection; Nomogram; Penalized regression; Prediction model; QoL-B.

Conflict of interest statement

Declarations. Ethics approval and consent to participate: This study was approved by the Ethics Committee of the First Affiliated Hospital of Xinjiang Medical University (Approval No. K202601-65). Owing to the retrospective nature of the study and the use of de-identified clinical data, the requirement for written informed consent was waived by the Ethics Committee. For the follow-up assessment conducted approximately 1 month after surgery, either at an outpatient visit or by telephone, patients were informed about the administration of the QoL-B bronchiectasis questionnaire, and oral informed consent was obtained prior to participation. Participation was voluntary, and patients were free to decline. All data were anonymized before statistical analysis. This study was conducted in accordance with the Declaration of Helsinki and relevant institutional requirements. Consent for publication: Not applicable. This manuscript does not contain any individual person's data in any form (including individual details, images, or videos). All data were de-identified prior to analysis. Competing interests: The authors declare no competing interests.

Supplementary info

Grants and fundingExpand

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. 2026 Jul 16:keag372.

doi: 10.1093/rheumatology/keag372. Online ahead of print.

Reproductive factors and risk of rheumatoid arthritis-associated interstitial lung disease or bronchiectasis in women

Xiaosong Wang [1], Suchita P Nety [1 2 3], Misti L Paudel [1 2], Ying Qi [1 2], Qianru Zhang [1 2 4], Nancy A Shadick [1 2], Michael E Weinblatt [1 2], Liya S Getachew [1 2], Gregory C McDermott [1 2], Jeffrey A Sparks [1 2]

Affiliations Expand

- PMID: 42464016

- DOI: 10.1093/rheumatology/keag372

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. 2026 Jul 16.

doi: 10.1007/s41030-026-00375-w. Online ahead of print.

Efficacy and Safety of Brensocatib in Participants of Asian Race with Non-cystic Fibrosis Bronchiectasis: A Subgroup Analysis of the ASPEN Trial

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- PMID: 42461571

- DOI: 10.1007/s41030-026-00375-w

Abstract

Introduction: In the ASPEN trial, brensocatib, a dipeptidyl peptidase 1 inhibitor, significantly reduced the burden of pulmonary exacerbations versus placebo in participants with bronchiectasis. A prespecified subgroup analysis evaluated the efficacy and safety of brensocatib in participants of Asian race with bronchiectasis from ASPEN.

Methods: Participants with confirmed bronchiectasis and a history of exacerbations in the 12 months before screening [adults (18-85 years), ≥ 2; adolescents (12- < 18 years), ≥ 1] received once-daily brensocatib (10 or 25 mg) or matching placebo for 52 weeks (adults, 1:1:1; adolescents, 2:2:1). Efficacy endpoints included annualized exacerbation rate, time to first exacerbation, and change at 52 weeks in post-bronchodilator (BD) forced expiratory volume (FEV) in 1 s (post-BD FEV_1) and Quality of Life-Bronchiectasis Respiratory Symptom Score (QOL-B RSS). Safety was monitored from enrollment through the end of study.

Results: Overall, 191 participants were of Asian race (n = 63, brensocatib 10 mg; n = 64, brensocatib 25 mg; n = 64, placebo). Brensocatib 10 mg and brensocatib 25 mg significantly reduced the annualized exacerbation risk (both by ~ 60%; p = 0.0005 and p = 0.0012, respectively) and prolonged the time to first exacerbation (hazard reduced by ~ 55%; p = 0.0039 and 0.0082, respectively) versus placebo. Brensocatib 25 mg significantly reduced post-BD FEV_1 decline [least squares mean difference (95% CI): 69 (24-114) mL, p = 0.0029] and improved QOL-B RSS score [7.49 (2.48-12.50) points, p = 0.0034] versus placebo. The frequency of treatment-emergent adverse events was similar across treatment groups and consistent with the overall ASPEN results.

Conclusions: In participants of Asian race, brensocatib 10 mg and 25 mg reduced the burden of pulmonary exacerbations, and the 25-mg dose reduced lung function decline and improved patient-reported symptoms versus placebo. The efficacy and safety of brensocatib in participants of Asian race were largely consistent with the overall ASPEN population, with select outcomes showing numerically greater benefit, although ASPEN was not powered to detect treatment differences in prespecified subgroup analyses.

Gov identifier: NCT04594369.

Keywords: ASPEN trial; Asian race; Brensocatib; Bronchiectasis; DPP1 inhibitor; Lung function; Patient-reported outcomes; Pulmonary exacerbations.

Plain language summary

Bronchiectasis is a long-term inflammatory lung disease that usually worsens over time. Brensocatib is a new medicine developed to treat bronchiectasis. In a clinical trial called ASPEN, people with bronchiectasis took brensocatib at doses of 10 mg or 25 mg or a placebo, for 52 weeks. In ASPEN, brensocatib reduced the number of exacerbations versus placebo. In this study, researchers wanted to know the effect of brensocatib in people of Asian race with bronchiectasis who took part in ASPEN. A total of 191 people of Asian race were assessed: 63 took brensocatib 10 mg, 64 took brensocatib 25 mg, and 64 took a placebo. During the study, both doses of brensocatib reduced the risk of people having an exacerbation by about 60% versus

placebo and prolonged the time to their first exacerbation, reducing the chance of exacerbating by about 55%. Compared with placebo, the 25-mg dose reduced the decline in lung function caused by bronchiectasis and improved bronchiectasis symptoms as reported by the people themselves. The occurrence of side effects was similar among the people who took brensocatib and those who took placebo and was similar to the overall ASPEN clinical trial. In summary, brensocatib reduced the burden of exacerbations and improved lung function and the symptoms of bronchiectasis in people of Asian race from ASPEN, although the number of people was small. Generally, the benefits of brensocatib in people of Asian race were similar to those in the overall ASPEN clinical trial, and some benefits were numerically larger.

Conflict of interest statement

Declarations. Conflict of Interest: Doreen Addrizzo-Harris: clinical trial support to the institution from AN2 Therapeutics, Armata Pharmaceuticals, Chiesi, Boehringer Ingelheim, Hillrom, Insmed Incorporated, Novartis, Sanofi, Verona, and Zambon; consulting fees from AstraZeneca, Boehringer Ingelheim, Clarametyx, MannKind, Paratex, and Sanofi; and member of the data and safety monitoring board for MannKind. James D. Chalmers: grants and personal fees from AstraZeneca, Boehringer Ingelheim, GSK, Insmed Incorporated, and Zambon; a grant from Gilead; and personal fees from Chiesi and Novartis. Stefano Aliberti: grant support from GSK; consulting fees from AN2 Therapeutics, AstraZeneca, Boehringer Ingelheim, BRAHMS GmbH, Chiesi Farmaceutica SpA, CSL Behring GmbH, Fondazione Internazionale Menarini, GlaxoSmithKline SpA, Insmed Incorporated, Menarini, Moderna, MSD Italia Srl, Pfizer, PhysioAssist SAS, Verona Pharma PLC, Vertex Pharmaceuticals, and Zambon SpA; speaking fees from Boehringer Ingelheim, Fondazione Internazionale Menarini, GlaxoSmithKline SpA, Insmed Incorporated, Vertex Pharmaceuticals, and Zambon; data monitoring committee work with AstraZeneca, Insmed Incorporated, MSD Italia Srl, and Verona Pharma PLC. Pierre-Régis Burgel: grants from GSK and Vertex, outside the submitted work; clinical trials advisory activity for AstraZeneca, Chiesi, GSK, Insmed Incorporated, MSD, Vertex, Viatris, and Zambon; substantial financial contributions to the budget of his institution from Association Vaincre la Mucoviscidose, Filière MUCO-CFTR, GSK, Société Française de la Mucoviscidose, and Vertex. Pierre-Régis Burgel is an editorial board member of Pulmonary Therapy. Pierre-Régis Burgel was not involved in the selection of peer reviewers for the manuscript nor any of the subsequent editorial decisions. Brian M. Morrissey: grants from the Cystic Fibrosis Foundation and clinical trial support to the institution from Boehringer Ingelheim, CSL Behring, Insmed Incorporated, US National Institutes of Health, and Vertex Pharmaceuticals. Xiangmin Zhang, Chunpeng Fan, Melanie Lauterio, Sebastian Fucile, Dianne Griffis, and Ariel Teper: employees and shareholders of Insmed Incorporated. Ethical Approval: The trial was conducted in accordance with the principles of the Declaration of Helsinki, the Good Clinical Practice guidelines of the International Council for Harmonisation, and applicable regulatory requirements. An institutional review board or independent ethics committee approved the protocol at each participating site (details provided as supplementary material). All participants provided their written informed consent before starting the study. Adolescents provided their signed assent if required per local requirements, and a parent or legal guardian provided their signed informed consent.

- 31 references

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5

Chronic Obstr Pulm Dis

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. 2026 Jul 15.

doi: 10.15326/jcopdf.2026.0806. Online ahead of print.

Low Incidence of High Frequency Chest Wall Oscillation in Bronchiectasis Registry Data Despite Indications and Reimbursement

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Affiliations Expand

- **PMID: 42460997**

- **DOI: 10.15326/jcopdf.2026.0806**

Free article

Abstract

Background: Airway clearance techniques (ACTs) are required in international bronchiectasis (BE) management guidelines, and high frequency chest wall oscillation (HFCWO) is the only ACT with a Centers for Medicare and Medicaid Services (CMS) reimbursement guideline.

Objective: Compare patient demographics and clinical characteristics between BE patients using HFCWO to BE patients not using HFCWO.

Methods: Bronchiectasis and Nontuberculous Mycobacteria Research Registry (BRR) (2008-2025) data were retrospectively analyzed. Patients were grouped by baseline HFCWO use and non-users were further stratified by selected CMS

eligibility criteria (productive cough or more than two exacerbations per year) and subsequent HFCWO utilization.

Results: Of 5,673 patients (median age 69 years), 518 used HFCWO and 5,155 did not. HFCWO users had higher rates of asthma (31.7 vs. 25.3%, *P*=0.002), gastroesophageal reflux disease (48.5 vs. 41.9%, *P*=0.004), primary ciliary dyskinesia (5.8 vs. 2.1%, *P*<0.001), allergic bronchopulmonary aspergillosis (3.3 vs. 1.7%, *P*=0.013) and nontuberculous mycobacteria (20.1 vs. 15.7%, *P*=0.011). Symptoms more common in HFCWO users included dyspnea (72.1 vs. 38.5%), fatigue (61.5 vs. 46.8%), cough (90.9 vs. 76.6%,), and hemoptysis (27.1 vs 19.8%) (all *P*<0.001). Median modified bronchiectasis severity index (mBSI) score was higher in HFCWO users (8 vs. 7, *P*<0.001), and HFCWO users more frequently received antibiotics, bronchodilators, hypertonic saline, inhaled and oral corticosteroids, indicating greater disease burden. Notably, 58% (2,703/4,679) of non-HFCWO users appeared to meet selected CMS symptom/exacerbation criteria and their characteristics resembled HFCWO users.

Conclusion: These findings suggest areas to explore to standardize BE management and motivate clearer treatment guidelines to optimize patient health outcomes.

Keywords: Bronchiectasis and Nontuberculous Mycobacteria Research Registry; CMS criteria; bronchiectasis; high frequency chest wall oscillation; nontuberculous mycobacteria.

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6

Observational Study

BMJ Open Respir Res

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. 2026 Jul 14;13(1):e004203.

doi: 10.1136/bmjresp-2026-004203.

Resource impact of bronchiectasis and associated exacerbations: based on a 5-year prospective observational cohort study (BronchUK)

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- **PMID: 42448374**

- **PMCID: PMC13374417**

- **DOI: 10.1136/bmjresp-2026-004203**

Abstract

Background: Our objective is to document major healthcare resource use and associated costs in the care of patients with bronchiectasis, with a particular focus on the costs incurred by exacerbations.

Methods: We use a unique dataset from the Bronchiectasis Observational Cohort and Biobank UK. The study includes a baseline cohort of 1119 patients with a primary diagnosis of bronchiectasis, followed for up to five years. Data were extracted and linked to centrally held National Health Service (NHS) resource use data.

Results: The average age of the cohort was 64 years and 62% were female. The most common bronchiectasis aetiology was idiopathic or post-infectious. Across follow-ups, exacerbations became less frequent: the proportion of patients with no events increased for all settings, while recurrent (≥2) events declined markedly and single-event categories remained largely stable. Exacerbations were predominantly managed in primary care settings. Based on exacerbation frequency and type and applying 2024/2025 NHS reference costs, the estimated total healthcare exacerbation costs for the study population ranged from £2 million to £3.2 million. Disaggregated estimates for the highest cost scenario include: general practitioner (GP)-only exacerbations (n=2824 events; £479 945), emergency department-managed exacerbations (n=311; £260 126) and inpatient-managed exacerbations (n=680; £2 428 291). The average estimated cost per patient over the full period was £1943. This corresponds to a weighted annual average of £495 per patient (including patients with no exacerbations), with most costs attributable to inpatient-managed exacerbations. Specifically, the average cost was £2980 for individuals with one or more exacerbations, £4865 for those with two or more and £5875 for those with three or more.

Conclusions: The findings highlight the economic burden of bronchiectasis exacerbations and demonstrate that targeted management strategies to reduce

exacerbation rates should increase health benefits and substantially reduce healthcare costs associated with bronchiectasis.

Keywords: Bronchiectasis; Health Economist.

Conflict of interest statement

Competing interests: ADS reports grants from Bayer, Gilead, Pfizer, AstraZeneca, Insmed and Novartis; fees from Boehringer Ingelheim, Bayer, Gilead, Pfizer, GSK, Insmed, AstraZeneca, Novartis, Sanofi, 30 Technology, Innogen and Fisher & Paykel; travel support from AstraZeneca, Chiesi, GSK and Insmed; and advisory board membership for Bayer. CH reports grants from AstraZeneca; consulting fees from 30 Technology, AstraZeneca, BiomX, Boehringer Ingelheim, Chiesi, Clarametyx, Infex, Insmed, LifeArc, Pneumagen, Sanofi, Vertex and Zambon; honoraria from Chiesi, Insmed, Vertex and Zambon; expert testimony for Zambon; leadership role with ECFS; and stock in Pneumagen. ATH is President Elect for the British Thoracic Society. JSE reports other financial interests as Chair of Respiratory Disease for LifeArc. JRH reports consulting fees from AstraZeneca and GSK; honoraria from Boehringer Ingelheim, Chiesi, Sanofi and Takeda; travel support and advisory board membership for AstraZeneca; and equipment donation from Nonin. MRL reports consulting fees from 30 Technology, AstraZeneca, Insmed, Chiesi, Recode, Boehringer Ingelheim, Ethris, Mannkind, AN2 Therapeutics, MucPharm and Galapagos; honoraria and travel support from Insmed; and advisory board membership for Sanofi. JS reports grants, honoraria and participation in a taskforce for AstraZeneca. JD reports honoraria from Vertex, Insmed and Chiesi; advisory board membership for Ambrose Pharmaceuticals, VG2D Pharmaceuticals and Boehringer Ingelheim; and is a Trustee for Asthma and Lung UK. JDC reports grants from AstraZeneca, Genentech, Boehringer Ingelheim, Gilead, Chiesi, Grifols, Insmed and Trudell; and consulting fees from AstraZeneca, Chiesi, GlaxoSmithKline, Insmed, Grifols, Novartis, Boehringer Ingelheim, Pfizer, Janssen, Antabio and Zambon. CG-M, LM and AM report an unrestricted medical education grant to LSE from Insmed. All other authors declare no competing interests.

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7

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. 2026 Jul 13;12(4):01397-2025.

doi: 10.1183/23120541.01397-2025. eCollection 2026 Jul.

The association between chronic rhinosinusitis, bronchiectasis and type 2 inflammation: an EMBARC registry analysis

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- **PMID: 42445230**

- **PMCID: PMC13358662**

- **DOI: 10.1183/23120541.01397-2025**

Abstract

Introduction: Chronic rhinosinusitis (CRS) is a common comorbidity in bronchiectasis. Previous studies suggested that bronchiectasis with CRS is associated with elevated type 2 biomarkers, representing an "eosinophilic bronchiectasis" phenotype. However, whether the association with type 2 inflammation exists in rare aetiologies of bronchiectasis such as primary ciliary dyskinesia (PCD) or immune deficiency is unknown. Our aim was to explore the prevalence of CRS with and without nasal polyposis (CRSwNP and CRSnNP), their impact on bronchiectasis outcomes, and their association with type 2 inflammatory biomarkers in patients with bronchiectasis of various aetiologies.

Methods: Using data from the EMBARC bronchiectasis registry, we classified patients with bronchiectasis as having no CRS, CRSnNP or CRSwNP. Regression models were used to test the effect of CRS on symptom scores and long-term outcomes. Multivariate models were created for elevated "type 2 biomarkers", defined as elevated blood eosinophil count or total IgE.

Results: Among 16 640 people with bronchiectasis, 2703 (20.9%) had CRSnNP and 1223 (7.3%) had CRSwNP. CRSwNP and CRSnNP were associated with worse symptoms and more frequent exacerbations, but lower hospitalisations and mortality. Type 2 biomarkers were elevated in people with comorbid CRSwNP in idiopathic bronchiectasis, but not in bronchiectasis secondary to PCD or immune deficiency. In multivariable analysis, CRSwNP was independently associated with elevated type 2 biomarkers.

Conclusions: CRS and nasal polyposis are common comorbidities in bronchiectasis, associated with worse symptoms and exacerbations. Elevated type 2 biomarkers are associated with CRS, but this finding is dependent on the aetiology of bronchiectasis.

Conflict of interest statement

Conflict of interest: M. Shteinberg reports grants or contract from the Tel Aviv League for Lung Disease and the G. Baum Foundation, paid to her institution; personal payments for consultation from AstraZeneca, Boehringer Ingelheim, Dexcel, Kamada, Synchrony Medical, Trumed and Zambon; personal payments or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from AstraZeneca, Boehringer Ingelheim, GSK, Kamada, Sanofi and Insmed; support for attending meetings and/or travel from Boehringer Ingelheim Israel, Astra Zeneca Israel, Kamada, Rafa and GSK Israel; personal fees for participation on a data safety monitoring or advisory board from Bonus Biotherapeutics, Boehringer Ingelheim, AstraZeneca and Insmed; personal payments as an American Journal of Respiratory and Critical Care Medicine associate editor; and voluntary roles as a Journal of Cystic Fibrosis associate editor, a management board member of the Israeli Pulmonology Society and the Israeli society for Tuberculosis and Mycobacterial Diseases, a management board member of EMBARC, an editorial board member of the European Respiratory Journal, and a member of the European Respiratory Society task forces on bronchiectasis guidelines and transitioning in bronchiectasis, all in the past 36 months. C.S. Haworth reports grants or contracts from AstraZeneca to his institution; personal fees for consulting from 30 Technology, AstraZeneca, BiomX, Chiesi, Infex, Insmed, LifeArc, Pneumagen, Vertex and Zambon; personal payments or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from Chiesi, Insmed, LifeArc, Vertex and Zambon; personal payment for expert testimony from Zambon; is a board member of the European Cystic Fibrosis Society; and owns stock or stock options in Pneumagen, all in the past 36 months. J. Pollock is a member of the early career mentoring programme of this journal. S. Cohen, J. Jrbashyan, N. Abo Helo, N. Stein, Y. Adir, M. Vendrell, H. Lind, K. Viligorska, K. Robertson, P. Kauppi, B. Milenkovic, R. Menendez, O. Munteanu, A. Torres, E. Van Braeckel, M. Anwar and W. Boersma have nothing to disclose. M.R. Loebinger reports consulting fees from Armata, 30T, AstraZeneca, Parion, Insmed, Chiesi, Zambon, Electromed, Recode, Boehringer Ingelheim, Ethris, Mannkind and AN2 Therapeutics; and payment or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from Insmed, all in the past 36 months. K. Dimakou reports payment or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from Novartis, Boehringer Ingelheim, GSK, NORMA Hellas, Chiesi,

AstraZeneca and Zambon; direct payment in support for attending meetings and/or travel from Novartis, Boehringer Ingelheim, GSK, NORMA Hellas, Chiesi, AstraZeneca and Menarini; and direct payment for participation on a data safety monitoring or advisory board from Novartis, GSK and Chiesi, all in the past 36 months. S. Aliberti reports grants or contracts from GSK to his institution; personal fees for consulting from INSMED Incorporated, INSMED Italy, INSMED Ireland Ltd, INSMED Netherlands BV, ZAMBON Spa, AstraZeneca, Menarini, CSL Behring GmbH, Pfizer, Fondazione Internazionale Menarini, Moderna Italy, Moderna TX, Boehringer Ingelheim, Chiesi Farmaceutica Spa, MSD Italia S.r.l., Vertex Pharmaceuticals, BRAHMS GMBH, Physioassist SAS, AN2 Therapeutics, GlaxoSmithKline Spa and Verona; personal payments or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from GlaxoSmithKline Spa, Fondazione Internazionale Menarini, INSMED Italy, INSMED Ireland Ltd, Boehringer Ingelheim, Zambon and Vertex Pharmaceuticals; and personal payments for data safety monitoring or advisory boards from INSMED Incorporated, INSMED Italy, AstraZeneca UK Limited, MSD Italia S.r.l. and Verona pharma plc, all in the past 36 months. F.C. Ringshausen reports grants or contracts from the German Center for Lung Research (DZL), German Center for Infection Research (DZIF), IMI (EUEFPIA) and iABC Consortium (including Alaxia, Basilea, Novartis and Polyphor), Mukoviszidose Institute, Novartis and Insmed Germany to his institution; personal fees for consulting from Parion Sciences, Boehringer Ingelheim, Insmed and Chiesi; personal payments or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from I!DE Werbeagentur GmbH, Insmed, Grifols, University Hospital Hamburg, AstraZeneca, Cliniqo GmbH and Sanofi; personal fees for participation on a data safety monitoring or advisory board from Insmed, Boehringer Ingelheim, Parion Sciences and Chiesi; honorary positions as co-chair of the German Bronchiectasis Registry PROGNOSIS, a member of the SteerCo of the European Bronchiectasis Registry EMBARC and a principal investigator of the DZL; fees for clinical trial participation paid to his institution by AstraZeneca, Boehringer Ingelheim, Insmed, Novartis, Parion Sciences, ReCode, Ruhr University-Bochum, University of Dundee, UMC Utrecht and Vertex, all in the past 36 months. A. De Soyza reports grants or contracts from GSK, 30T and Sanofi to his institution; personal fees for consulting from 30T, Insmed, AstraZeneca and Sanofi; personal payments or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from AstraZeneca, Bayer, GSK, Insmed, Zambon, Sanofi, Fisher & Paykel and Inogen, all in the past 36 months. P.R. Burgel reports personal fees for consulting from AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, Insmed, MSD, Pfizer, Vertex and Viatris; and support for attending meetings and/or travel from AstraZeneca and Chiesi to his institution, in the past 36 months. O. Sibila reports consulting fees from Insmed and Boehringer Ingelheim in the past 36 months. A. Bossios reports that a grant from AstraZeneca was paid his my institution outside the submitted work; honoraria and lecture fees from Chiesi, GSK, and AstraZeneca paid to his institution outside the submitted work; and is Head of Assembly 5 (Airway diseases, asthma, COPD and chronic cough) of the European Respiratory Society (ERS), co-chair of the Nordic Severe Asthma Network, member of the steering committee of SHARP (ERS severe asthma Clinical Research Collaboration) and a member of the steering committee of the Swedish National Airway Register, all in the past 36 months. D. Obradovic reports support for attending the ERS Congress in 2024 and is President of the Serbian Society of Intensive Care Medicine. A. Nowinski reports scientific grants received from the National Centre for Research and Development, the Medical Research

Agency and the pharmaceutical industry (Boehringer Ingelheim, GSK and AstraZeneca) to their institutions in the past 36 months. A. Amorim reports grants or contracts from the European Cystic Fibrosis Society Patient Registry; and personal consulting fees and payment or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from Vertex Pharmaceuticals Inc.; support for attending meetings and/or travel from Zambon and Boehringer Ingelheim; and personal fees for participation on a data safety monitoring or advisory board from Chiesi, all in the past 36 months. N. Lorent is a member of the EMBARC management committee. S. Battalglia reports personal fees for advisory boards from GSK and Insmed; personal payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing or educational events from Insmed; and personal support for attending meetings and/or travel from Lusofarmaco and Sapio, all in the past 36 months. A. Shoemark reports that EMBARC3 is supported by Armata, AstraZeneca, Boehringer Ingelheim, Chiesi, CSL Behring, GlaxoSmithKline, Grifols, Insmed, LifeArc, Roche, Verona and Zambon; grants or contracts from AstraZeneca and LifeArc; consulting fees from Spirovant, Translate Bio and ReCode Therapeutics; payment or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from Translate Bio, Ethris and Insmed; unpaid involvement in European Respiratory Society Clinical Research Collaborations (EMBARC, BEATPCD and AMR Lung); and is supported by the Asthma and Lung UK Chair of Respiratory Research, all in the past 36 months. P.C. Goeminne reports payment or honoraria for lectures from Insmed, RMEI, AstraZeneca and GSK; support to attend conferences from GSK and AstraZeneca; participation on a data monitoring committee for Boehringer, and advisory boards for MSD and Pfizer, all in the past 36 months. F. Blasi reports grants from AstraZeneca, Chiesi and Insmed; personal fees for consulting from Menarini; and personal fees for lectures and advisory board from AstraZeneca, Chiesi, Boehringer Ingelheim, GSK, Guidotti, Grifols, Insmed, Menarini, Novartis, OM Pharma, Pfizer, Sanofi, Vertex and Zambon, in the past 36 months. E. Polverino reports consulting fees from Insmed, Grifols, Pari and CSL Behring; and payment or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from Insmed, Pari, Grifols and CSL Behring, in the past 36 months. J.D. Chalmers reports grants or contracts from AstraZeneca, Genentech, Boehringer Ingelheim, Gilead, Chiesi, Grifols, Insmed and Trudell; and consulting fees from Janssen, Antabio, Pfizer, Zambon, AstraZeneca, Chiesi, GlaxoSmithKline, Insmed, Grifols, Novartis and Boehringer Ingelheim, in the past 36 months and is the Chief Editor of ERJ Open Research.

Thorax

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. 2026 Jul 13:thorax-2026-225413.

doi: 10.1136/thorax-2026-225413. Online ahead of print.

Paediatric bronchiectasis: clinical phenotypes and future directions

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Affiliations Expand

- **PMID: 42442947**

- **DOI: 10.1136/thorax-2026-225413**

No abstract available

Keywords: Bronchiectasis; Paediatric Lung Disease.

Conflict of interest statement

Competing interests: None declared.

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