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

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Crit Pathw Cardiol

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[Redefining atrial fibrillation treatment success: patient-defined goals for arrhythmia burden and health-related quality of life](#)

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Affiliations Expand

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Abstract

Background: Despite the use of atrial fibrillation (AF) cutoff of 30s as the standard for success in most AF clinical trials, patients consider an AF Severity Scale (AFSS) of ≤ 5 or AF duration ≤ 1 hour as treatment success. Prevalence and factors associated with these patient-defined endpoints are unknown.

Methods: We performed a cross-sectional analysis using a single-site cohort of AF patients. We report rates of patient-defined treatment success (AFSS ≤ 5 or AF burden ≤ 1 hour) and multivariable analyses to identify factors associated with either successful outcome.

Results: From 2019 to 2023, 2087 patients had available AFSS symptom scores and 2305 had ambulatory ECG monitoring. Of these, 862 (41%) had AFSS scores ≤ 5 and 1130 (49%) had AF burden ≤ 1 hour. After adjusted analysis, older age (OR 1.03, 95% CI 1.02-1.04, $p < 0.001$) was associated with AFSS ≤ 5 . Whereas female sex (OR 0.43, 95% CI 0.35-0.52, $p < 0.001$), CKD, COPD, depression, and CHF were less likely to meet AFSS threshold. Among the AF burden cohort, age (OR 0.98, 95% CI 0.97-0.99, $p < 0.001$), and female sex (OR 1.24, 95% CI 1.03-1.50, $p = 0.025$) were associated with AF burden ≤ 1 hour. Unlike the AFSS cohort, medical comorbidities such as COPD and CHF, were not significantly different for meeting AF burden goal.

Conclusion: Less than half of AF patients had AF-symptom scores or arrhythmia burdens reflecting patient-defined treatment success. Factors associated with reaching patient reported outcome goals were distinct from those associated with arrhythmia burden goals.

Keywords: Arrhythmia; Atrial Fibrillation; Electrophysiology; Patient Goals; Patient Reported Outcomes; Rhythm Disorders &.

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[Managing multimorbidity in severe asthma: comparison of resources and perspectives between severe asthma specialists and general respiratory physicians across Europe](#)

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Abstract

Background: Multimorbidity refers to the presence of multiple coexisting conditions, but is often underappreciated in the context of severe asthma (SA) management. We sought to identify differences in approaches to multimorbidity management in SA, variability in access to multidisciplinary team (MDT) resources, and whether physician perspectives on multimorbidity differ between SA specialists and general respiratory physicians.

Methods: The Severe Heterogeneous Asthma Registry, Patient-centred (SHARP) Clinical Research Collaboration circulated an online physician survey *via* European national respiratory societies to assess 1) available resources to address multimorbidity and 2) physician perspectives on multimorbidity in SA.

Results: 495 responses from 25 European countries included 48% SA specialists and 52% general respiratory physicians. SA specialists had more experience with SA patients (20% were seeing >60 patients per month) compared to general respiratory physicians. SA specialists had greater access to multidisciplinary care - including better access to MDTs, allied health professionals and referrals to external specialists, and therefore more routinely assessed comorbidities and considered them greater influences on their practice. They also considered multimorbidity to a greater degree and rated its impact on their patients' asthma outcomes (and general health outcomes) as more substantial.

Conclusions: Alongside more experience of treating SA, SA specialists have increased awareness of multimorbidity and better resources to manage it. However, access to MDTs remains a significant gap for both SA specialists and general respiratory physicians. Furthermore, both groups identified a high need for further education and training about multimorbidity. These findings highlight key areas for improvement in clinical practice, resources and training.

Conflict of interest statement

Conflict of interest: D. Matīsa reports personal fees for lectures, presentations, speaker bureau activities, manuscript writing and educational events from Berlin-Chemie/Menarini Baltic and AstraZeneca, and support for attending meetings and/or travel from AstraZeneca, MSD, Boehringer Ingelheim and Norameda. A.T. Bansal reports consulting fees from GSK, Chiesi, Teva, Sanofi and Novartis, paid via the European Respiratory Society (ERS) Clinical Research Collaboration to Acclarogen. S. Rink reports personal fees for lectures, presentations, speaker bureau activities, manuscript writing and educational events from Chiesi, AstraZeneca, Berlin-Chemie and Medis, and support for attending meetings and/or travel from Chiesi and AstraZeneca. A. Freeman reports agreed support for attending meetings and/or travel from Chiesi for the ERS Congress 2025. B. Frankenmölle, M. Singh, M. Hyland, G.A.M.L. Costanzo, A. Egesten, E. Jusufovic, F. Jaun, B. Milenkovic, J. Varkonyi-Sepp, O. Goksel, A.M. Pereira, A. Rizzi, R. Hou, A. Štajduhar, L. Brussino, H.M. Haitchi, K. Bieksiene, E. Damadoglu, V. Yasinka, I. Kroiča and R.J. Kurukulaaratchy report no conflicts of interest. J.K. Sont reports research grants from the Dutch RAPSODI severe asthma registry, the SHARP severe asthma registries, AstraZeneca and ZonMW. A. Bossios reports institutional research grants from AstraZeneca; institutional honoraria and lecture fees from Chiesi, GSK, Sanofi and AstraZeneca; and participation in a data safety monitoring board and advisory board for AstraZeneca; and holds leadership roles as Head of Assembly 5 (Airway diseases, asthma, COPD and chronic cough) of the ERS and as a member of the steering committee of the Swedish National Airway Register. B. Ainsworth reports institutional research funding from the National Institute for Health and Care Research, PhD research funding and a research contract with Neurify.io to conduct a research project without associated payment; and reports personal honoraria from AstraZeneca for educational meetings and for grant review activities from the Agència de Qualitat i Avaluació Sanitàries de Catalunya, received travel expense support from the Centre for Applied Respiratory Research Innovation and Impact, and participates in a scientific advisory board for Medito Inc. and is a member of the UK Taskforce for Lung Health; both roles are unpaid. R. Chaudhuri reports research grants from AstraZeneca for an investigator-led study; consulting fees from Connect Biopharma for a conference presentation; honoraria for lectures from GSK, AstraZeneca, Chiesi and Sanofi; support for attending meetings and/or travel from Sanofi; and participation in advisory board meetings for GSK, AstraZeneca and Celltrion. F. Mihaltan reports an unpaid leadership role as President of the Romanian Society of Pneumology. A. Spanavello reports research grants and contracts from GSK, MSD, Sanofi, AstraZeneca, Chiesi and Lusofarmaco; consulting fees from GSK, MSD, Sanofi, AstraZeneca and Chiesi; support for attending meetings and/or travel from GSK, MSD, Sanofi, AstraZeneca and Chiesi; and participation in advisory board activities for GSK, MSD, Sanofi, AstraZeneca and Chiesi. E. Heffler reports institutional research grants from Chiesi (payment made to the institution); personal consulting fees from Almirall, Celltrion Healthcare, Chiesi, Apogee Therapeutics, GSK, Regeneron and Blueprint Medicines; personal honoraria for lectures and educational activities from GSK, Chiesi, AstraZeneca, Sanofi, Gentili, Recordati, Lofarma, Firma, Blueprint Medicines and Orion Pharma; personal support for attending meetings and/or travel from AstraZeneca; and personal advisory board fees from AstraZeneca, GSK, Sanofi, Regeneron, Celltrion Healthcare and Allergy Therapeutics. I. Adcock reports institutional research grants from GSK, the Medical Research Council, and the Engineering and Physical Sciences Research Council, and institutional grant

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[Clinical comorbidity phenotypes in COPD and their biomarker signatures](#)

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Affiliations Expand

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Abstract

Biomarkers of inflammation, coagulation and fibroblast activity differ across COPD comorbidity phenotypes, revealing biologically plausible signatures and suggesting potential endotypes that reflect subclinical disease processes <https://bit.ly/49t5nkW>.

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Conflict of interest statement

Conflict of interest: L. Egerod is a PhD student conducting her project in collaboration with Nordic Bioscience. D.J. Leeming, M.A. Karsdal, J.M.B. Sand and C.L. Bager are employees of Nordic Bioscience and hold stock or stock options. J.C. Yates is an employee of GlaxoSmithKline and hold stock or stock options.

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Short-term longitudinal variation in exhaled nitric oxide fraction predicts future moderate-to-severe exacerbations in COPD patients on triple therapy: a prospective cohort study

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Abstract

Background: Fractional exhaled nitric oxide (F_{ENO}) reflects type 2 airway inflammation, yet the prognostic utility of longitudinal F_{ENO} changes in COPD remains unclear. We aim to explore whether 6-month F_{ENO} variation patterns predict subsequent moderate-to-severe exacerbations in COPD patients receiving triple therapy.

Methods: We prospectively evaluated COPD patients receiving triple inhaled therapy from 2023 to 2024. Four F_{ENO} -related variables were used to derive F_{ENO} variation phenotypes *via* K-means unsupervised clustering.

Results: Three distinct F_{ENO} -variation phenotypes were identified: a High F_{ENO} -Persistently Elevated subtype (Cluster 1, 11.2%), a High F_{ENO} -Declining subtype (Cluster 2, 20.3%) and a Low F_{ENO} -Stable subtype (Cluster 3, 68.5%). During 6-12 months of follow-up, 75 patients (33.8%) experienced a moderate-to-severe exacerbation. Compared with Cluster 3, both Cluster 1 (OR 6.97, 95% CI 2.38-20.47) and Cluster 2 (OR 20.08, 95% CI 7.01-57.58) were independently associated with future exacerbations ($p < 0.001$). The final prediction model incorporating F_{ENO} variation phenotypes demonstrated excellent discrimination (AUC 0.889) and provided greater net clinical benefit than models using traditional clinical predictors alone ($p = 0.004$). Subgroup analyses revealed consistent effect sizes across categories of age, prior-year exacerbations, baseline FEV₁ % predicted, symptom burden, smoking status and proportion of days covered, supporting the robustness and internal consistency of the F_{ENO} -variation phenotyping approach.

Conclusion: Short-term longitudinal F_{ENO} variation over 6 months was independently associated with future moderate-to-severe exacerbations in COPD patients receiving triple therapy, supporting risk stratification and hypothesis generation for future interventional studies rather than direct treatment guidance.

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Conflict of interest statement

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

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[Prevalence of type 2 multimorbidities in COPD compared to asthma and relationship to blood eosinophilic counts](#)

[David M G Halpin](#)^{1,2}, [Jaspreet Kaur](#)³, [Heath Heatley](#)³, [Freya Tyrer](#)³, [Cono Ariti](#)³, [Rachel Pullen](#)², [Shelly Pathak](#)⁴, [Victoria Carter](#)³, [David Price](#)^{2,3,5}

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Abstract

Background: Type 2 (T2) inflammation is increasingly recognised in COPD, though its immunopathological profile may differ from asthma. T2 inflammatory diseases often coexist, but their prevalence in COPD patients without asthma remains underexplored. This study investigated the prevalence of T2 inflammatory multimorbidities in individuals with COPD (without asthma) and compared it with those in people with asthma. It also examined the relationship between these multimorbidities and blood eosinophil counts (BEC).

Methods: Using data from the Optimum Patient Care Research Database (OPCRD), we identified patients with COPD or asthma and assessed lifetime and adjusted prevalence of T2 comorbidities including allergic rhinitis, atopic dermatitis/eczema, nasal polyps, chronic rhinitis with or without polyps, eosinophilic oesophagitis and ulcerative colitis. Prevalence was stratified by BEC and adjusted for demographic and clinical variables.

Results: Among 122 509 COPD and 1 154 094 asthma patients, T2 multimorbidities were present in both groups but significantly less common in COPD. Allergic rhinitis and nasal polyps were notably less prevalent in COPD, even at higher BEC levels. Prevalence of multimorbidities increased with BEC in both groups, with stronger associations observed for nasal polyps and ulcerative colitis. Eosinophilic oesophagitis was rare across both cohorts.

Conclusion: T2 multimorbidities are present in COPD and their prevalence increases with BEC, though they are generally less prevalent than in asthma, suggesting distinct immunopathology.

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[Eosinophil biology in COPD: from scientific insight to clinical treatment action](#)

[Steven P Cass](#)¹, [Mona Bafadhel](#)¹

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- DOI: [10.1183/23120541.01301-2025](#)

Abstract

COPD is a common lung disease that causes significant global morbidity. Strikingly, elevated blood and/or airway eosinophil levels are observed in up to 40% of COPD patients. These innate immune cells are clinically associated with increased exacerbation frequency and risk. Eosinophils are key in COPD symptom management and a drive to uncover their related immunopathology is critical to our understanding of disease progression. Recent biologic treatments targeting eosinophils have had success in reducing symptoms in eosinophilic COPD patients. However, the underlying pathways that lead to these improvements is incompletely understood. Given eosinophils are important in pathogen clearance, mucus viscosity, barrier integrity and tissue remodelling, any disease modifying treatments will have several proposed mechanisms. In this narrative review, we summarise the developmental, recruitment, activation and related pathology of eosinophils in the context of eosinophil-depleting treatments to elucidate treatment efficacy. Furthermore, we highlight potential future biological pathways for therapeutics aimed at specific eosinophil mechanisms.

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Conflict of interest statement

Conflict of interest: S.P. Cass reports grants from Asthma+Lung UK and is an Associate Editor for ERJ Open Research. M. Bafadhel reports grants from Asthma+Lung UK, NIHR, AstraZeneca and EU Horizon; payment or honoraria for lectures, presentations, manuscript writing or educational events from AstraZeneca and Roche; participation on a data safety monitoring board or advisory board with ProAxis and Albus Health; and leadership roles with the British Thoracic Society, Thorax (Associate Editor) and the European Respiratory Journal (Section Editor).

- [213 references](#)
- [3 figures](#)

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BMJ Open Respir Res

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. 2026 Sep 1;13(1):e003484.

doi: 10.1136/bmjresp-2025-003484.

[Risk of pneumonia in adults with chronic cough: a nationwide cohort study](#)

[Man Young Park](#)¹, [Beom-Joon Lee](#)², [Kwan-Il Kim](#)², [Jun-Hwan Lee](#)^{3 4 5 6}

Affiliations Expand

- PMID: 42680518
- DOI: [10.1136/bmjresp-2025-003484](#)

Free article

Abstract

Background: Chronic cough affects approximately 10% of adults and is increasingly recognised as a distinct clinical condition. This symptom has increasingly been

associated with significant outcomes such as pneumonia. Nevertheless, few large long-term population-based studies have been conducted.

Methods: This retrospective cohort study was performed using nationwide claims data from the Health Insurance Review and Assessment Service in South Korea from 2013 to 2020. Adult patients who visited outpatient clinics for cough (International Classification of Diseases, 10th Revision: R05) were enrolled. Chronic cough was defined as ≥ 8 visits or ≥ 56 days. Patients with pneumonia within 2 years before and 6 months after the index date were excluded. The main outcome was incident pneumonia during the 3 year follow-up period. The association between chronic cough and incident pneumonia was evaluated using Cox proportional hazards models, with HRs adjusted for age, sex, comorbidities and Charlson comorbidity index. Sensitivity analyses and subgroup analyses by sex and age were also performed.

Results: Among 385 417 participants (28 706 with chronic cough and 356 711 controls), the incidence of pneumonia was higher in the chronic cough group (18.87 vs 11.32 per 1000 person-years). Chronic cough was independently associated with an elevated risk of pneumonia (adjusted HR 1.13; 95% CI 1.06 to 1.19; $p < 0.001$), and the association was robust across multiple sensitivity analyses with alternative exposures. The subgroup analysis showed a stronger association among men (HR 1.72) than among women (HR 1.39) and among adults aged 40-79 years, with the highest risk observed among adults aged 40-49 years (HR 1.37).

Conclusions: Chronic cough was independently associated with increased pneumonia risk, especially in middle-aged and male patients. Clinicians should be aware that chronic cough may signal increased vulnerability to lower respiratory tract infections (eg, pneumonia) and consider preventive strategies, including vaccination and close monitoring, for high-risk individuals.

Keywords: Cough/Mechanisms/Pharmacology; Pneumonia; Pulmonary Disease, Chronic Obstructive; Respiratory Infection.

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Conflict of interest statement

Competing interests: None declared.

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Editorial

Am J Respir Crit Care Med

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. 2026 Sep 1;212(9):1897-1898.

doi: 10.1093/ajrccm/aamag352.

[One elevated blood eosinophil count is enough to identify mepolizumab responders in chronic obstructive pulmonary disease](#)

[Sanjay Ramakrishnan](#) ^{1 2 3}

Affiliations Expand

- PMID: 42656167
- DOI: [10.1093/ajrccm/aamag352](#)

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Comment on

- [Mepolizumab efficacy in chronic obstructive pulmonary disease: insights from longitudinal patterns of blood eosinophil counts and their variability across 3 clinical trials.](#)

Criner GJ, Watz H, Han MK, Martinez FJ, Gould S, Min J, Biswas A, Kolterer S, Singh D. Am J Respir Crit Care Med. 2026 Sep 1;212(9):2022-2035. doi: 10.1093/ajrccm/aamag288. PMID: 42265988 Free PMC article. Clinical Trial.

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Lancet Reg Health Eur

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. 2026 Jul 14:68:101776.

doi: 10.1016/j.lanepe.2026.101776. eCollection 2026 Sep.

GOLD-concordant inhaled maintenance therapy at hospital discharge after hospitalisation for severe COPD exacerbation: a multicentre retrospective observational study

Catharina Peukert¹, Stefan Kwast², Sven Hohenstein², Victoria Pradler², Sebastian König^{2,3}, Torsten Bauer¹, Thomas Armbrust⁴, Nikolaus Büchner⁵, Kristina Probst⁶, Anika Lainq⁶, Dörte Anderson⁶, Kathrin Kahnert^{7,8}, Andreas Bollmann², Ralf Kuhlen², Michael Gediga⁶, Kurt Rasche⁹

Affiliations Expand

- PMID: 42519111
- PMCID: [PMC13382325](#)
- DOI: [10.1016/j.lanepe.2026.101776](#)

Abstract

Background: Chronic obstructive pulmonary disease (COPD) is a leading cause of global morbidity, with frequent exacerbations resulting in hospitalizations, increased healthcare burdens, and mortality. The GOLD report emphasizes dual or triple inhaler therapy for high-risk (GOLD group E) patients, yet real-world guideline adherence during hospitalization remains unclear. This study aimed to evaluate concordance with GOLD-recommended maintenance inhaler therapy at hospital discharge in patients with severe exacerbations of COPD and to identify factors associated with treatment rates.

Methods: We conducted a retrospective, multicentre, observational study of 3928 COPD inpatients across 85 hospitals within the German Helios group (January 2022–September 2024). The primary outcome was the proportion of patients discharged on GOLD-concordant inhaler therapy, defined as dual long-acting bronchodilation (LABA/LAMA), or triple therapy (LABA/LAMA/ICS) in patients with eosinophils $\geq 300/\mu\text{L}$ or high exacerbation risk. Secondary outcomes included diagnostic procedures, pharmacological management, hospital characteristics, in-hospital outcomes and predictors of guideline-concordant prescribing assessed using multivariable logistic regression models.

Findings: The mean age of the cohort was 70.1 years (SD 10.1), 45% (n = 1784) were female, 75% (n = 2952) had cardiovascular comorbidities and 45% were treated on pneumology wards. Eosinophil counts were measured in 49% (n = 1895) of patients. During hospitalisation, 14% (n = 560) of patients required intensive care, mean length of stay was 6.6 days, and in-hospital mortality was 1.7% (n = 66). In patients

with available documentation, at admission, 61% (1344 of 2205) received dual (21%; 455) or triple (40%; 889) maintenance inhaler therapy. At discharge, 77% (2573 of 3326) of patients were prescribed GOLD-concordant inhaler therapy (dual: 28%; 939 and triple: 52%; 1720). In multivariable analyses, guideline-concordant prescribing at discharge was independently associated with longer length of stay (odds ratio [OR] 1.17/day; 95% CI 1.06-1.29), male sex (OR 1.45; CI 1.23-1.71), treatment on a pneumology ward (OR 1.77; 1.42-2.20), and older age (OR 0.87 per standard deviation increase; CI 0.79-0.95).

Interpretation: In this multicentric large, real-world, hospital-based cohort of patients with severe COPD exacerbations, more than one in five patients were discharged without guideline-concordant maintenance inhaler therapy. Specialist pneumological care and structured inpatient management were strongly associated with improved adherence. Hospital care substantially increased maintenance therapy rate. Systematic implementation of eosinophil risk stratification, enhanced specialist involvement, and standardised discharge pathways could be opportunities and may substantially improve evidence-based COPD care and reduce future exacerbation risk.

Funding: This study and the preparation of the manuscript were financially supported by AstraZeneca.

Keywords: COPD; GOLD; Guideline adherence; Hospital care; Inhaler therapy.

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Conflict of interest statement

KP, AL, DA, and MG are employees of AstraZeneca and may hold company shares. KK reports personal fees for consultancy and lectures from AstraZeneca, GSK, Chiesi, Insmmed, Sanofi, Vivisol, Pari, and Berlin-Chemie, outside the submitted work. All other authors declare no competing interests. The sponsor contributed to the development of the study protocol. All analyses, outcome definitions, and guideline concordance criteria were predefined, literature-based, and conducted independently. The sponsor had no role in data analysis, clinical data interpretation, or the decision to submit the manuscript for publication.

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- [2 figures](#)

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Review

Clin Chest Med

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. 2026 Sep;47(3):651-670.

doi: 10.1016/j.ccm.2026.04.017. Epub 2026 Jun 22.

[Noninvasive Ventilation in Chronic Hypercapnic Respiratory Failure](#)

[Sritika Thapa](#)¹, [Sreelatha Naik](#)², [Bernardo Selim](#)³

Affiliations Expand

- PMID: 42486571
- DOI: [10.1016/j.ccm.2026.04.017](#)

Abstract

Noninvasive ventilation (NIV) is a cornerstone therapy for chronic hypercapnic respiratory failure arising from chronic obstructive pulmonary disease (COPD), obesity hypoventilation syndrome (OHS), and neuromuscular disease (NMD). This article reviews the pathophysiology of ventilatory pump failure, key NIV mode features (continuous positive airway pressure, bilevel positive airway pressure-S/ST, volume-assured pressure support, auto-expiratory positive airway pressure), and advanced settings that govern patient-ventilator synchrony. It contrasts respiratory assist devices with home mechanical ventilators and links device choice to disease-specific needs.

Keywords: COPD; Hypercapnic respiratory failure; Neuromuscular disease; Noninvasive ventilation; Obesity hypoventilation syndrome; Respiratory mechanics.

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Conflict of interest statement

Disclosure None.

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. 2026 Sep;47(3):499-510.

doi: 10.1016/j.ccm.2026.04.005. Epub 2026 Jun 22.

[Airflow Obstruction and Dynamic Hyperinflation](#)

[John J Marini](#)¹

Affiliations Expand

- PMID: 42486559
- DOI: [10.1016/j.ccm.2026.04.005](#)

Abstract

Dynamic hyperinflation with gas trapping, a key element of the shared pathophysiology of acutely exacerbated asthma and chronic airflow obstruction (COPD), underpins the serious consequences of positive pressure ventilation-increased workload, impaired muscular efficiency, and hemodynamic compromise. Although the basic therapeutic approach to ventilatory assistance is similar for both conditions, noninvasive ventilation, high-flow nasal cannula, and positive end-expiratory pressure are predictably more effective in COPD than asthma. The expanding deployment of extracorporeal gas exchange (extracorporeal membrane oxygenation) now provides an attractive option in tertiary centers for the care of life-threatening and refractory ventilatory failure due to airflow obstruction.

Keywords: Asthma; Auto-PEEP; COPD; Dynamic hyperinflation; Extracorporeal gas exchange; Mechanical ventilation.

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Conflict of interest statement

Disclosure The author has no financial or ethical conflicts relevant to this work.

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Editorial

Am J Respir Crit Care Med

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. 2026 Sep 1;212(9):1897-1898.

doi: 10.1093/ajrccm/aamag352.

[One elevated blood eosinophil count is enough to identify mepolizumab responders in chronic obstructive pulmonary disease](#)

[Sanjay Ramakrishnan](#) ^{1 2 3}

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- PMID: 42656167
- DOI: [10.1093/ajrccm/aamag352](#)

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Comment on

- [Mepolizumab efficacy in chronic obstructive pulmonary disease: insights from longitudinal patterns of blood eosinophil counts and their variability across 3 clinical trials.](#)

Criner GJ, Watz H, Han MK, Martinez FJ, Gould S, Min J, Biswas A, Kolterer S, Singh D. Am J Respir Crit Care Med. 2026 Sep 1;212(9):2022-2035. doi: 10.1093/ajrccm/aamag288. PMID: 42265988 Free PMC article. Clinical Trial.

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J Appl Physiol (1985)

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. 2026 Sep 1;141(3):840-850.

doi: 10.1152/jappphysiol.00541.2026. Epub 2026 Aug 12.

[Reliability and validity of surface electromyography to identify contractile muscle fatigue during cycling in people with COPD](#)

[Simone Pancera](#)¹, [Paulien Mellaerts](#)¹, [Daniel Langer](#)¹, [Mathieu Brancaleone](#)^{2,3}, [Mykyta Chunikhin](#)⁴, [Luc Janssens](#)⁵, [Bart Vanrumste](#)⁴, [Wim Janssens](#)^{2,3}, [Stephanie Everaerts](#)^{2,3}, [Heleen Demeyer](#)^{1,6}, [Thierry Troosters](#)¹

Affiliations Expand

- PMID: 42586168
- DOI: [10.1152/jappphysiol.00541.2026](#)

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Abstract

Surface electromyography (sEMG) may provide reliable biomarkers of contractile muscle fatigue (CMF) during exercise in chronic obstructive pulmonary disease (COPD). This study aimed to: 1) determine the test-retest reliability of amplitude- and frequency-based sEMG metrics recorded from the quadriceps muscle during a constant-work-rate cycling test (CWRT); 2) assess their criterion validity for detecting CMF against potentiated twitch force (TWp); and 3) explore associations between sEMG metrics and physiological outcomes. Adults with COPD referred for pulmonary rehabilitation performed two CWRTs to the limit of tolerance (T_{lim}) at 75%-80% of the individual peak workload, with physiological responses recorded. CMF was assessed by: 1) amplitude- (root mean square, RMS) and frequency-based sEMG metrics recorded from the right quadriceps, analyzed per pedal stroke and expressed as Z-score changes at T_{lim} relative to a fatigue-free baseline; and 2) the postexercise change in TWp of the right quadriceps. Relative and absolute test-retest reliability, and criterion validity of sEMG against TWp were assessed. Twenty-five participants completed the assessments. Among the sEMG metrics, only vastus lateralis RMS showed adequate relative reliability [intraclass correlation coefficient (95% CI) = 0.79 (0.74-0.85)] but a nonnegligible standard error of measurement of 0.58. Moreover, vastus lateralis RMS showed 86% sensitivity and specificity versus TWp in identifying CMF. An increase of ≥ 0.65 Z-scores identified the threshold for sEMG-based CMF. Changes in vastus lateralis RMS were moderately correlated with physiological responses at T_{lim} ($P < 0.05$). In conclusion, vastus lateralis RMS

derived from sEMG can be used as a biomarker of CMF during cycling in individuals with COPD.**NEW & NOTEWORTHY** This study provides novel evidence that exercise-induced changes in the amplitude of the vastus lateralis surface electromyography signal during a standardized constant-work-rate cycling test can represent a reliable and valid biomarker of quadriceps contractile muscle fatigue in individuals with moderate-to-severe COPD.

Keywords: COPD; exercise tolerance; fatigue; muscle function; surface electromyography.

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3

Editorial

Am J Respir Crit Care Med

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. 2026 Sep 1;212(9):2099-2100.

doi: 10.1093/ajrccm/aamag263.

[Targeted lung denervation in chronic obstructive pulmonary disease: the need to address comorbid contributors to dyspnea](#)

[Zhican Liu¹](#), [Li Peng²](#), [Mingyan Jiang¹](#)

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- PMID: 42548191
- DOI: [10.1093/ajrccm/aamag263](#)

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- [Reply to Zheng, Zhang et al., Liu et al., Xu et al., and Zang et al.](#)

Criner GJ; all authors. Am J Respir Crit Care Med. 2026 Sep 1;212(9):2104-2105. doi: 10.1093/ajrccm/aamag262. PMID: 42548091 No abstract available.

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4

Editorial

Am J Respir Crit Care Med

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. 2026 Sep 1;212(9):2096.

doi: 10.1093/ajrccm/aamag260.

[Limitations of the AIRFLOW-3 trial: targeted lung denervation in chronic obstructive pulmonary disease](#)

[Bowen Zheng](#)¹

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- PMID: 42548115
- DOI: [10.1093/ajrccm/aamag260](#)

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Criner GJ; all authors. Am J Respir Crit Care Med. 2026 Sep 1;212(9):2104-2105. doi: 10.1093/ajrccm/aamag262. PMID: 42548091 No abstract available.

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Editorial

Am J Respir Crit Care Med

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. 2026 Sep 1;212(9):2102-2103.

doi: 10.1093/ajrccm/aamag265.

[Targeted lung denervation in chronic obstructive pulmonary disease: refining phenotyping and endpoints after AIRFLOW-3](#)

[Ningzi Zang](#)^{1,2}, [Lijian Pang](#)^{1,2}, [Xiaodong Lv](#)²

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- PMID: 42548097
- DOI: [10.1093/ajrccm/aamag265](#)

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- [Reply to Zheng, Zhang et al., Liu et al., Xu et al., and Zang et al.](#)

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Am J Respir Crit Care Med

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. 2026 Sep 1;212(9):2097-2098.

doi: 10.1093/ajrccm/aamag261.

[Targeted lung denervation in chronic obstructive pulmonary disease: phenotype-specific benefits and procedure-related risks](#)

[Xi Zhang](#)¹, [Min Li](#)², [Tian Wang](#)¹

Affiliations Expand

- PMID: 42548090
- DOI: [10.1093/ajrccm/aamag261](#)

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- [Reply to Zheng, Zhang et al., Liu et al., Xu et al., and Zang et al.](#)

Criner GJ; all authors. Am J Respir Crit Care Med. 2026 Sep 1;212(9):2104-2105. doi: 10.1093/ajrccm/aamag262. PMID: 42548091 No abstract available.

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Respir Med

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. 2026 Sep:261:109070.

doi: 10.1016/j.rmed.2026.109070. Epub 2026 Jul 30.

[Impact of obstructive lung disease on survival in patients with rheumatoid arthritis related interstitial lung disease](#)

[Lee M Fidler](#)¹, [Omri A Arbiv](#)², [Jolene H Fisher](#)³, [Shane Shapera](#)³, [Andrea S Gershon](#)⁴

Affiliations Expand

- PMID: 42532360
- DOI: [10.1016/j.rmed.2026.109070](#)

Abstract

Chronic obstructive pulmonary disease (COPD) and asthma are common comorbidities in rheumatoid arthritis related interstitial lung disease (RA-ILD), yet their impact on health outcomes is poorly understood. Using health services data from Ontario, Canada, we aimed to evaluate the effect of COPD, asthma and COPD/asthma overlap (ACO) on survival in patients with RA-ILD. Among 6470 RA-ILD patients 4437 (68.6%) had obstructive lung disease. COPD and ACO were associated with significantly increased mortality compared to RA-ILD with asthma and RA-ILD alone. These results highlight the burden and deleterious effects of COPD in patients with RA-ILD.

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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: Lee Fidler reports financial support was provided by Canadian Pulmonary Fibrosis Foundation. Lee Fidler reports financial support was provided by University of Toronto Temerty Faculty of Medicine. 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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Lancet Reg Health Eur

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. 2026 Jul 14:68:101776.

doi: 10.1016/j.lanepe.2026.101776. eCollection 2026 Sep.

[GOLD-concordant inhaled maintenance therapy at hospital discharge after hospitalisation for severe COPD exacerbation: a multicentre retrospective observational study](#)

[Catharina Peukert¹](#), [Stefan Kwast²](#), [Sven Hohenstein²](#), [Victoria Pradler²](#), [Sebastian König^{2,3}](#), [Torsten Bauer¹](#), [Thomas Armbrust⁴](#), [Nikolaus Büchner⁵](#), [Kristina Probst⁶](#), [Anika Laing⁶](#), [Dörte Anderson⁶](#), [Kathrin Kahnert^{7,8}](#), [Andreas Bollmann²](#), [Ralf Kuhlen²](#), [Michael Gediga⁶](#), [Kurt Rasche⁹](#)

Affiliations Expand

- PMID: 42519111
- PMCID: [PMC13382325](#)
- DOI: [10.1016/j.lanepe.2026.101776](#)

Abstract

Background: Chronic obstructive pulmonary disease (COPD) is a leading cause of global morbidity, with frequent exacerbations resulting in hospitalizations, increased healthcare burdens, and mortality. The GOLD report emphasizes dual or triple inhaler therapy for high-risk (GOLD group E) patients, yet real-world guideline adherence during hospitalization remains unclear. This study aimed to evaluate concordance with GOLD-recommended maintenance inhaler therapy at hospital discharge in patients with severe exacerbations of COPD and to identify factors associated with treatment rates.

Methods: We conducted a retrospective, multicentre, observational study of 3928 COPD inpatients across 85 hospitals within the German Helios group (January 2022-September 2024). The primary outcome was the proportion of patients discharged on GOLD-concordant inhaler therapy, defined as dual long-acting bronchodilation (LABA/LAMA), or triple therapy (LABA/LAMA/ICS) in patients with eosinophils $\geq 300/\mu\text{L}$ or high exacerbation risk. Secondary outcomes included diagnostic procedures, pharmacological management, hospital characteristics, in-hospital outcomes and predictors of guideline-concordant prescribing assessed using multivariable logistic regression models.

Findings: The mean age of the cohort was 70.1 years (SD 10.1), 45% (n = 1784) were female, 75% (n = 2952) had cardiovascular comorbidities and 45% were treated on pneumology wards. Eosinophil counts were measured in 49% (n = 1895) of patients. During hospitalisation, 14% (n = 560) of patients required intensive care, mean length of stay was 6.6 days, and in-hospital mortality was 1.7% (n = 66). In patients with available documentation, at admission, 61% (1344 of 2205) received dual (21%; 455) or triple (40%; 889) maintenance inhaler therapy. At discharge, 77% (2573 of 3326) of patients were prescribed GOLD-concordant inhaler therapy (dual: 28%; 939 and triple: 52%; 1720). In multivariable analyses, guideline-concordant prescribing at discharge was independently associated with longer length of stay (odds ratio [OR] 1.17/day; 95% CI 1.06-1.29), male sex (OR 1.45; CI 1.23-1.71), treatment on a pneumology ward (OR 1.77; 1.42-2.20), and older age (OR 0.87 per standard deviation increase; CI 0.79-0.95).

Interpretation: In this multicentric large, real-world, hospital-based cohort of patients with severe COPD exacerbations, more than one in five patients were discharged without guideline-concordant maintenance inhaler therapy. Specialist pneumological care and structured inpatient management were strongly associated with improved adherence. Hospital care substantially increased maintenance therapy rate. Systematic implementation of eosinophil risk stratification, enhanced specialist involvement, and standardised discharge pathways could be opportunities and may substantially improve evidence-based COPD care and reduce future exacerbation risk.

Funding: This study and the preparation of the manuscript were financially supported by AstraZeneca.

Keywords: COPD; GOLD; Guideline adherence; Hospital care; Inhaler therapy.

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Conflict of interest statement

KP, AL, DA, and MG are employees of AstraZeneca and may hold company shares. KK reports personal fees for consultancy and lectures from AstraZeneca, GSK, Chiesi, Insmad, Sanofi, Vivisol, Pari, and Berlin-Chemie, outside the submitted work. All other authors declare no competing interests. The sponsor contributed to the development of the study protocol. All analyses, outcome definitions, and guideline concordance criteria were predefined, literature-based, and conducted independently. The sponsor had no role in data analysis, clinical data interpretation, or the decision to submit the manuscript for publication.

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Review

Clin Chest Med

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. 2026 Sep;47(3):651-670.

doi: 10.1016/j.ccm.2026.04.017. Epub 2026 Jun 22.

[Noninvasive Ventilation in Chronic Hypercapnic Respiratory Failure](#)

[Sritika Thapa](#)¹, [Sreelatha Naik](#)², [Bernardo Selim](#)³

Affiliations Expand

- PMID: 42486571
- DOI: [10.1016/j.ccm.2026.04.017](#)

Abstract

Noninvasive ventilation (NIV) is a cornerstone therapy for chronic hypercapnic respiratory failure arising from chronic obstructive pulmonary disease (COPD), obesity hypoventilation syndrome (OHS), and neuromuscular disease (NMD). This article reviews the pathophysiology of ventilatory pump failure, key NIV mode features (continuous positive airway pressure, bilevel positive airway pressure-S/ST, volume-assured pressure support, auto-expiratory positive airway pressure), and advanced settings that govern patient-ventilator synchrony. It contrasts respiratory assist devices with home mechanical ventilators and links device choice to disease-specific needs.

Keywords: COPD; Hypercapnic respiratory failure; Neuromuscular disease; Noninvasive ventilation; Obesity hypoventilation syndrome; Respiratory mechanics.

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Conflict of interest statement

Disclosure None.

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Review

Clin Chest Med

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. 2026 Sep;47(3):499-510.

doi: 10.1016/j.ccm.2026.04.005. Epub 2026 Jun 22.

[Airflow Obstruction and Dynamic Hyperinflation](#)

[John J Marini](#)¹

Affiliations Expand

- PMID: 42486559
- DOI: [10.1016/j.ccm.2026.04.005](https://doi.org/10.1016/j.ccm.2026.04.005)

Abstract

Dynamic hyperinflation with gas trapping, a key element of the shared pathophysiology of acutely exacerbated asthma and chronic airflow obstruction (COPD), underpins the serious consequences of positive pressure ventilation-increased workload, impaired muscular efficiency, and hemodynamic compromise. Although the basic therapeutic approach to ventilatory assistance is similar for both conditions, noninvasive ventilation, high-flow nasal cannula, and positive end-expiratory pressure are predictably more effective in COPD than asthma. The expanding deployment of extracorporeal gas exchange (extracorporeal membrane

oxygenation) now provides an attractive option in tertiary centers for the care of life-threatening and refractory ventilatory failure due to airflow obstruction.

Keywords: Asthma; Auto-PEEP; COPD; Dynamic hyperinflation; Extracorporeal gas exchange; Mechanical ventilation.

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Conflict of interest statement

Disclosure The author has no financial or ethical conflicts relevant to this work.

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11

Review

Clin Chest Med

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. 2026 Sep;47(3):447-461.

doi: 10.1016/j.ccm.2026.04.002. Epub 2026 May 20.

[Optimizing Non-invasive Ventilation in Acute Respiratory Failure](#)

[Maria Laura Vega Pittao¹](#), [Stefano Nava²](#), [Lara Pisani¹](#)

Affiliations Expand

- PMID: 42486556
- DOI: [10.1016/j.ccm.2026.04.002](#)

Abstract

Noninvasive ventilation (NIV) and non-invasive respiratory supports are key in managing acute respiratory failure (ARF), with effectiveness depending on etiology

and context. In hypercapnic ARF, especially acute exacerbations of COPD, NIV reduces intubation rates, hospital stay, and mortality, particularly when respiratory acidosis improves early. In cardiogenic pulmonary edema, continuous positive airway pressure and NIV improve oxygenation and reduce intubation rates. In "de novo" hypoxemic ARF (eg, pneumonia, ARDS), NIV carries higher failure risk and potential harm if intubation is delayed. Optimal application requires careful patient selection, early initiation, tailored settings, and close monitoring.

Keywords: Acute respiratory failure; Chronic obstructive pulmonary disease; Hypercapnic respiratory failure; Hypoxemic respiratory failure; NIRS; NIV; Non-invasive respiratory support; Non-invasive ventilation.

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Conflict of interest statement

Disclosures M.L. Vega Pittao reports a salary support grant from Alma Mater Studiorum, Department of Medical and Surgical Sciences (DIMEC), University of Bologna, Italy, Italy, in the form of a Post-Doctoral Fellowship and personal fees from Vivisol Italia. S. Nava is on the advisory board for Philips and Breas Medical and receives travel fees from Fisher Paykel. L. Pisani is a consultant for Fisher and Paykel and VitalAire Italia and receives speaker and travel fees. The authors have no other relevant affiliations or financial involvement with any organization or entity with a financial interest in or financial conflict with the subject matter or materials discussed in the article apart from those disclosed.

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Lancet Respir Med

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. 2026 Sep;14(9):755-756.

doi: 10.1016/S2213-2600(26)00201-8. Epub 2026 Jul 21.

[Small airways, early origins, and precision prevention of COPD](#)

[Amelia Licari](#)¹, [Angelo Guido Corsico](#)²

Affiliations Expand

- PMID: 42480574
- DOI: [10.1016/S2213-2600\(26\)00201-8](https://doi.org/10.1016/S2213-2600(26)00201-8)

No abstract available

Conflict of interest statement

We declare no competing interests.

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13

Respir Med

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. 2026 Sep;261:109046.

doi: 10.1016/j.rmed.2026.109046. Epub 2026 Jul 17.

[Impact of comorbidities on endobronchial valve treatment response in severe emphysema patients](#)

[Else A M D Ter Haar¹](#), [Dirk-Jan Slebos²](#), [Sonja W S Augustijn³](#), [Marlies van Dijk²](#), [I David Koster²](#), [Karin Klooster²](#), [Jorine E Hartman²](#)

Affiliations Expand

- PMID: 42468857
- DOI: [10.1016/j.rmed.2026.109046](https://doi.org/10.1016/j.rmed.2026.109046)

Free article

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 (FEV₁), 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 FEV₁, 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.

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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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. 2026 Jun 1;5(5):100741.

doi: 10.1016/j.jacig.2026.100741. eCollection 2026 Sep.

[Effect of once-daily ICS/LAMA/LABA triple therapy versus ICS/LABA on respiratory symptoms \(E-RS: Asthma\): Analysis of the phase IIIA CAPTAIN trial](#)

[Emilio Pizzichini](#)^{1,2}, [Guy Brusselle](#)³, [Jodie Crawford](#)⁴, [Hiromasa Inoue](#)⁵, [Huib A M Kerstjens](#)⁶, [John Oppenheimer](#)⁷, [Alberto Papi](#)⁸, [Ian D Pavord](#)⁹, [David Slade](#)¹⁰, [Liza Yuanita](#)¹¹, [Alison Moore](#)¹²

Affiliations Expand

- PMID: 42438707
- PMCID: [PMC13356626](#)
- DOI: [10.1016/j.jacig.2026.100741](#)

Abstract

Background: Addition of the long-acting muscarinic antagonist umeclidinium (UMEC) to the inhaled corticosteroid/long-acting β_2 -agonist (ICS/LABA) combination fluticasone furoate/vilanterol (FF/VI) improved lung function in adults with uncontrolled moderate to severe asthma in the CAPTAIN (Clinical study of Asthma Patients receiving Triple therapy through A single INhaler) study; however, the impact on symptoms requires further investigation.

Objective: We sought to evaluate the effect of adding UMEC to FF/VI on asthma symptoms.

Methods: The CAPTAIN study was a phase IIIA, randomized, controlled, 24- to 52-week study of patients with uncontrolled moderate to severe asthma despite ICS/LABA receiving once-daily single-inhaler FF/VI (100/25 or 200/25 μ g) or FF/UMEC/VI (100/31.25/25, 100/62.5/25, 200/31.25/25, or 200/62.5/25 μ g). Here, we compare the effect of pooled FF/UMEC 62.5/VI (100/62.5/25 and 200/62.5/25 μ g) versus FF/VI (100/25 and 200/25 μ g) on symptom control using prespecified analyses of change from baseline in Evaluating Respiratory Symptoms in Asthma (E-RS: Asthma) total and domain scores, and proportion of patients meeting an E-RS: Asthma total score responder threshold. We also performed *post hoc* analyses assessing the impact of baseline type 2 inflammation status on treatment response.

Results: Least-squares mean (95% CI) reductions from baseline in E-RS: Asthma total score exceeded the minimum clinically important difference (-2.0 units) and were numerically greater with FF/UMEC 62.5/VI (-2.89 [-3.15 to -2.64]; n = 814) versus FF/VI (-2.47 [-2.73 to -2.22]; n = 813). The proportion of responders (45% [n = 360] vs 41% [n = 327]) and odds of response (odds ratio, 1.18 [95% CI, 0.96 to 1.45]) were numerically greater with FF/UMEC 62.5/VI versus FF/VI. Similar trends were observed irrespective of type 2 status.

Conclusions: Patients with symptomatic asthma may benefit from optimized treatment interventions, such as adding a long-acting muscarinic antagonist to ICS/LABA.

Keywords: Asthma; Evaluating Respiratory Symptoms; fluticasone furoate; inhaled corticosteroid; long-acting muscarinic antagonist; long-acting β 2-agonist; symptoms; triple therapy; umeclidinium; vilanterol.

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Conflict of interest statement

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- [4 figures](#)

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15

Respir Med

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. 2026 Sep;261:109029.

doi: 10.1016/j.rmed.2026.109029. Epub 2026 Jul 11.

[Have pulmonary function testing rates recovered post-COVID-19 pandemic? A population-based study](#)

[Javier Silva-Valencia](#)¹, [Karen Tu](#)², [Krystle Amog](#)³, [Rahim Moineddin](#)⁴, [Debra A Butt](#)⁵, [Jessica Gronsbell](#)⁶, [Braden O'Neill](#)⁷, [Anthony Train](#)⁸, [Andrea S Gershon](#)⁹

Affiliations Expand

- PMID: 42435914
- DOI: [10.1016/j.rmed.2026.109029](#)

Abstract

Background: Pulmonary Function Tests are critical in diagnosing and managing respiratory conditions such as chronic obstructive pulmonary disease and asthma. However, because they generate aerosols, they were restricted in laboratories and offices during the COVID-19 pandemic to prevent virus spread.

Objective: To determine whether Pulmonary Function Test capacity had returned to pre-pandemic levels overall and across demographic groups in a large North American cohort.

Methods: We conducted a population cohort study in individuals aged 7 and older from 2015 to 2023 in Ontario, Canada, using provincial health administrative data. Incidence rate ratios (IRR) were used to compare observed rates to rates that would have been expected if the pandemic had never occurred and to assess whether test utilization returned to pre-pandemic levels. Subgroup analyses were conducted across various demographic characteristics.

Main findings: There were 8,302,872 tests performed on 2,683,844 people during the study period. As of December 2023, testing rates were still 27% lower than they were prior to the pandemic (IRR 0.73, 95% CI 0.63 - 0.87). Recovery was lower in males (IRR 0.72, 95%CI 0.62-0.86), those aged 18-65 (IRR 0.68, 95%CI 0.59-0.82), urban residents (IRR 0.72, 95%CI 0.62-0.86), and individuals of lower socioeconomic status (IRR 0.68, 95%CI 0.59-0.81).

Conclusion: More than three years after the pandemic onset, pulmonary function test rates in Ontario still have not recovered to pre-pandemic levels, with certain groups more affected than others. These findings suggest persistent reductions in PFT utilization and disparities in care for people with respiratory conditions.

Keywords: COVID-19; Diagnostic tests; Health services; Pulmonary function testing; Respiratory diseases; Spirometry.

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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: KT, AG, DB, BO, JG and AT received funding award from the First Mover's Fund, Ontario Ministry of Health. KT received the funding award from the Rathlyn Foundation. KT, DB, BO and JG received salary support for research from the Rathlyn Foundation Primary Care Big Data Research and Discovery Fund. KT receives a Chair in Family and Community Medicine Research in Primary Care at University Health Network, Toronto, Canada. KT, DB and BO receive Research Scholar Awards from the Department of Family and Community Medicine at the University of Toronto. AG is supported by a PSI Foundation Fellowship in Translational Medicine. All other authors declare no conflicts of interest.

Supplementary info

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Respir Med

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. 2026 Sep;261:109023.

doi: 10.1016/j.rmed.2026.109023. Epub 2026 Jul 11.

Beta-blockers and mortality after myocardial infarction in patients with and without chronic obstructive pulmonary disease - A Danish nationwide cohort study of 96,567 patients

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Affiliations Expand

- PMID: 42431469
- DOI: [10.1016/j.rmed.2026.109023](https://doi.org/10.1016/j.rmed.2026.109023)

Abstract

Aims: To investigate the association of beta-blocker use after first-time myocardial infarction (MI) with all-cause mortality and cardiovascular mortality in patients with and without chronic obstructive pulmonary disease (COPD), and whether it varies by type of MI, and COPD severity, and mMRC dyspnoea burden.

Methods: Danish nationwide cohort study of patients discharged after hospitalisation for MI from 2003 to 2015 using the National Prescription Registry and other individual level registers. Multivariable Cox regression models with time-dependent variables using continuously updated data on claimed prescriptions on beta-blockers to account for varying use during follow-up.

Result: Of 96,567 patients surviving MI, 10,884 (11.3%) had COPD. COPD patients had more often non-ST-elevation MI (NSTEMI) compared to non-COPD patients (88.5% vs. 79.5%), and were older (median age 75 vs. 68 years). Presence of COPD was associated with higher all-cause mortality both in STEMI (HR 1.60 [95% CI 1.46-1.77]) and NSTEMI (HR 1.47 [1.43-1.52]). For COPD patients, beta-blocker users had lower mortality independently of type of MI (HR 0.73 [0.61-0.88] in STEMI and HR 0.68 [0.65-0.72] in NSTEMI). Overall, estimates were similar in patients without COPD. Among high-risk COPD patients with severe COPD and frequent exacerbations (5-year mortality 63.5% and 62.6%, respectively) beta-blockers were also associated with lower mortality. Analyses of cardiovascular mortality showed similar results.

Conclusion: Beta-blocker use was associated with lower risk of mortality following MI independently of type of MI, presence or absence of COPD, and COPD severity. This supports that beta-blocker treatment carries no increased mortality risk in COPD, regardless of COPD severity and dyspnoea score.

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Conflict of interest statement

Declaration of competing interest Dr. Torp-Pedersen reports grants from Bayer, grants from Novo Nordisk, outside the submitted work. Dr. Meteran reports grants from ALK-Abelló and personal fees from Chiesi, GSK, Sanofi, ALK-Abelló, AstraZeneca within the past five years, outside the submitted work. The remaining authors have nothing to disclose.

Supplementary info

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Randomized Controlled Trial

Respir Med

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. 2026 Sep:261:109027.

doi: 10.1016/j.rmed.2026.109027. Epub 2026 Jul 6.

[Eight-week high-intensity inspiratory muscle training improves cardiac autonomic function in COPD: a randomized controlled trial](#)

[Pairoj Suraprapapich](#)¹, [Wattana B Watanapa](#)², [Sauwaluk Dacha](#)³, [Wilawan Ketpan](#)⁴, [Somruthai Yeunyong](#)⁴, [Kanokwan Rattanaengloet](#)⁴, [Nontanat Sathaporn](#)⁵, [Benjamas Chuaychoo](#)⁶

Affiliations Expand

- PMID: 42409226
- DOI: [10.1016/j.rmed.2026.109027](#)

Free article

Abstract

Background: Cardiovascular autonomic dysfunction and respiratory muscle weakness have been detected in patients with COPD. Although low-intensity inspiratory muscle training over 12 weeks increases cardiac parasympathetic (vagal) activity, eight-week programmes at the highest tolerable intensity and their effects on cardiovascular autonomic function remain untested.

Methods: Thirty-nine stable COPD patients were randomized to inspiratory muscle training or control. Both received standard care, excluding pulmonary rehabilitation;

the training group additionally performed 30 breaths twice daily at the highest tolerable intensity for eight weeks using a tapered flow resistive loading device. Assessments comprised pulmonary and respiratory muscle function, heart rate variability (HRV), blood pressure variability, baroreflex sensitivity, dyspnoea, 6-min walk distance and health status. Thirty-seven participants (training n = 18, control n = 19) completed the protocol.

Results: Maximal inspiratory pressure increased by 22.46 ± 15.71 cmH₂O ($p < 0.001$), and cardiac parasympathetic activity rose (high-frequency component of HRV: $36.99 \pm 17.51\%$ to $46.84 \pm 15.33\%$, $p < 0.01$). Sympathetic index decreased (low-frequency component of HRV: $54.13 \pm 21.40\%$ to $40.73 \pm 17.01\%$, $p < 0.001$), as did the low-frequency/high-frequency ratio (2.30 ± 2.39 to 1.10 ± 0.83 , $p < 0.01$). Systolic blood pressure variability decreased significantly. Baroreflex sensitivity increased from 5.36 ± 3.15 to 7.18 ± 4.58 ms/mmHg but was not significant ($p = 0.05$). Six-minute walk distance improved from 347.47 ± 82.72 to 378.71 ± 80.09 m ($p < 0.01$), and health status improved (COPD Assessment Test 7.72 ± 3.36 to 3.61 ± 2.85 ; Clinical COPD Questionnaire 1.07 ± 0.52 to 0.48 ± 0.31 ; both $p < 0.001$). These training-group improvements significantly exceeded control; ANCOVA confirmed group effects after baseline adjustment.

Conclusion: Eight-week highest tolerable intensity inspiratory muscle training enhances cardiovascular autonomic function in COPD through increased parasympathetic and reduced sympathetic activity, and improves functional capacity and health status.

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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. The authors declare that there are no conflicts of interest.

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Editorial

Am J Respir Crit Care Med

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. 2026 Sep 1;212(9):1899-1901.

doi: 10.1093/ajrccm/aamag351.

[Aim high-stay stable: rethinking treatment success in chronic obstructive pulmonary disease](#)

[Frederik Trinkmann](#) ^{1 2}

Affiliations Expand

- PMID: 42398014
- DOI: [10.1093/ajrccm/aamag351](#)

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Comment on

- [Defining disease stability in chronic obstructive pulmonary disease: evidence from phase 3 clinical trials.](#)

Singh D, Stacey R, Halpin DMG, Bhatt SP, Crawford J, Drury T, Di Boscio V, Kolterer S, Han MK. Am J Respir Crit Care Med. 2026 Sep 1;212(9):2036-2049. doi: 10.1093/ajrccm/aamag292. PMID: 42281286 Free PMC article. Clinical Trial.

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Editorial

Am J Respir Crit Care Med

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. 2026 Sep 1;212(9):1902-1903.

doi: 10.1093/ajrccm/aamag343.

[Astegolimab in COPD: success or failure?](#)

[Dave Singh](#)^{1 2}, [Mark Dransfield](#)^{3 4}

Affiliations Expand

- PMID: 42381344

- DOI: [10.1093/ajrccm/aamag343](#)

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- [Astegolimab for chronic obstructive pulmonary disease with frequent exacerbations: pooled analysis of the ALIENTO and ARNASA trials.](#)

Wedzicha JA, Agustí À, Brightling CE, Calverley P, Chalmers JD, Greening NJ, Han MK, Mohan D, Ng J, Papi A, Roche N, Saenz R, Samara K, Tal-Singer R, Vogelmeier CF, Yang X, Celli BR. Am J Respir Crit Care Med. 2026 Sep 1;212(9):2050-2060. doi: 10.1093/ajrccm/aamag226. PMID: 42148875 Free PMC article. Clinical Trial.

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Review

Respir Med

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. 2026 Sep;261:109006.

doi: 10.1016/j.rmed.2026.109006. Epub 2026 Jun 29.

Targeting the neutrophil-DPP-1-protease axis in airway disease: current evidence and future indications

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Affiliations Expand

- PMID: 42372954
- DOI: [10.1016/j.rmed.2026.109006](https://doi.org/10.1016/j.rmed.2026.109006)

Abstract

Neutrophils contribute to chronic airway diseases with variable pathogenic relevance across conditions. In bronchiectasis, persistent airway neutrophilia and sustained activity of neutrophil serine proteases (NSPs) - neutrophil elastase (NE), proteinase 3 (PR3), and cathepsin G (CatG) - directly drive structural damage and exacerbations. In Chronic Obstructive Pulmonary Disease (COPD), neutrophils participate in parenchymal destruction and systemic inflammation within a broader network of oxidative and immune dysregulation. In T2-low asthma, neutrophilic inflammation is heterogeneous and context-dependent, suggesting a less uniform contribution of NSP-mediated injury. Therapeutic strategies targeting neutrophils downstream have yielded limited clinical success: selective NE inhibitors and C-X-C motif chemokine receptor 2 (CXCR2) antagonists reduced protease activity or neutrophil recruitment but failed to produce consistent improvements in lung function or exacerbation rates. These evidences reflect redundancy among NSPs, compensatory inflammatory pathways, and the presence of pre-activated circulating neutrophils whose proteolytic potential is already established before tissue recruitment. This has shifted attention upstream to the neutrophil-DPP-1-protease axis. Dipeptidyl peptidase-1 (DPP-1) activates NSPs during neutrophil maturation in the bone marrow; its inhibition reduces the protease load of circulating neutrophils without broadly suppressing innate immunity. In bronchiectasis, DPP-1 inhibitors have demonstrated clinically meaningful reductions in exacerbations and airway NSP activity, providing proof of concept for disease modification. In COPD, this strategy is biologically compelling, particularly in neutrophil-predominant phenotypes, but requires dedicated clinical validation. In asthma, any therapeutic role is likely restricted to highly selected T2-low, neutrophil-driven subsets. Future progress will depend on biomarker-guided stratification to define where modulation of the neutrophil-NSP axis can meaningfully alter disease trajectory.

Keywords: Bronchiectasis; Chronic obstructive airway diseases; DPP1-Inhibitors; Neutrophils.

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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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Am J Respir Crit Care Med

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. 2026 Sep 1;212(9):2091-2095.

doi: 10.1093/ajrccm/aamag312.

[Inhaled triple therapy in symptomatic individuals who currently smoke cigarettes with preserved FEV1/FVC ratio: the CHRONOS clinical trial](#)

[Anna Salina](#)^{1 2 3}, [Maria Pascarella](#)⁴, [Leticia Grize](#)¹, [Andrei M Darie](#)^{5 6}, [Andreas Hoheisel](#)¹, [Eleni Papakonstantinou](#)¹, [Janwillem W H Kocks](#)^{7 8 9 10}, [Philipp Latzin](#)¹¹, [Mario Cazzola](#)¹², [Medea Imboden](#)^{13 14}, [Nicole Probst-Hensch](#)^{13 14}, [Daiana Stolz](#)¹

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- PMID: 42363404
- DOI: [10.1093/ajrccm/aamag312](#)

No abstract available

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Respir Med

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. 2026 Sep:261:109000.

doi: 10.1016/j.rmed.2026.109000. Epub 2026 Jun 26.

[The hidden burden of overlap syndrome: Sleep quality and functional impairment in chronic obstructive pulmonary disease](#)

[Patrícia Faria Camargo¹](#), [Guilherme Dionir Back¹](#), [Luiz Carlos Soares de Carvalho - Jr²](#), [Guilherme Peixoto Tinoco Arêas³](#), [Cássia da Luz Goulart⁴](#), [Larissa Felício Anjolin¹](#), [Letícia Roberta Lourencetti¹](#), [Audrey Borghi-Silva⁵](#)

Affiliations Expand

- PMID: 42362121
- DOI: [10.1016/j.rmed.2026.109000](#)

Free article

Abstract

Background: Chronic Obstructive Pulmonary Disease (COPD) is associated with reduced functional capacity and a high prevalence of sleep-related disturbances. However, the relationship between sleep-related disturbances and functional capacity remains incompletely understood.

Objective: To investigate the associations between COPD severity, sleep quality, nocturnal respiratory disturbances, and functional capacity assessed by the 6-min walk test (6MWT).

Methods: Eighty clinically stable patients with COPD underwent spirometry, home sleep monitoring, Pittsburgh Sleep Quality Index (PSQI), and 6MWT. Correlation and multiple linear regression analyses were performed.

Results: Patients with more severe disease exhibited higher apnea-hypopnea index values, lower mean SpO₂, and longer periods with SpO₂<90% (p = 0.001). Poorer sleep quality, higher apnea-hypopnea index, and greater nocturnal hypoxaemia were associated with shorter 6MWT distance. In multiple regression analyses, FEV₁ and dyspnoea (mMRC) were the strongest predictors of functional capacity, while PSQI score, apnea-hypopnea index, and time spent with SpO₂<90% remained independently associated with walking distance.

Conclusion: Increasing COPD severity was associated with poorer sleep quality, greater nocturnal oxygen desaturation, and lower functional capacity. Sleep-related variables were independently associated with 6MWT performance, suggesting that sleep assessment may provide complementary information in the evaluation of patients with COPD.

Keywords: COPD; Functional capacity; Nocturnal hypoxaemia; Overlap syndrome; Sleep disturbances.

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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: Audrey Borghi-Silva reports equipment, drugs, or supplies was provided by State of Sao Paulo Research Foundation. 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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Am J Respir Crit Care Med

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. 2026 Sep 1;212(9):1999-2010.

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[The frequent exacerbator phenotype in bronchiectasis revisited: data from EMBARC registry](#)

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Abstract

Rationale: The frequent exacerbator phenotype was previously defined using a threshold of ≥ 3 exacerbations per year in bronchiectasis. However, the contribution of each prior exacerbation to future risk as well as the influence of severe exacerbations and different etiologies and regions remain poorly understood.

Objectives: To quantify the risk associated with each prior exacerbation of bronchiectasis in predicting future exacerbations and severe exacerbations, and to determine whether this association varies across different etiologies and geographic regions.

Methods: We analyzed data from the European Bronchiectasis Registry (EMBARC), including 30 countries across Europe and Asia. The association between baseline exacerbation history and future exacerbations was tested using negative binomial regression over up to 5 years of follow-up. Severe exacerbations were defined as those requiring hospitalization.

Measurements and main results: A total of 19 324 patients with bronchiectasis were included. Each prior exacerbation was associated with an increased risk of exacerbations and severe exacerbations. Incidence rate ratio (IRR) for future exacerbations was 1.45 (95% CI 1.34-1.58, $P < .001$) for 1 exacerbation; 1.84 (95% CI 1.69-1.99, $P < .001$) for 2 exacerbations; 2.50 (95% CI 2.29-2.73, $P < .001$) for 3 exacerbations; and 3.56 (95% CI 3.32-3.82, $P < .001$) for patients with 4 or more prior exacerbations. Additionally, 1 prior severe exacerbation was associated with increased risk of exacerbation (IRR = 1.52, 95% CI 1.45-1.60, $P < .001$) and strongly associated with future severe exacerbations (IRR = 3.96, 95% CI 3.71-4.22, $P < .001$). The frequent exacerbator phenotype was consistent across different etiologies and geographic regions.

Conclusions: The frequent exacerbator phenotype is highly consistent across patient subgroups and regions. Each prior exacerbation is associated with a progressively higher risk, with no definitive threshold-defining high risk.

Keywords: etiology; exacerbation risk; region.

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Conflict of interest statement

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MSD, Pfizer, and Vertex; and support for attending meetings and/or travels from AstraZeneca, Chiesi and Zambon. E.P. reports grants or contracts from Grifols; consulting fees from Insmed, Pari, Electromed, Pari, Grifols and Chiesi; payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing or educational events from Insmed, Pari, Electromed, Pari, Grifols, Chiesi and GSK; support for attending meetings and/or travel from Insmed; and participation on a Data Safety Monitoring Board or Advisory Board from Insmed. S.H.C. reports grants or contracts from Singapore Ministry of Health's National Medical Research Council under its Clinician-Scientist Individual Research Grant (MOH-001356), Singapore Ministry of Health's National Medical Research Council under its Clinician Scientist Award (MOH-001855), and National Research Foundation Singapore under its Open Fund-Large Collaborative Grant (MOH-001636) administered by the Singapore Ministry of Health's National Medical Research Council; consulting fees from CSL Behring, Boehringer Ingelheim, Pneumagen Ltd, Chiesi Farmaceutici, Sanofi, GSK and Zaccha Pte Ltd.; payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing, or educational events from AstraZeneca, Chiesi Farmaceutici, CSL Behring, and Boehringer Ingelheim; and participation on a data safety monitoring board or advisory board from Inovio Pharmaceuticals Inc. and Imam Abdulrahman Bin Faisal University. M.S. reports grants or contracts from Tel Aviv league for lung diseases, G. Baum Foundation; consulting fees from AstraZeneca, Boehringer Ingelheim, Dexcel, GSK, Insmed, Kamada, Synchrony Medical, Trumed, and Zambon; payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing, or educational events from AstraZeneca, Boehringer Ingelheim, CSL Behring, GSK, Sanofi, Insmed and Kamada; support for attending meetings or travel from Boehringer Ingelheim, AstraZeneca, Rafa, GSK Israel and Kamada; participation on a data safety monitoring board or advisory board for Bonus Biotherapeutics, Boehringer Ingelheim, AstraZeneca, Insmed and GSK; leadership or fiduciary role in other board, society, committee, or advocacy group for American Journal of Respiratory and Critical Care Medicine (associate editor), Israeli Pulmonology Society, Israeli Society for Tuberculosis and Mycobacterial Diseases, EMBARC as unpaid management board member, European Respiratory Journal as unpaid editorial board member; and European Respiratory Society (ERS) as taskforce member for bronchiectasis guidelines and transitioning in bronchiectasis (unpaid). C.H. reports consulting fees from 30 Technology, Chiesi, Infex, Insmed, LifeArc, Pneumagen, Vertex, and Zambon; payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing, or educational events from Chiesi, Insmed, Vertex, and Zambon; and payment for expert testimony from Zambon. K.D. 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; support for attending meetings or travel from Novartis, Boehringer Ingelheim, GSK, NORMA Hellas, Chiesi, AstraZeneca, and Menarini; and participation on a data safety monitoring board or advisory board from Novartis, GSK, and Chiesi. A.B. reports grants or contracts from AstraZeneca outside the submitted work; honoraria and lecture fees from Chiesi, GSK, and AstraZeneca paid to institution, outside the submitted work; leadership or fiduciary role in other board, society, committee or advocacy group, paid or unpaid, from Head of Assembly 5 (airway diseases, asthma, COPD, and chronic cough), European Respiratory Society; cochair of the Nordic severe asthma network; member of the steering committee of SHARP, ERS severe asthma Clinical Research Collaboration; and member of the steering committee of the Swedish National Airway Register. M.L. reports consulting fees

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Ingelheim Italia Spa, Boehringer Ingelheim International GmbH, Thermo Fisher Scientific, Zambon Italia srl, Sanofi srl, Providens doo, Pfizer srl, Limare llc, Glaxosmithkline spa, Chiesi Farmaceutici spa, Vertex Pharmaceuticals (Europe) Limited; and participation on a data safety monitoring board or advisory board from Glaxosmithkline spa, Boehringer Ingelheim Italia spa, Moderna Italy srl, Zambon spa, Chiesi Farmaceutici spa, Insmed Inc., Insmed Netherlands BV, AN2 Therapeutics Inc, Modernatx, and Boehringer Ingelheim International GmbH. J.C. reports grants or contracts from AstraZeneca, Genentech, Insmed, Novartis, Gilead Sciences, Glaxosmithkline, Grifols, and Boehringer Ingelheim; consulting fees from Antabio, AstraZeneca, Boehringer Ingelheim, Chiesi, Glaxosmithkline, Grifols, Insmed, Janssen, Novartis, Pfizer, and Zambon; payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing, or educational events from Insmed; and leadership or fiduciary roles as involvement in European Respiratory Society Clinical Research Collaborations (EMBARC, BEATPCD; unpaid). L.P., R.H., M.B.L., J.P., J.S., H.L., R.D., J.F.X., P.M., and A.S. have no potential conflict of interest to disclose.

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Dawkins P, Wong C. Am J Respir Crit Care Med. 2026 Sep 1;212(9):1890-1893. doi: 10.1093/ajrccm/aamag356.PMID: 42438155 No abstract available.

- [To the airway and beyond: introduction to an AJRCCM special section on airway disease.](#)

Bush A, Chotirmall SH, Han MK, Harhay M. Am J Respir Crit Care Med. 2026 Sep 1;212(9):1879-1881. doi: 10.1093/ajrccm/aamag368.PMID: 42518197 No abstract available.

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Editorial

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[Measuring what matters: hospitalization reduction in chronic obstructive pulmonary disease](#)

[Sanjay Ramakrishnan](#) ^{1 2 3}, [Joon Young Choi](#) ⁴

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- PMID: 42330347
- DOI: [10.1093/ajrccm/aamag315](#)

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Review

Am J Respir Crit Care Med

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Airway mucus plugs in asthma and chronic obstructive pulmonary disease: pathobiology, imaging, and implications for clinical trials

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Abstract

Mucus plugs have been previously recognized as an important pathological feature in asthma and chronic obstructive pulmonary disease (COPD), but their clinical role in these diseases has not been explored in depth until recently. Mucus plug formation is driven by mucus hyperconcentration, changes in mucus viscoelastic properties, impaired clearance, and mucociliary collapse. Scoring systems, such as the bronchopulmonary segment mucus plug score, have been used to associate greater mucus plug burden with poor clinical outcomes. Additional scoring methods obtained through quantitative image processing are currently under development. Mucus plug burden has been associated with greater exacerbations and spirometric decline in both asthma and COPD, as well as greater mortality in COPD. Recently, mucus plug burden has been used as an endpoint in clinical trials to evaluate the effectiveness of biologic therapies in asthma; multiple biologic therapies demonstrated decreases in mucus plug burden and associated improvements in spirometry with treatment. Together, these data suggest that mucus plugs may be a treatable trait in asthma and COPD. Mucus plug burden has current clinical, phenotypic, and predictive utility and shows promise as a future biomarker. Increased incorporation into clinical trials, expanded evidence of treatment effect, and standardization of methodology and imaging protocols will be needed. Computed tomographic detection of mucus plug burden is ready for greater incorporation into both research outcomes and clinical care.

Keywords: COPD; asthma; mucus plug score; mucus plugs.

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Singapore Ministry of Health's National Medical Research Council and the National Research Foundation Singapore; received consulting fees from CSL Behring, Boehringer Ingelheim, Pneumagen Ltd, Chiesi Farmaceutici, Sanofi, GlaxoSmithKline, and Zaccha Pte Ltd.; received lecture fees from AstraZeneca, Chiesi Farmaceutici, CSL Behring, and Boehringer Ingelheim; and served on advisory boards for Inovio Pharmaceuticals Inc. and Imam Abdulrahman Bin Faisal University. A.A.D. received grants from the NHLBI; received speaker fees from Zambon and Johnson & Johnson; received travel support from the COPD Foundation and the Global Initiative for Chronic Obstructive Lung Disease (GOLD); and holds US patent number 11,946,928 B2, "Methods and compositions relating to airway dysfunction." J.V.F. received research grants from the NIH/NHLBI; received consulting fees from Suzhou Connect Biopharmaceuticals, Aer Therapeutics, and AirNexis; received honoraria from Boston Children's Hospital; is an inventor on patents PCT/US2014/028656 and PCT/US19/50475 related to thiol-modified saccharides for mucus-associated lung disease; holds stock or stock options in Suzhou Connect Biopharmaceuticals and Aer Therapeutics; and served on the scientific advisory board for Suzhou Connect Biopharmaceuticals and the company board for Aer Therapeutics. J.G.G. received NIH grant support; is founder of MedQIA LLC, now VoiantClinical LLC; and reports no other conflicts to declare. A.J.H. reported no relevant financial relationships with ineligible companies. D.M.G.H. received personal fees for lectures, presentations, speakers bureaus, manuscript writing, or educational events from AstraZeneca, Boehringer Ingelheim, Chiesi, GlaxoSmithKline, Inogen, Novartis, Sanofi, Menarini, and Berlin-Chemie; received personal fees for participation on advisory boards from Chiesi, Synairgen, and Sanofi; and is a member of the GOLD Board of Directors and Science Committee. E.H. received NIH support paid to the University of Iowa for the present manuscript, travel support from NIH paid to the University of Iowa, and NIH support paid to the University of Iowa for purchase of a CT scanner; served as a nonremunerated member of the Siemens Healthineers photon-counting advisory committee; and is a founder and shareholder of VIDA Diagnostics. W.W.L. received grants from the NIH and the Respiratory Health Association/Solovy Award for Advancement in COPD through his institution; received consulting fees from Inogen and Verona; received payment or honoraria and travel support from Inogen; and served as data and safety monitoring board (DSMB) executive secretary for a pilot trial on aspirin in COPD conducted at Johns Hopkins University. N.L. received grants or contracts from Amgen, AstraZeneca, Avillion, Bellus, Evidera, Gossamer Bio, Genentech, GlaxoSmithKline, Janssen, Pfizer, Regeneron, Roche, Sanofi, Novartis, and Teva; received consulting fees from AbbVie, Amgen, Apogee, AstraZeneca, Avillion, Foresee, Genentech, GlaxoSmithKline, Incyte, Niox, Novartis, Pfizer, Regeneron, Sanofi, and Teva; received honoraria for non-speakers bureau presentations from GlaxoSmithKline, Teva, Sanofi/Regeneron, and AstraZeneca; received travel support from AstraZeneca, Sanofi, Teva, Regeneron, and GlaxoSmithKline; and served on a DSMB or advisory board for Incyte. E.K. reported no relevant financial relationships with ineligible companies. M.K. received grants from the NHLBI and the Cystic Fibrosis Foundation. A.P. received grants or contracts paid to his institution from AstraZeneca, Chiesi, GlaxoSmithKline, and Sanofi; received consulting fees from AstraZeneca, Avillion, Chiesi, GlaxoSmithKline, Moderna, Regeneron, Roche, Sanofi, Zambon, and Zentiva; and received payment or honoraria for lectures from AstraZeneca, Avillion, Chiesi, Regeneron, Moderna, GlaxoSmithKline, Roche, Sanofi, and Zambon. S.R. reported no relevant financial relationships with ineligible companies. K.A.R. received grants

paid to her institution from the National Health and Medical Research Council Australia Investigator Fellowship, Medical Research Future Fund Australia Chronic Respiratory Conditions, and Western Australia Child Health Research Fund; and serves as unpaid chair of the 7.01 Group, Paediatric Respiratory Physiology and Diagnostic Testing, European Respiratory Society. R.S.J.E. received support for the present manuscript from NHLBI paid to his institution; received contracts or sponsored research agreements from Lung Biotechnology, Boehringer Ingelheim, Gossamer Bio, and 35Pharma; received consulting fees from Mount Sinai and Sanofi; reports a provisional patent for Methods Relating to Impaired Respiratory Health Therapeutics and 3 patents in the lung cancer diagnostic space assigned to Johnson & Johnson; serves as an unpaid scientific advisory board member for the CRIS Cancer Foundation; and is co-founder and stockholder of Quantitative Imaging Solutions. N.T. received grants from Fujifilm and Daiichi Sankyo; and received lecture fees from Sanofi, Regeneron, GlaxoSmithKline, AstraZeneca, and Insmed. K.W. serves as site principal investigator for the Sanofi STRIDE Registry, a future study characterizing patients with COPD started on dupilumab, with no financial compensation. J.A.W. received grants paid to her institution from AstraZeneca, Boehringer Ingelheim, Chiesi, GlaxoSmithKline, and Novartis; received advisory board fees from AstraZeneca, Epiendo, GlaxoSmithKline, Empirico, Gilead, Sanofi, Roche, Pfizer, NEATstix, Altesa, MucPharm, CSL Behring, and Forbion; received speaker fees from AstraZeneca, GlaxoSmithKline, Boehringer Ingelheim, Recipharm, Handok, Novartis, Roche, Sanofi, Altesa, and Glenmark; and served as DSMB chair for Virtus. F.J.M. received support for the present manuscript from the NHLBI; received grant or in-kind support from AstraZeneca, Chiesi, GlaxoSmithKline, and Sanofi/Regeneron, and reports payments made to the COPD Foundation from AstraZeneca, Chiesi, Boehringer Ingelheim, GlaxoSmithKline, Novartis, and Sanofi/Regeneron for partnership in SPIROMICS and/or CAPTURE; received travel support and/or consulting fees from AstraZeneca, Chiesi, GlaxoSmithKline, and Sanofi/Regeneron; participated in COPD steering committee, advisory board, or consultation activities for Chiesi, DevPro, Roche, and Sanofi/Regeneron; received payment or honoraria from UpToDate for COPD continuing medical education; received travel support for disease-state presentations from AstraZeneca and GlaxoSmithKline; gave a disease-state presentation for Roche without honoraria or travel support; and received writing support from AstraZeneca, Chiesi, GlaxoSmithKline, and Sanofi/Regeneron. M.K.H. received grants or contracts paid to her institution from Chiesi, GlaxoSmithKline, and Pfizer; received consulting fees from GlaxoSmithKline, AstraZeneca, Sanofi, Chiesi, Pfizer, Austral, Biosency, and Roche; received payment or honoraria from GlaxoSmithKline, AstraZeneca, Sanofi, Chiesi, Pfizer, Zambon, MSD, and Menarini; and received travel support from Chiesi, AstraZeneca, and GlaxoSmithKline.

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Bush A, Chotirmall SH, Han MK, Harhay M. Am J Respir Crit Care Med. 2026 Sep 1;212(9):1879-1881. doi: 10.1093/ajrccm/aamag368. PMID: 42518197 No abstract available.

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Editorial

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. 2026 Sep 1;212(9):2071-2074.

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[Mucus plug formation is associated with eosinophilic activation in chronic obstructive pulmonary disease](#)

[Federico Baraldi](#)^{1,2}, [Jordina S Y Mah](#)¹, [Abdulrahman Almuhan](#)¹, [Aaron Braddy-Green](#)¹, [Sam Bartlett-Pestell](#)¹, [Mairi A MacLeod](#)¹, [Chloe I Bloom](#)¹, [Andrew I Ritchie](#)^{1,3}, [Dexter J Wiseman](#)^{1,4}, [James P Allinson](#)¹, [Eric A Hoffman](#)⁵, [Alberto Papi](#)², [Jadwiga A Wedzicha](#)¹, [Lydia J Finney](#)¹

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- PMID: 42330336
- DOI: [10.1093/ajrccm/aamag311](#)

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doi: 10.1016/j.rmed.2026.108965. Epub 2026 Jun 19.

[Should triple inhaled therapy be initiated earlier in the disease course of COPD to modify long-term outcomes, including mortality, exacerbations, and cardiovascular risk?](#)

[Vitaliano Nicola Quaranta](#)¹, [Silvano Dragonieri](#)², [Giulia Cosentino](#)³, [Valeria Motta](#)³, [Juan Camilo Signorello](#)⁴, [Guido Di Stefano](#)⁵, [Emanuele Ciasullo](#)⁶, [Dejan Radovanovic](#)⁴, [Giovanna Elisiana Carpagnano](#)¹, [Pierachille Santus](#)⁷

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- PMID: 42320603
- DOI: [10.1016/j.rmed.2026.108965](#)

Free article

Abstract

Background: Chronic obstructive pulmonary disease (COPD) is a progressive and heterogeneous disorder in which exacerbations accelerate lung-function decline, increase cardiovascular morbidity, and worsen mortality. Although single-inhaler triple therapy (SITT; ICS/LABA/LAMA) is currently recommended for patients with persistent symptoms or frequent exacerbations despite dual bronchodilation, emerging evidence suggests that earlier initiation may improve long-term outcomes.

Objective: To evaluate whether earlier initiation of triple inhaled therapy in COPD could improve long-term outcomes, including lung-function preservation, exacerbation burden, mortality, cardiovascular risk, and healthcare resource utilisation.

Evidence synthesis: Pivotal randomized trials such as IMPACT and ETHOS showed that SITT reduces exacerbations and improves lung function, with significant reductions in all-cause mortality and cardiopulmonary events in high-risk populations. Post hoc analyses and real-world studies suggest that symptomatic patients without frequent exacerbations may also benefit from earlier escalation. Predictive models, including DEPICT, ACCEPT, and GALAXY, consistently indicate that earlier initiation of SITT, particularly in younger or pre-exacerbator phenotypes, may preserve lung function, delay disease progression, reduce exacerbations, lower mortality risk, and remain cost-effective. These benefits appear to be mediated partly through exacerbation prevention and attenuation of post-exacerbation cardiovascular vulnerability.

Conclusions: Converging evidence from clinical trials, real-world studies, and predictive modelling supports the hypothesis that earlier initiation of SITT may represent a disease-modifying strategy in selected patients with COPD. Prospective pragmatic trials are needed to define optimal timing, target populations, and the balance between benefit and risk.

Keywords: COPD; Cardiovascular risk; Disease modification; Exacerbations; Predictive modelling; Single-inhaler triple therapy; Triple inhaled therapy.

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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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Nat Rev Rheumatol

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. 2026 Sep;22(9):558-570.

doi: 10.1038/s41584-026-01394-2. Epub 2026 Jun 18.

Lung disease in rheumatoid arthritis

Elisabeth Bendstrup^{1 2}, Philippe Dieude³, Michael Kreuter^{4 5}, Anna-Maria Hoffmann-Vold^{6 7}, Vincent Cottin⁸, Ellen M Hauge^{9 10}

Affiliations Expand

- PMID: 42315602
- DOI: [10.1038/s41584-026-01394-2](https://doi.org/10.1038/s41584-026-01394-2)

Abstract

Rheumatoid arthritis (RA) is a prevalent chronic systemic autoimmune inflammatory disease that primarily targets synovial joints and periarticular tissues. In RA, systemic inflammation has been associated with extra-articular manifestations, including pulmonary involvement, which are leading causes of reduced survival. Tobacco smoking is a well-established risk factor for anti-citrullinated protein antibody (ACPA)-positive RA and is also associated with chronic obstructive pulmonary disease, interstitial lung disease (ILD) and lung cancer, the prevalence of which is elevated in people with RA. Pulmonary manifestations such as airway obstructive disease, ILD and bronchiolitis affect a substantial proportion of people with RA. Screening for pulmonary disease, particularly ILD, is gaining emphasis, with high-resolution CT recommended based on risk factors including age, sex, antibody status and smoking. Despite advances in therapies to effectively manage joint inflammation, evidence-based treatments for RA-associated ILD remain limited. Chronic obstructive pulmonary disease and bronchiectasis in RA warrant more recognition owing to their effect on morbidity and mortality, and should be managed in accordance with current international treatment guidelines for these conditions. This Review summarizes the pathophysiology of lung involvement in RA, diagnostic challenges and evolving management strategies aimed at optimizing patient outcomes.

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Conflict of interest statement

Competing interests: The authors declare no competing interests.

- [120 references](#)

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Respir Med

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. 2026 Sep;261:108978.

doi: 10.1016/j.rmed.2026.108978. Epub 2026 Jun 18.

[Divergent prognostic roles of air trapping and reduced inspiratory reserve in COPD: Exacerbations versus functional decline](#)

[Hye-Rin Kang](#)¹, [Jin Hwa Song](#)², [Shinhee Park](#)³, [Seung Won Ra](#)⁴, [Chang Youl Lee](#)⁵, [Yong Il Hwang](#)⁶, [Deog Kyeom Kim](#)⁷, [Jin Hwa Lee](#)⁸, [Kwang Ha Yoo](#)⁹, [Youlim Kim](#)¹⁰

Affiliations Expand

- PMID: 42314775
- DOI: [10.1016/j.rmed.2026.108978](#)

Abstract

Background: Lung hyperinflation is a key feature of COPD, yet it remains unclear if its primary components-reduced inspiratory reserve (IC/TLC) and air trapping (RV/TLC)-predict distinct clinical trajectories. We investigated the independent prognostic roles of these indices regarding acute exacerbations and functional decline.

Methods: We analyzed 1214 COPD patients from the prospective KOCOSS cohort. Patients were stratified into four phenotypes using IC/TLC (<25%) and RV/TLC (>40%). Outcomes included 1-year acute exacerbation (AE) risk and 3-year longitudinal changes in health status (SGRQ) and exercise capacity (6MWD).

Results: IC/TLC and RV/TLC predicted divergent outcomes. Lower IC/TLC was an independent predictor of acute instability, including 1-year AE risk (OR 0.97; $p = 0.020$) and health status deterioration. Conversely, higher RV/TLC specifically predicted a steeper 3-year decline in 6MWD ($\beta -0.34$ m/year; $p = 0.030$). The "Combined" phenotype (low IC/TLC + high RV/TLC) exhibited the greatest vulnerability, with a two-fold higher AE risk (OR 2.06; $p = 0.015$) and accelerated SGRQ worsening. Notably, these associations were independent of airflow limitation, as annual FEV1 decline did not differ across phenotypes.

Conclusions: IC/TLC and RV/TLC provide complementary prognostic information. Reduced inspiratory reserve identifies patients at risk for acute events, while air trapping marks those prone to long-term functional loss. Lung volume-based phenotyping allows for refined risk stratification beyond standard spirometry.

Keywords: Chronic obstructive; Disease exacerbation; Disease progression; Hyperinflation; Phenotype; Prognosis; Pulmonary disease.

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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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30

Observational Study

J Cardiothorac Vasc Anesth

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. 2026 Sep;40(9):2828-2836.

doi: 10.1053/j.jvca.2026.05.042. Epub 2026 May 21.

Preoperative Lung Function Assessment and the Impact of Spirometry Misdiagnosis on Mortality Following Cardiac Surgery

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Affiliations Expand

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Free article

Abstract

Objectives: Individuals undergoing cardiac surgery often have obstructive lung disease. This may affect surgical mortality, but a pre-existing diagnosis may not be present in all individuals with obstruction. The objectives of this study were to describe the relationship between obstructive spirometry and cardiothoracic surgery outcomes in those with and without a preoperative diagnosis of respiratory disease.

Design: Retrospective, observational, noncontrolled.

Setting: Single-center, tertiary cardiothoracic teaching hospital.

Participants: A total of 16,906 consecutive patients undergoing preoperative spirometry between January 2010 and September 2020.

Interventions: Preoperative spirometry prior to cardiac surgery.

Measurements and main results: The median (interquartile range) age of participants was 69 (61, 75) years, and 28.4% were female. Overall, 3,284 (19.4%) had a documented history of lung disease, and 4,712 (27.9%) demonstrated obstruction on spirometry. Of those without a diagnosis of respiratory disease, 3,672 (21.7%) were found to demonstrate obstructive spirometry and were considered "diagnosis-/obstruction+." Of those with a diagnosis of chronic obstructive pulmonary disease, 568 (39.2%) did not demonstrate a pattern of obstruction on spirometry and were considered "diagnosis+/obstruction-." In-hospital mortality was highest in the diagnosis+/obstruction+ (4.5%) and diagnosis+/obstruction- (3.8%) groups, and lowest in the diagnosis-/obstruction+ (2.6%) and diagnosis-/obstruction- (1.8%) groups.

Conclusions: A significant proportion of patients undergoing cardiac surgery have obstructive spirometry, many of whom have no diagnosis of respiratory disease. Mis- or undiagnosed obstructive disease may impact in-hospital mortality. Preoperative spirometry offers opportunities for case finding, disease reclassification, and treatment optimization.

Keywords: COPD; cardiac surgery; obstructive lung disease; preoperative testing; spirometry.

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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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Clinical Trial

Am J Respir Crit Care Med

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. 2026 Sep 1;212(9):2036-2049.

doi: 10.1093/ajrccm/aamag292.

[Defining disease stability in chronic obstructive pulmonary disease: evidence from phase 3 clinical trials](#)

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Affiliations Expand

- PMID: 42281286
- PMCID: [PMC13519310](#)
- DOI: [10.1093/ajrccm/aamag292](#)

Abstract

Rationale: Disease stability in chronic obstructive pulmonary disease (COPD) is a low disease activity state proposed as a treatment target.

Objectives: Characterize COPD stability as a composite endpoint.

Methods: Post hoc analyses were carried out on IMPACT and FULFIL (fluticasone furoate/umeclidinium/vilanterol [FF/UMEC/VI] vs dual therapies) and MATINEE/METREX/METREO (mepolizumab added onto triple therapy). Stability was defined as "no moderate/severe exacerbations and no worsening from baseline in COPD Assessment Test (CAT) and FEV1." We assessed whether achieving stability at week 28 was prognostic of subsequent outcomes (time to first on-treatment moderate/severe exacerbation and time to all-cause mortality [ACM]) after week 28 (IMPACT). Bayesian joint modeling evaluated the probability of achieving stability (IMPACT).

Measurements and main results: Stability was achieved with FF/UMEC/VI by 22% of patients in IMPACT (week 52) and by 46% of patients in FULFIL (week 24); stability was achieved with mepolizumab + triple therapy by 18% of patients in MATINEE/METREX/METREO (week 52). Patients were more likely to achieve stability with triple vs dual therapy and with mepolizumab vs placebo. Many individuals achieving stability had clinically meaningful improvements in CAT and FEV1. Patients achieving stability at week 28 (vs patients who were not stable) had a 45.7% reduction in the risk of moderate/severe exacerbations and a 51.7% reduction in the risk of ACM after week 28. Bayesian joint modeling demonstrated a mean (SD) posterior probability of stability: 25.60% (0.66) at week 52 (FF/UMEC/VI).

Conclusions: Our data provide further evidence for disease stability as an achievable COPD treatment target that predicts long-term clinical benefits in exacerbations and mortality.

Keywords: chronic obstructive pulmonary disease; disease stability; patient-reported outcome measure; prompt optimization; treatment outcome.

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Conflict of interest statement

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Horizon CME, Illuminate Health, Integritas Communications, IntegrityCE, and MedScape. M.K.H. has received either in kind research support or funds paid to her institution from NIH, Sanofi, Novartis, NuVaira, Sunovion, Gala Therapeutics, COPD Foundation, AstraZeneca, American Lung Association, Boehringer Ingelheim, and Biodesix, as well as consulting fees from AstraZeneca, Boehringer Ingelheim, GSK, Novartis, Pulmonx, Teva, Verona, Merck, Mylan, Sanofi, DevPro, Aerogen, Polarian, Regeneron, Altesa BioSciences, Amgen, Roche, United Therapeutics, RS Biotherapeutics, and Apreo Health. She has received royalties from UpToDate, Norton Publishing, and Penguin Random House. She has received payment or honoraria for consultancy from Cipla, Chiesi, AstraZeneca, Boehringer Ingelheim, GSK, Medscape, Integrity, NACE, and Medwiz. She has served roles on boards or scientific committees for the COPD Foundation Board, COPD Foundation Scientific Advisory Committee, ALA Advisory Committee, American Thoracic Society (journal editor), ALA (volunteer spokesperson), GOLD scientific committee, and Emerson School Board, Ann Arbor, MI. She has participated in Data Safety Monitoring Boards for Novartis and Medtronic with funds paid to her institution. She holds stock options from Meissa Vaccines and Altesa BioSciences. Please see the ICMJE disclosure forms, which have been provided as supplementary material.

Comment in

- [Aim high-stay stable: rethinking treatment success in chronic obstructive pulmonary disease.](#)

Trinkmann F. Am J Respir Crit Care Med. 2026 Sep 1;212(9):1899-1901. doi: 10.1093/ajrccm/aamag351. PMID: 42398014 No abstract available.

- [To the airway and beyond: introduction to an AJRCCM special section on airway disease.](#)

Bush A, Chotirmall SH, Han MK, Harhay M. Am J Respir Crit Care Med. 2026 Sep 1;212(9):1879-1881. doi: 10.1093/ajrccm/aamag368. PMID: 42518197 No abstract available.

- [40 references](#)
- [8 figures](#)

Supplementary info

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Cite

32

Heart Lung

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. 2026 Sep-Oct:79:102873.

doi: 10.1016/j.hrtlng.2026.102873. Epub 2026 Jun 11.

[Simplified GDMT score and all-cause readmission in patients with heart failure: A retrospective cohort study](#)

[Mahmoud Abdalla](#)¹, [Mahnoor Anjum](#)², [Vipul Reddy](#)², [Tiagpaul Bhamber](#)², [Joelian Mislav](#)², [Claudia Kroker-Bode](#)², [Augustine Agocha](#)³

Affiliations Expand

- PMID: 42275917
- DOI: [10.1016/j.hrtlng.2026.102873](#)

Abstract

Background: Guideline-directed medical therapy (GDMT) is the cornerstone of evidence-based heart failure management, yet its real-world implementation remains suboptimal. We adapted a simplified GDMT score to objectively quantify GDMT intensity and provide a practical measure of therapy optimization.

Objective: To evaluate the association between a simplified GDMT score with 30-day and 6-month readmissions of HF patients.

Methods: We conducted a single-center retrospective cohort analysis including patients with HF with reduced, mildly reduced, and recovered ejection fractions. The primary outcomes were 30-day and 6-month readmissions. Logistic regression models were used to evaluate the association between the GDMT score (high: ≥ 5 vs. low: < 5) and outcomes, with odds ratios (ORs) and 95% confidence intervals as measures of association.

Results: A high GDMT score (≥ 5) was significantly associated with reduced odds of both 30-day and 6-month readmissions. At 30 days, the odds ratio was 0.51 (95% CI: 0.28-0.93; $p = 0.027$), and at 6 months, 0.48 (95% CI: 0.29-0.79; $p = 0.0055$), corresponding to nearly 50% lower odds of hospital readmission. In the ischemic subgroup, the association was more pronounced, with an OR of 0.20 (95% CI: 0.07-0.55; $p = 0.0022$) for 30-day readmission. COPD independently predicted increased 6-month readmission risk (OR: 1.80; 95% CI: 1.07-3.03; $p = 0.027$). Age, sex, and BMI were not significant predictors in either model.

Conclusion: A higher simplified GDMT score was associated with reduced 30-day and 6-month readmissions, particularly among patients with ischemic heart failure, supporting its potential utility as a pragmatic measure of GDMT optimization.

Keywords: Acute decompensated heart failure; Guideline-directed medical therapy; Hospital readmission; Implementation science; Quality of care; Therapeutic optimization.

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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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Randomized Controlled Trial

Am J Respir Crit Care Med

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. 2026 Sep 1;212(9):2022-2035.

doi: 10.1093/ajrccm/aamag288.

[Mepolizumab efficacy in chronic obstructive pulmonary disease: insights from longitudinal patterns of blood eosinophil counts and their variability across 3 clinical trials](#)

[Gerard J Criner](#)¹, [Henrik Watz](#)^{2,3}, [MeiLan K Han](#)⁴, [Fernando J Martinez](#)⁵, [Steven Gould](#)⁶, [Jeff Min](#)⁷, [Arunangshu Biswas](#)⁸, [Stefanie Kolterer](#)⁶, [Dave Singh](#)^{9,10}

Affiliations Expand

- PMID: 42265988
- PMCID: [PMC13519312](#)
- DOI: [10.1093/ajrccm/aamag288](#)

Abstract

Rationale: Blood eosinophil count (BEC) is a biomarker indicating type 2 inflammation in patients with chronic obstructive pulmonary disease (COPD), but can be variable.

Objectives: Evaluate mepolizumab efficacy in patients with COPD with variability of BEC patterns.

Methods: Data were pooled from the phase 3, randomized, double-blind, placebo-controlled METREX ([NCT02105948](#)), METREO ([NCT02105961](#)), and MATINEE ([NCT04133909](#)) trials. Patients receiving mepolizumab 100 mg or placebo were included. These trials documented historical BEC (within 12 months before randomization) for all patients. Outcomes included annualized rates of moderate or severe exacerbations, and exacerbations requiring an emergency department (ED) visit and/or hospitalization. Outcomes were assessed in subgroups based on BEC values in the 12 months before randomization, at screening, and at baseline.

Measurements and main results: Annualized rates of moderate or severe exacerbations were reduced, or trended toward reduction, with mepolizumab versus placebo in patients with type 2 inflammation characteristics, including those with BEC ≥ 300 cells/ μ L at any pre-randomization timepoint (21% reduction), persistently elevated BECs (12%-27% reduction), and -variable BECs over time (22%-36% reduction). Across various subgroups with elevated BEC, starting from ≥ 150 cells/ μ L, mepolizumab reduced exacerbations requiring ED visit and/or hospitalization. Patients with persistently low BEC (<150 cells/ μ L) experienced no benefit with mepolizumab.

Conclusions: Mepolizumab improved exacerbation-related outcomes in patients with COPD and type 2 inflammation, characterized by both consistently and intermittently elevated BEC. Persistent BEC elevation is not required to identify treatable eosinophilic phenotypes in COPD.

Keywords: IL-5; biological products; chronic obstructive; eosinophils; pulmonary disease.

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Conflict of interest statement

Please see the ICMJE disclosure forms, which have been provided as supplementary material. G.J.C. reports grants and personal fees from GSK, Boehringer Ingelheim, Chiesi, Mereo, AstraZeneca, Pulmonx, Pneumrx, Olympus, Broncus, Lungpacer, Nuaira, ResMed, Respiroics, and Patara; personal fees from Verona, BTG, EOLO, and NGM; and grants from Alung, Fisher Paykel, and Galapagos. H.W. declares consulting fees, payment or honoraria, payment for expert testimony, support for attending meetings, and participation on a data and safety monitoring board (DSMB) or advisory board from AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, Novartis, and Sanofi. M.K.H. has received personal fees from GSK, AstraZeneca, Boehringer Ingelheim, Novartis, Pulmonx, Teva, Verona, Merck, Sanofi, DevPro, Aerogen, Polarian, Regeneron, United Therapeutics, Cipla, and Chiesi; received stock options from Meissa Vaccines and Altessa Biopharma; received either in-kind research support or funds paid to the institution from the National Institutes of Health, Novartis, Sunovion, Nuaira, Sanofi, AstraZeneca,

Boehringer Ingelheim, Gala Therapeutics, Biodesix, the COPD Foundation, and the American Lung Association; and participated in DSMBs for Novartis and Medtronic with funds paid to the institution. F.J.M. has received grants from NHLBI, AstraZeneca, Chiesi, GSK, and Sanofi/Regeneron; fees for consultancy work from AstraZeneca, Boehringer Ingelheim, Chiesi, CSL Behring, Gala, GSK, Novartis, Polarean, Pulmonx, Sanofi/Regeneron, Sunovion, Teva, Theravance, Viatris, and Verona; payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing, or educational events from UpToDate; and is a member of the DSMB of Medtronic. S.G., J.M., A.B., and S.K. are employed by GSK and hold financial equities in GSK. D.S. has received personal fees from Adovate, Aerogen, Almirall, Apogee, Arrowhead, AstraZeneca, Bial, Boehringer Ingelheim, Chiesi, Cipla, CONNECT Biopharm, Covis, CSL Behring, DevPro Biopharma LLC, Elpen, Empirico, EpiEndo, Genentech, Generate Biomedicines, GSK, Glenmark, Kamada, Kinaset Therapeutics, Kymera, Menarini, MicroA, OM Pharma, Orion, Pieris Pharmaceuticals, Pulmatrix, Revolo, Roivant Sciences, Sanofi, Synairgen, Tetherex, Teva, Theravance Biopharma, Upstream, and Verona Pharma.

Comment in

- [To the airway and beyond: introduction to an AJRCCM special section on airway disease.](#)

Bush A, Chotirmall SH, Han MK, Harhay M. *Am J Respir Crit Care Med*. 2026 Sep 1;212(9):1879-1881. doi: 10.1093/ajrccm/aamag368.PMID: 42518197 No abstract available.

- [One elevated blood eosinophil count is enough to identify mepolizumab responders in chronic obstructive pulmonary disease.](#)

Ramakrishnan S. *Am J Respir Crit Care Med*. 2026 Sep 1;212(9):1897-1898. doi: 10.1093/ajrccm/aamag352.PMID: 42656167 No abstract available.

- [31 references](#)
- [4 figures](#)

Supplementary info

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Editorial

Ann Am Thorac Soc

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. 2026 Sep 1;23(9):1276-1277.

doi: 10.1093/annalsats/aaog146.

[The burden of living through an unforeseen death in chronic obstructive pulmonary disease](#)

[Remy Bremner](#)^{1,2}, [Joanna L Hart](#)^{1,2,3}

Affiliations Expand

- PMID: 42249531
- DOI: [10.1093/annalsats/aaog146](#)

Free article

No abstract available

Comment on

- ["I feel like you should buy an umbrella before it starts raining": caregiver perspectives on illness inflection points in chronic obstructive pulmonary disease.](#)

Smirnova N, Batieste T, Sullivan DR, Jamdar S, Lowers J, Suen A, Murray C, Peterson C, Kavalieratos D. Ann Am Thorac Soc. 2026 Sep 1;23(9):1313-1319. doi: 10.1093/annalsats/aaog094. PMID: 42152177

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35

Review

Curr Opin Pulm Med

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. 2026 Sep 1;32(5):386-393.

doi: 10.1097/MCP.0000000000001287. Epub 2026 May 25.

[Association between upper airway obstruction and pulmonary hypertension in children with Down syndrome](#)

[Kevin Guy](#)¹, [Amal Isaiah](#)^{1 2 3 4}

Affiliations Expand

- PMID: 42199076
- PMCID: [PMC13294707](#)
- DOI: [10.1097/MCP.0000000000001287](#)

Abstract

Purpose of review: Down syndrome (DS) is the most common nonlethal chromosomal aneuploidy, affecting 1 in 700 live births. Pulmonary hypertension (PH) occurs in approximately 25% of children with DS and contributes to a 10% mortality rate within 3 years of diagnosis. Despite obstructive sleep apnea (OSA) affecting up to 80% of children with DS, the specific contribution of upper airway obstruction to PH in this population remains poorly characterized. This review synthesizes current evidence to address that gap.

Recent findings: Children with DS develop multilevel upper airway obstruction due to craniofacial dysmorphology, relative macroglossia, hypotonia, and reduced peripheral chemosensitivity. OSA-driven chronic hypoxemia promotes pulmonary vascular remodeling, with 87% of recurrent PH cases classified as WHO Group III. Echocardiographic diagnosis is limited by chronic lung disease. NT-proBNP is the most reliable biomarker in DS. Adenotonsillectomy reduces apnea severity, though evidence of a reduction in mean pulmonary arterial pressure in DS is lacking. Endothelin receptor antagonists show functional benefit, while sildenafil appears less effective in DS-specific analyses.

Summary: No DS-specific PH staging system exists, representing a critical gap. Future research should quantify the impact of airway interventions on pulmonary hemodynamics, develop DS-tailored biomarkers, and optimize pharmacologic regimens in this molecularly distinct population.

Keywords: adenotonsillectomy; obstructive sleep apnea; pulmonary hypertension; upper airway obstruction.

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Conflict of interest statement

Conflict of interest

Dr. Isaiah receives royalties and holds patents for the diagnosis and management of upper airway obstruction outside the submitted work. No other disclosures are reported.

- [52 references](#)

Supplementary info

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36

Am J Respir Crit Care Med

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. 2026 Sep 1;212(9):2079-2082.

doi: 10.1093/ajrccm/aamag244.

[Respiratory oscillometry in patients with chronic obstructive pulmonary disease with airway mucus plugs: insights from the ECLIPSE study](#)

[Titilope Olanipekun](#)^{1,2}, [Sofia K Mettler](#)^{1,2}, [Nirmal Sharma](#)^{1,2}, [Miguel Divo](#)^{1,2}, [Eric Garshick](#)^{2,3}, [Ruben San Jose Estépar](#)^{1,2,4}, [Raul San Jose Estépar](#)^{1,2,4}, [Michael Cho](#)^{1,2,5}, [George R Washko](#)^{1,2}, [Alejandro A Diaz](#)^{1,2}

Affiliations Expand

- PMID: 42184284
- PMCID: PMC13274801 (available on 2027-09-01)
- DOI: [10.1093/ajrccm/aamag244](#)

No abstract available

Keywords: COPD; mucus plug; oscillometry; spirometry.

Conflict of interest statement

Please see the ICMJE disclosure forms, which have been provided as supplementary material. A.A.D. reports USPTO Patent No.: 11,946,928 B2 “Methods and compositions relating to airway dysfunction”; participation in advisory board for Sanofi, Verona Pharma, Polarean; speaker fees from Zambon; consulting for Expedition Therapeutics and Astra-Zeneca; all unrelated to this work.

Dr. Diaz is supported by the National Heart, Lung, and Blood Institute grants (R01-HL149861, R01-HL164824, R01-173017). Dr. Washko reports serving on an advisory committee for Boehringer Ingelheim, CSL Behring, GlaxoSmithKline and Vertex; personal fees from Boehringer Ingelheim, CSL Behring, Janssen, Novartis, PulmonX and Vertex; serving on a data safety and monitoring board for PulmonX; received research support from Boehringer Ingelheim, BTG and Janssen; has ownership and investment interest in Quantitative Image Solutions; and his spouse is an employee of Bioge.

- [13 references](#)

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Clinical Trial

Am J Respir Crit Care Med

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. 2026 Sep 1;212(9):2011-2021.

doi: 10.1093/ajrccm/aamag227.

[Dupilumab in chronic obstructive pulmonary disease: a pooled analysis of emergency department visits, hospital admissions, and systemic corticosteroid use](#)

[Surya P Bhatt](#)¹, [Fernando J Martinez](#)², [Imran Satia](#)^{3,4}, [Antonio Anzueto](#)⁵, [Jean Bourbeau](#)⁶, [Alberto Papi](#)⁷, [Stephanie Korn](#)^{8,9}, [Gaëtan Deslée](#)¹⁰, [Changming Xia](#)¹¹, [Jigna Heble](#)¹², [Mena Soliman](#)¹¹, [Mona Bafadhel](#)¹³

Affiliations Expand

- PMID: 42153327
- PMCID: [PMC13519320](#)
- DOI: [10.1093/ajrccm/aamaq227](#)

Abstract

Rationale: In chronic obstructive pulmonary disease (COPD), exacerbations drive morbidity, healthcare resource utilization, and mortality. Hospitalization and emergency department (ED) visits reflect acute clinical instability. Systemic corticosteroids are usually prescribed for exacerbations, but cumulative exposure is a concern.

Objectives: To evaluate the effect of dupilumab on ED visits/hospital admissions and systemic corticosteroid use in patients experiencing exacerbations.

Methods: BOREAS and NOTUS, two phase 3, randomized, double-blind, placebo-controlled trials, enrolled patients (40-85 years) with COPD, moderate-to-severe airflow limitation, and type 2 inflammation (screening blood eosinophil count ≥ 300 cells/ μ L). Patients received dupilumab 300 mg (N = 938) or placebo (N = 936) for 52 weeks. Systemic corticosteroid use and annualized rate and time to first ED visit/hospital admission were assessed.

Measurements and main results: Dupilumab versus placebo reduced ED visits/hospital admissions of any duration by 38% (rate ratio, 0.62 [95% CI, 0.43-0.90]; P = .0121), delayed time to first event, and reduced risk of a first event by 45% (hazard ratio, 0.55 [95% CI, 0.38-0.78]; P = .0010). Compared with placebo, systemic corticosteroid use was reduced in patients treated with dupilumab who experienced severe exacerbations by 42% (rate ratio, 0.58 [95% CI, 0.38-0.89]; P = .0126) and moderate exacerbations by 28% (rate ratio, 0.72 [95% CI, 0.60-0.87]; P = .0005).

Conclusions: Dupilumab reduced ED visits/hospital admissions of any duration. Patients who experienced moderate and/or severe exacerbations required fewer systemic corticosteroids with dupilumab compared with placebo.

Clinical trial registration: ClinicalTrials.gov ([NCT03930732](#), [NCT04456673](#)).

Keywords: chronic obstructive pulmonary disease; dupilumab; exacerbations; severe exacerbations; systemic corticosteroids.

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Conflict of interest statement

Please see the ICMJE disclosure forms, which have been provided as supplementary material. S.P.B.: Supported by National Institutes of Health grants R01HL151421 and UH3HL155806; Apreo, AstraZeneca, Boehringer Ingelheim, Chiesi, Connect Biopharma, Genentech, GSK, Kymera, Merck, Polarean, Regeneron Pharmaceuticals, Sanofi, Uniquity, Verona (advisory boards or consultant); Horizon

CME, illuminate.health, Integrity Communications, Integrity CE, Medscape (honoraria); COPD Foundation, Genentech, Nuaira, Sanofi (funds paid to institute for research). F.J.M.: Afferent/Merck, AstraZeneca, Bayer, Boehringer Ingelheim, Gilead, GSK, Nitto BioPharma, Patara Pharma/Respivant Sciences, Pearl Pharmaceuticals, Promedior/Roche, ProMetic Life Sciences, Stromedix/Biogen, Veracyte (steering committees); AstraZeneca, BioScale/ProTERRIX Bio, Boehringer Ingelheim, Chiesi, CSL Behring, Gala Therapeutics, Genentech, GSK, Novartis, Pearl Pharmaceuticals, Physicians' Education Resource, Sunovion, Teva, Zambon (advisory board member); BMS, BridgeBio Therapeutics, twoXR (consultant); Canadian Respiratory Network, Chiesi, CME Outfitters, Dartmouth University, France Foundation, Inova Fairfax, MD Magazine, Methodist Hospital, Miller Communications, National Association for Continuing Education/Haymarket, New York University, PeerView, PRIME Education, Rare Diseases Healthcare Communication, Rockpointe, University of Alabama at Birmingham, UpToDate, Vindico Pharmaceuticals, WebMD/MedScape, Zambon (continuing medical education presentation support); Boehringer Ingelheim, GSK (data and safety monitoring board). I.S.: Bayer, BELLUS, Genentech, GSK, Merck, Mitacs, Trevi Therapeutics (grants); AstraZeneca, GSK, Merck, Regeneron Pharmaceuticals, Sanofi (speaker fees); BELLUS, Genentech, GSK, Merck, Methapharm, Regeneron Pharmaceuticals, Sanofi, Vitalograph (consulting fees) (all outside the submitted work). A.A.: AstraZeneca, GSK, Sanofi/Regeneron Pharmaceuticals, Viatris (consultant and speaker). J.B.: AstraZeneca, GSK, Novartis, Sanofi, Trudell (institutional grant support); AstraZeneca, GSK, Roche, Sanofi (speaker fees); AstraZeneca, GSK, Regeneron Pharmaceuticals, Sanofi (scientific advisory fees). A.P.: AstraZeneca, Chiesi, GSK, Sanofi (payments to institution); AstraZeneca, Avillion, Chiesi, GSK, Moderna, Roche, Sanofi (consultancy fees); AstraZeneca, Avillion, Chiesi, GSK, IQVIA, Moderna, Roche, Sanofi, Zambon (payment or honoraria for lectures, presentations, speakers' bureaus, manuscript writing, or educational events). S.K.: AstraZeneca, GSK, Novartis, Sanofi, Teva (grants/funds, personal fees for lectures and advisory boards). G.D.: AstraZeneca, Chiesi, GSK, Sanofi (consulting fees). C.X. and M.S.: Regeneron Pharmaceuticals (employees and shareholders). J.H.: Sanofi (employee, may hold stock and/or stock options in the company). M.B.: Research Professor NIHR304263, is funded by the National Institute for Health and Care Research (NIHR; the views expressed are those of the author and not necessarily those of the NIHR, National Health Service, or the UK Department of Health and Social Care); AstraZeneca, Roche (consultancy and speaker honoraria, paid to institution); Asthma + Lung UK, AstraZeneca, EU Horizon, NIHR (grant funding, paid to institution); Albus Health (scientific advisor).

Comment in

- [Measuring what matters: hospitalization reduction in chronic obstructive pulmonary disease.](#)

Ramakrishnan S, Choi JY. Am J Respir Crit Care Med. 2026 Sep 1;212(9):1894-1896. doi: 10.1093/ajrccm/aamag315.PMID: 42330347 No abstract available.

- [To the airway and beyond: introduction to an AJRCCM special section on airway disease.](#)

Bush A, Chotirmall SH, Han MK, Harhay M. Am J Respir Crit Care Med. 2026 Sep 1;212(9):1879-1881. doi: 10.1093/ajrccm/aamag368.PMID: 42518197 No abstract available.

- [48 references](#)
- [3 figures](#)

Supplementary info

Publication types, MeSH terms, Substances, Associated data, Grants and fundingExpand

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Ann Am Thorac Soc

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. 2026 Sep 1;23(9):1313-1319.

doi: 10.1093/annalsats/aa0ag094.

["I feel like you should buy an umbrella before it starts raining": caregiver perspectives on illness inflection points in chronic obstructive pulmonary disease](#)

[Natalia Smirnova](#)¹, [Tivona Batieste](#)², [Donald R Sullivan](#)³, [Samir Jamdar](#)², [Jane Lowers](#)⁴, [Angela Suen](#)⁵, [Camille Murray](#)⁶, [Catherine Peterson](#)⁴, [Dio Kavalieratos](#)⁴

Affiliations Expand

- PMID: 42152177
- PMCID: PMC13521444 (available on 2027-05-18)
- DOI: [10.1093/annalsats/aa0ag094](#)

Abstract

Rationale: The prolonged and unpredictable trajectory of chronic obstructive pulmonary disease (COPD) complicates prognostication and leaves caregivers uncertain about what to expect. Although caregiver unmet needs are well described, little is known about how they interpret missed or unclear prognostic conversations or how informational and support needs evolve during concrete illness transitions.

Objectives: To examine how bereaved caregivers of people with COPD perceive illness inflection points and how communication gaps and multimorbidity shape their expectations and support needs.

Methods: We conducted semi-structured interviews with bereaved caregivers of patients with any stage of COPD who had been seen in Emory Healthcare pulmonary clinics and died of respiratory causes within the prior 12 months. Two investigators independently analyzed transcripts using template analysis.

Results: We interviewed 18 bereaved caregivers (median age 58 years, 50% Black, 89% female). We identified 2 key themes: (1) Navigating without a roadmap: caregivers want earlier, clearer communication about what to expect as COPD progresses; and (2) Missing the signposts: inflection points in the COPD illness trajectory are missed opportunities for additional support. The initiation of supplemental oxygen was described as a particularly visible and life-altering marker of advanced disease, triggering loss of independence and reshaping daily life for patients and caregivers.

Conclusions: Bereaved caregivers emphasized the need for earlier, more specific prognostic conversations that focus on functional decline and care needs rather than time remaining. Clearer expectations about the illness course and help distinguishing COPD progression from other comorbidities may enable caregivers to recognize illness transitions as meaningful signals. Recognizing oxygen initiation and other illness inflection points as actionable indicators could help clinicians provide timely prognostic information, anticipatory guidance, and supportive care to patients and families across the COPD trajectory.

Keywords: COPD; bereaved caregiver; chronic obstructive pulmonary disease; palliative care.

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Conflict of interest statement

Please see the ICMJE disclosure forms, which have been provided as supplementary material. The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Comment in

- [The burden of living through an unforeseen death in chronic obstructive pulmonary disease.](#)

Bremner R, Hart JL. Ann Am Thorac Soc. 2026 Sep 1;23(9):1276-1277. doi: 10.1093/annalsats/aaoag146. PMID: 42249531 No abstract available.

- [31 references](#)

Supplementary info

MeSH terms, Grants and fundingExpand

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Multicenter Study

Am J Respir Crit Care Med

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. 2026 Sep 1;212(9):1988-1998.

doi: 10.1093/ajrccm/aamag225.

[Tezepelumab in real-world US patients with severe asthma across phenotypes and underrepresented populations: the phase 4 PASSAGE study](#)

[Njira L Lugogo](#)¹, [Praveen Akuthota](#)², [Kaharu Sumino](#)³, [Autumn F Burnette](#)⁴, [Sameer K Mathur](#)⁵, [Andrew W Lindsley](#)⁶, [Jean-Pierre Llanos](#)⁷, [Claudio Marchese](#)⁸, [Christopher S Ambrose](#)⁹, [Benjamin Emmanuel](#)⁹

Affiliations Expand

- PMID: 42148905
- PMCID: [PMC13519350](#)
- DOI: [10.1093/ajrccm/aamag225](#)

Abstract

Rationale: Clinical trials of severe asthma therapies often exclude or underrepresent key patient populations.

Objectives: To evaluate the effectiveness and safety of tezepelumab in a diverse, real-world US population with severe, uncontrolled asthma (SUA).

Methods: PASSAGE was a phase 4, multicenter, single-arm, open-label, 12-month study enrolling patients with SUA (≥12 years old), including different phenotypes (blood eosinophil count ≥300 or <300 cells/μL, with or without allergy) and

underrepresented populations (Black/African American patients, adolescents, those with SUA with comorbid mild-to-moderate chronic obstructive pulmonary disease, people with a significant smoking history [≥ 10 pack-years]). The primary outcome was the annualized asthma exacerbation rate (AAER) in the 12 months before (baseline period) and after (treatment period) tezepelumab initiation.

Measurements and main results: Among 286 participants, AAER decreased by 70% (95% CI, 63%-75%) from 2.88 (baseline period) to 0.87 (treatment period) and by 54% to 77% across phenotypes and underrepresented populations. At week 52, least-squares mean pre-bronchodilator FEV1 increased from baseline by 0.122 L (95% CI, 0.07-0.17) overall and by 0.212 L (95% CI, 0.15-0.28) among participants with percent predicted pre-bronchodilator FEV1 $\leq 80\%$ at baseline. Clinically meaningful improvements in Asthma Control Questionnaire-6, Asthma Impairment and Risk Questionnaire, and St George's Respiratory Questionnaire scores were observed in 51% to 91% of participants across phenotypes and underrepresented populations at week 52. No new safety signals were identified.

Conclusions: The PASSAGE study of a diverse, real-world US population with SUA treated with tezepelumab demonstrated substantial reductions in asthma exacerbations across phenotypes and underrepresented populations as well as clinically meaningful improvements in lung function, asthma control, and health-related quality of life.

Clinical trial registration: www.clinicaltrials.gov ([NCT05329194](https://clinicaltrials.gov/ct2/show/study?term=NCT05329194)).

Keywords: phenotype; real-world; severe asthma; tezepelumab; underrepresented populations.

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Conflict of interest statement

Please see the ICMJE disclosure forms, which have been provided as supplementary material. Njira L. Lugogo has received consultancy fees from AbbVie, Amgen, Apogee, AstraZeneca, Avillion, Chiesi, Foresee, Genentech, GSK, Inctye, Niox, Novartis, Pfizer, Regeneron Pharmaceuticals, Sanofi, and Teva Pharmaceuticals; has received fees for non-speakers bureau presentations and travel support from AstraZeneca, GSK, Regeneron Pharmaceuticals, Sanofi, and Teva Pharmaceuticals; her institution has received research support from Amgen, AstraZeneca, Avillion, Bellus, Evidera, Genentech, Gossamer Bio, GSK, Janssen, Novartis, Pfizer, Regeneron Pharmaceuticals, Roche, Sanofi, and Teva Pharmaceuticals; she is also an honorary faculty member of Observational and Pragmatic Research Institute but does not receive compensation for this role. Praveen Akuthota has received consultancy fees from Amgen, AstraZeneca, Connect Biopharma, Enveda, Gilead, GSK, Regeneron Pharmaceuticals, Sanofi, and Vida Ventures; has received research support from 4D Molecular Therapeutics, Advanced Research Projects Agency for Health, AstraZeneca, the Cystic Fibrosis Foundation, the National Institutes of Health, ReCode Therapeutics, and Sanofi; has received royalties from UpToDate; has received fees for continuing medical education presentations from Advancing Knowledge in Healthcare, Medlive, MJH Life Sciences, PeerView, PRIME Continuing Medical Education, Rockpointe, and Vindico Medical Education; has received fees for presentations from the Taiwan

Society of COPD; and has received fees for participating in data and safety monitoring boards from Sandia National Laboratories. Kaharu Sumino has received consultancy fees for participation in an advisory board from AstraZeneca, consultancy fees from Teva Pharmaceuticals, and speaker fees from Kyorin Pharmaceutical. Autumn F. Burnette has received consultancy fees for participation in advisory boards and panel presentations from Amgen, AstraZeneca, GSK, Regeneron Pharmaceuticals, and Sanofi, and has received speakers bureau fees from Amgen, AstraZeneca, GSK, Regeneron Pharmaceuticals, and Sanofi. Sameer K. Mathur has received consultancy fees from AstraZeneca, GSK, Novartis, and Regeneron Pharmaceuticals, and has received fees for presentations from AstraZeneca and GSK. Andrew W. Lindsley and Jean-Pierre Llanos are employees of Amgen and own stock in Amgen. Claudio Marchese, Christopher S. Ambrose, and Benjamin Emmanuel are employees of AstraZeneca and may own stock or stock options in AstraZeneca.

Comment in

- [Beyond the trials: real-world insights into tezepelumab efficacy.](#)

Sharma S, Holguin F. Am J Respir Crit Care Med. 2026 Sep 1;212(9):1888-1889. doi: 10.1093/ajrccm/aamag325.PMID: 42363411 No abstract available.

- [To the airway and beyond: introduction to an AJRCCM special section on airway disease.](#)

Bush A, Chotirmall SH, Han MK, Harhay M. Am J Respir Crit Care Med. 2026 Sep 1;212(9):1879-1881. doi: 10.1093/ajrccm/aamag368.PMID: 42518197 No abstract available.

- [26 references](#)
- [4 figures](#)

Supplementary info

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Randomized Controlled Trial

Am J Respir Crit Care Med

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. 2026 Sep 1;212(9):2050-2060.

doi: 10.1093/ajrccm/aamag226.

[Astegolimab for chronic obstructive pulmonary disease with frequent exacerbations: pooled analysis of the ALIENTO and ARNASA trials](#)

[Jadwiga A Wedzicha](#)¹, [Álvar Agustí](#)^{2 3 4 5}, [Christopher E Brightling](#)⁶, [Peter Calverley](#)⁷, [James D Chalmers](#)⁸, [Neil J Greening](#)⁶, [MeiLan K Han](#)⁹, [Divya Mohan](#)¹⁰, [Julie Ng](#)¹¹, [Alberto Papi](#)¹², [Nicolas Roche](#)¹³, [Rebecca Saenz](#)¹⁰, [Katerina Samara](#)¹⁴, [Ruth Tal-Singer](#)¹⁵, [Claus F Vogelmeier](#)¹⁶, [Xiaoying Yang](#)¹⁷, [Bartolome R Celli](#)¹⁸

Affiliations Expand

- PMID: 42148875
- PMCID: [PMC13519342](#)
- DOI: [10.1093/ajrccm/aamag226](#)

Abstract

Rationale: The efficacy and safety of astegolimab, an anti-ST2 monoclonal antibody, was evaluated in participants with chronic obstructive pulmonary disease (COPD) and frequent exacerbations in the pivotal ALIENTO and ARNASA trials.

Objectives: To report the prespecified pooled analysis of ALIENTO and ARNASA.

Methods: ALIENTO and ARNASA were randomized, double-blind, placebo-controlled trials with similar designs and included participants with COPD, a history of frequent exacerbations, and current/former smoking status, irrespective of blood eosinophil count and chronic bronchitis. Participants were randomized 1:1:1 to astegolimab 476 mg every 2 weeks (Q2W), astegolimab every 4 weeks (Q4W), or placebo for 52 weeks, plus optimized maintenance therapy. The primary endpoint was annualized rate of moderate/severe exacerbations. Secondary endpoints included annualized rate of severe exacerbations. A hierarchical statistical plan was followed with hypothesis testing of secondary efficacy endpoints gated on the primary efficacy endpoint success.

Measurements and main results: A total of 2682 participants were included in the pooled intent-to-treat population. Astegolimab significantly reduced the annualized rate of moderate/severe exacerbations by 15% in the Q2W arm (adjusted rate ratio, 0.85 [95% CI, 0.76-0.96]; P = .0077) and by 12% in the Q4W arm (rate ratio, 0.88 [95% CI, 0.78-0.99]; P = .0265). -A -nominally significant reduction in the annualized rate of severe COPD exacerbations (rate ratio, 0.68 [95% CI, 0.52-0.87]; P = .0028) was observed for astegolimab Q2W vs placebo. Astegolimab was well tolerated.

Conclusions: Astegolimab every 2 weeks reduced the annualized rate of moderate/severe exacerbations in a clinically heterogeneous population of participants with COPD and frequent exacerbations.

Clinical trial registration: ClinicalTrials.gov: [NCT05037929](https://clinicaltrials.gov/ct2/show/study/NCT05037929); [NCT05595642](https://clinicaltrials.gov/ct2/show/study/NCT05595642).

Keywords: ST2 monoclonal antibody; inflammation; interleukin-33.

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Conflict of interest statement

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BioSciences. Divya Mohan is an employee of Genentech, with stocks in F. Hoffmann-La Roche, and is a patent holder for method of treating COPD with an ST2 antagonist. Julie Ng is an employee of Genentech with stocks in F. Hoffmann-La Roche. Alberto Papi has received grants or contracts from AstraZeneca, Chiesi, GlaxoSmithKline, and Sanofi; consulting fees from AstraZeneca, Avillion, Chiesi, GlaxoSmithKline, Moderna, Regeneron, F. Hoffmann-La Roche, Sanofi, Zambon, and Zentiva; and honoraria from AstraZeneca, Avillion, Chiesi, Regeneron, Moderna, and GlaxoSmithKline, F. Hoffmann-La Roche, Sanofi, and Zambon. Nicolas Roche has received grants or contracts from Chiesi, GlaxoSmithKline, and Pfizer; consulting fees from GlaxoSmithKline, AstraZeneca, Sanofi, Chiesi, Pfizer, Austral, Biosency, and F. Hoffmann-La Roche; honoraria from GlaxoSmithKline, AstraZeneca, Sanofi, Chiesi, Pfizer, Zambon, Merck & Co, and Menarini; and support for travel from Chiesi, AstraZeneca, and GlaxoSmithKline. Rebecca Saenz is an employee of Genentech with stocks and stock options in F. Hoffmann-La Roche. Katerina Samara is an employee of F. Hoffmann-La Roche. Ruth Tal-Singer has received grants or contracts from GlaxoSmithKline, F. Hoffmann-La Roche, and Boehringer Ingelheim; consulting fees from GlaxoSmithKline, AstraZeneca, Johnson & Johnson, Renovion, F. Hoffmann-La Roche, ENA Respiratory, Samay Health, Boehringer Ingelheim, COPD Foundation, Global Allergy and Airways Patient Platform, and Global Skin; honoraria from GlaxoSmithKline and F. Hoffmann-La Roche; has or had a leadership or fiduciary role at COPD Foundation, ENA Respiratory, and Global Allergy and Airways Patient Platform; and has stock at GlaxoSmithKline and share options at ENA Respiratory. Claus F. Vogelmeier is an associate editor of AJRCCM and has received grants or contracts from the German Ministry of Education and Science, AstraZeneca, Boehringer Ingelheim, Chiesi, CSL Behring, GlaxoSmithKline, and Grifols; consulting fees from Aerogen, AstraZeneca, Boehringer Ingelheim, CSL Behring, Chiesi, GlaxoSmithKline, Insmed, Menarini, F. Hoffmann-La Roche, and Sanofi; and honoraria from Aerogen, AstraZeneca, Boehringer Ingelheim, CSL Behring, Chiesi, GlaxoSmithKline, Insmed, Menarini, F. Hoffmann-La Roche, and Sanofi. Xiaoying Yang is an employee of Genentech with stocks and stock options in F. Hoffmann-La Roche/Genentech. Bartolome Celli has received grants or contracts from GlaxoSmithKline, AstraZeneca, Menarini, Sanofi Aventis, Axios, Chiesi, F. Hoffmann-La Roche, and Genentech; consulting fees from GlaxoSmithKline, AstraZeneca, and Sanofi; honoraria from GlaxoSmithKline, AstraZeneca, Menarini, Chiesi, and Regeneron; support for travel from GlaxoSmithKline and Sanofi Aventis; and has participated in a DSMB or advisory board for AstraZeneca, Sanofi, and Vertex.

Comment in

- [Astegolimab in COPD: success or failure?](#)

Singh D, Dransfield M. *Am J Respir Crit Care Med*. 2026 Sep 1;212(9):1902-1903. doi: 10.1093/ajrccm/aamag343. PMID: 42381344 No abstract available.

- [To the airway and beyond: introduction to an AJRCCM special section on airway disease.](#)

Bush A, Chotirmall SH, Han MK, Harhay M. *Am J Respir Crit Care Med*. 2026 Sep 1;212(9):1879-1881. doi: 10.1093/ajrccm/aamag368. PMID: 42518197 No abstract available.

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- [2 figures](#)

Supplementary info

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Review

Heart Lung

-
-
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. 2026 Sep-Oct:79:102827.

doi: 10.1016/j.hrtlng.2026.102827. Epub 2026 May 4.

[Prevalence and associated factors of dysphagia in chronic obstructive pulmonary disease patients: A systematic review and meta-analysis](#)

[Yang Yang](#)¹, [Hong Yan](#)², [Lin Zhao](#)¹, [Yu Li](#)¹, [Kuaile Li](#)¹, [Feiyan Wan](#)¹

Affiliations Expand

- PMID: 42085928
- DOI: [10.1016/j.hrtlng.2026.102827](#)

Abstract

Background: Dysphagia is common in patients with COPD, and clarifying its prevalence and associated factors is an important prerequisite for developing effective nursing strategies.

Objectives: To systematically evaluate the prevalence and associated factors of dysphagia in COPD patients, thereby informing personalized interventions and risk reduction.

Methods: We searched CNKI, WanFang, VIP, CBM, PubMed, Embase, Web of Science, and Cochrane Library from inception to August 27, 2025, for observational

studies on dysphagia prevalence and associated factors in COPD patients. Two reviewers independently screened, assessed quality, and extracted data. Meta-analysis was conducted using Stata 16.0.

Results: A total of 18 studies involving 4608 patients were included. The meta-analysis revealed that the overall prevalence of dysphagia in COPD patients was 38.2% (95%CI: 29.8%-46.6%). The occurrence of dysphagia was associated with age (OR=1.18), mMRC dyspnea grade (OR=1.69), CAT score (OR=1.60), number of missing teeth (OR=2.63), nutritional status (OR=1.85), smoking status (OR=1.84), disease stage (OR=3.33), comorbid gastroesophageal reflux (OR=2.57), and the use of non-invasive mechanical ventilation (OR=0.40).

Conclusion: The prevalence of dysphagia in COPD patients is 38.2%. Current evidence suggests that higher age, higher mMRC dyspnea grade, elevated CAT score, number of missing teeth $\geq$ 6, malnutrition, smoking history, acute exacerbation stage, and comorbid gastroesophageal reflux are risk factors, while the use of non-invasive mechanical ventilation is associated with lower odds of dysphagia. Healthcare professionals should develop personalized interventions based on these associated factors to optimize disease management for COPD patients.

Keywords: Associated factors; Chronic obstructive pulmonary disease; Dysphagia; Meta-analysis; Prevalence.

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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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Review

Curr Opin Pulm Med

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. 2026 Sep 1;32(5):365-371.

doi: 10.1097/MCP.0000000000001282. Epub 2026 May 4.

[The clinical relevance of chest computed tomography imaging in pulmonary hypertension associated with lung diseases](#)

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Affiliations Expand

- PMID: 42083403
- PMCID: [PMC13270433](#)
- DOI: [10.1097/MCP.0000000000001282](#)

Abstract

Purpose of review: The purpose of this review is to describe the use of chest computed tomography (CT) data to expand sub-phenotyping of pulmonary hypertension associated with chronic lung disease (Group 3 pulmonary hypertension) and inform identification of effective treatment.

Recent findings: In the last 5 years, breakthroughs in clinical pulmonary hypertension research highlight the importance of chest CT data to inform disease trajectory and mortality risk. In presumed idiopathic pulmonary arterial hypertension (Group 1 pulmonary hypertension), a Group 1 'lung phenotype' with abnormal CT chest findings such as emphysema and fibrosis, experiences a mortality risk similar to that of Group 3 disease. Post hoc analyses of Group 3 pulmonary hypertension clinical trials highlight CT abnormalities to inform adverse treatment response, with implications for additional failed clinical trials to date. In fact, pulmonary hypertension guidelines emphasize the critical role for acquisition of standardized high-resolution CT data at pulmonary hypertension diagnosis and clinical trial enrollment.

Summary: Chest CT imaging is critical in the clinical management of pulmonary hypertension associated with chronic lung disease. Future research will not only incorporate CT data into Group 3 pulmonary hypertension phenotyping research but also consider treatment effect visualization on the lung parenchyma and pulmonary arterial vasculature as a novel clinical trial endpoint.

Keywords: Group 3 pulmonary hypertension; chest computed tomography; emphysema; pulmonary hypertension associated with chronic obstructive pulmonary disease; pulmonary hypertension associated with interstitial lung disease.

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Conflict of interest statement

Conflicts of interest

There are no conflicts of interest.

- [43 references](#)
- [1 figure](#)

Supplementary info

Publication types, MeSH terms, Grants and fundingExpand

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Cite

43

Clin Rehabil

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. 2026 Sep;40(9):1143-1159.

doi: 10.1177/02692155261441158. Epub 2026 Apr 24.

[A systematic review of physical activity guidelines for adults with cardio-respiratory diseases: Stepping towards evidence-based recommendations](#)

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Affiliations Expand

- PMID: 42029388
- PMCID: [PMC13525178](#)
- DOI: [10.1177/02692155261441158](#)

Abstract

ObjectivesPhysical activity benefits for adults with cardio-respiratory diseases are well established, and evidence-based recommendations are essential for healthcare professionals. This study systematically reviewed existing recommendations on physical activity for adults with cardio-respiratory diseases, specifically chronic

obstructive pulmonary disease, asthma, and heart failure, focusing on the frequency, intensity, time and type (FITT).Data SourcesWe searched OVID MEDLINE, EMBASE, CINAHL, and grey literature for guidelines and related documents. The comprehensive search was conducted in July 2025 and subsequently updated through March 2026. Two authors independently screened guidelines, extracted FITT components, and documented disease-specific precautions. Disagreements were resolved with a third author. The AGREE II instrument assessed methodological quality for identified CPGs. Recommendations were categorised based on the FITT framework.ResultsWe included 29 guidelines, of which 14 were classified as Clinical Practice Guideline and assessed with AGREE II. Among the 14 guidelines, 7 demonstrated high quality, 6 were moderate, and 1 was low quality. Most guidelines recommended at least 150 minutes of moderate aerobic activity per week. Adaptive recommendations primarily addressed exacerbations and symptom management.ConclusionWhile aerobic physical activity was consistently recommended, disease-specific guidance and adherence to FITT principles were limited. Significant gaps were noted in methodological quality, particularly in stakeholder involvement and applicability. To enhance usability, guidelines should standardise recommendations for type, duration, intensity, and frequency, incorporating evidence grading system.

Keywords: COPD; asthma; guidelines; heart failure; physical activity.

Conflict of interest statement

Declaration of conflicting interestsThe authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

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- [1 figure](#)

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44

Review

Dig Dis Sci

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. 2026 Sep;71(9):4426-4442.

doi: 10.1007/s10620-026-09894-7. Epub 2026 Apr 15.

[Unravelling the Links Between Gastroesophageal Reflux and Lung Disease: New Insights](#)

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- PMID: 41986862
- DOI: [10.1007/s10620-026-09894-7](#)

Free article

Abstract

Gastroesophageal reflux disease (GERD) is a prevalent comorbidity of chronic respiratory diseases including idiopathic pulmonary fibrosis (IPF), non-IPF interstitial lung disease, asthma, chronic obstructive pulmonary disease (COPD) and refractory chronic cough. Prevalence of symptoms of reflux and/ or refractory respiratory symptoms, along with concerns that refluxed gastric contents into the esophagus may micro-aspirate into the lungs causing injury and potentially accelerate disease progression, have resulted in high usage of empirical anti-reflux treatments. However, empirical treatment of reflux (medical or mechanical) is frequently ineffective without obvious explanation for the lack of respiratory improvement. This review provides novel and updated understanding of the pathophysiological mechanisms that link upper gut dysfunction, reflux (both distal and proximal), lung structure, lung mechanics and breathing patterns, including the potential role of the vagally mediated esophageal-bronchial reflex and the bi-directional nature of these interactions in individual respiratory diseases. We also highlight the need for a consensus between gastrointestinal and respiratory communities and propose a framework for diagnosing and managing GERD in respiratory disease.

Keywords: Gastroesophageal reflux; Motility; Respiratory disease.

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Conflict of interest statement

Declarations. Conflict of interest: The authors declare no competing interests.

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45

Observational Study

Heart Lung

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. 2026 Sep-Oct:79:102795.

doi: 10.1016/j.hrtlng.2026.102795. Epub 2026 Apr 14.

[Management of patients with COPD in the emergency department and treatment compliance with clinical guideline recommendations at discharge](#)

[Mónica Sachi Martínez Mihara¹](#), [Isabel Pérez Pañart²](#), [María Sánchez Salamero²](#), [Eva Campos Picontó²](#), [Sara Patricia Canales Villa²](#), [Víctor Latorre³](#), [Daniel Sáenz Abad⁴](#)

Affiliations Expand

- PMID: 41985297
- DOI: [10.1016/j.hrtlng.2026.102795](#)

Free article

Abstract

Background: Chronic obstructive pulmonary disease (COPD) exacerbations are a frequent cause of emergency department visits and are associated with high morbidity, mortality, and healthcare costs. These visits represent an opportunity to optimize patient management and align treatment with guideline recommendations, particularly regarding inhaled triple therapy.

Objectives: To describe the clinical characteristics and management of COPD patients in the emergency department and to identify factors associated with inhaled triple therapy prescription at discharge.

Methods: Retrospective observational study including patients aged >18 years attended at the emergency department of the Hospital Clínico Universitario (Zaragoza, Spain) between July and December 2022, with a diagnosis of COPD exacerbation at discharge. Demographic, clinical, laboratory, and therapeutic

variables were analyzed. Logistic regression identified independent predictors of inhaled triple therapy prescription at discharge.

Results: A total of 227 patients were included (mean age: 74.4 years; 70.9% male). Most (93.4%) had a prior COPD diagnosis, and 41.0% were already on maintenance inhaled triple therapy. At discharge, inhaled triple therapy was prescribed in 53.8% of the cases. Independent variables associated with triple therapy prescription included prior use of inhaled triple therapy (odds ratio [OR]:9.4), long-term home oxygen therapy (OR:4.3), and influenza vaccination (OR:3.1). Six months after discharge, 36.0% of patients required hospital admission for COPD exacerbation.

Conclusions: One-third of COPD patients discharged from the emergency department do not receive guideline-recommended inhaled triple therapy. Interventions aimed at standardizing and optimizing emergency department management are needed to improve adherence to clinical guidelines and improve patient outcomes.

Keywords: Chronic obstructive pulmonary disease; Emergency department; Exacerbation; Therapy.

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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: Daniel Saenz Abad reports statistical analysis was provided by AstraZeneca Pharmaceutical Spain. 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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Randomized Controlled Trial

J Cardiopulm Rehabil Prev

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. 2026 Sep 1;46(5):330-340.

doi: 10.1097/HCR.0000000000001027. Epub 2026 Mar 17.

Effects of Individualized Physical Activity Counseling Added to Pulmonary Rehabilitation on Physical Activity, Sedentary Behavior, and Exercise Motivation in Individuals With COPD: A Randomized Controlled Trial

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Affiliations Expand

- PMID: 41843815
- DOI: [10.1097/HCR.0000000000001027](https://doi.org/10.1097/HCR.0000000000001027)

Abstract

Purpose: Individual counseling during pulmonary rehabilitation (PR) has the potential to modify physical activity levels and motivation for exercise in patients with chronic obstructive pulmonary disease (COPD). This study analyzes the effect of an individual counseling session, added to a PR program, on physical activity, sedentary behavior, and motivation for exercise in patients with COPD.

Methods: A double-blind randomized controlled trial was conducted at the Hospital Distrital da Figueira da Foz PR center. Twenty patients with COPD were randomly allocated to an intervention group (IG) or a control group (CG). The IG received an individual physical activity counseling session during PR for 3 months. The CG received the PR. The number of steps and light, moderate, vigorous, and moderate-to-vigorous physical activity was studied as well as sedentary behavior, using the Actigraph wGT3X-BT accelerometer. Motivation for exercise was assessed with the Behavioral Regulations in Exercise Questionnaire. Data were collected at baseline and after 3 months. Data collectors and analysts were blinded.

Results: No significant differences were found between groups at baseline. After 3 months, the IG increased the number of steps ($P = .001$), light ($P = .033$) and moderate ($P = .001$) physical activity, and moderate-to-vigorous physical activity ($P = .001$) compared with CG. Sedentary behavior decreased in IG ($P = .009$) compared with CG. Motivation for exercise was significantly higher in IG ($P = .012$).

Conclusions: The individual counseling session, when added to PR, may improve physical activity, reduce sedentary behavior, and increase motivation to exercise in COPD.

Trial registration: ClinicalTrials.gov [NCT05961553](https://clinicaltrials.gov/ct2/show/study/NCT05961553).

Keywords: behavior modification; chronic obstructive pulmonary disease; exercise capacity; pulmonary rehabilitation; sedentary time.

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Supplementary info

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47

J Health Psychol

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. 2026 Sep;31(10):4082-4095.

doi: 10.1177/13591053251412948. Epub 2026 Jan 25.

[Social connection and living with severe chronic obstructive pulmonary disease: A qualitative analysis](#)

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Affiliations Expand

- PMID: 41581205
- PMCID: [PMC13451598](#)
- DOI: [10.1177/13591053251412948](#)

Abstract

People with chronic obstructive pulmonary disease (COPD) face increased risk of social isolation and loneliness. However, social dimensions are frequently overlooked in respiratory care. We aimed to explore the role of social connection in living with COPD, including influences on health and function. We conducted a reflexive thematic analysis of semi-structured interviews with 19 people with COPD (median age 78 years [range 58-88]; 14 with severe airflow obstruction). Three themes were identified: social connection supports COPD self-management, the "triple threat" of COPD to social connection, and the inseparable nature of social health. Participants described how worsening symptoms, particularly breathlessness, contribute to disconnection through physical restrictions,

psychological reactions, and societal unawareness, with negative impacts on self-management and wider physical and psychological health. We conclude that social connections become increasingly valuable, yet increasingly difficult to maintain, as COPD progresses. Supporting individuals to maintain connections within a biopsychosocial approach may unlock wider health benefits.

Keywords: biopsychosocial model; chronic obstructive pulmonary disease; loneliness; qualitative research; social isolation; social support.

Conflict of interest statement

Declaration of conflicting interestsThe authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

- [54 references](#)
- [1 figure](#)

Supplementary info

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Cite

48

J Intensive Care Med

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. 2026 Sep;41(9):845-852.

doi: 10.1177/08850666251412806. Epub 2026 Jan 9.

[The Superiority of AVAPS Mode of Non-invasive Ventilation in Combination with HFNC Over HFNC Alone in Patients with Chronic Obstructive Pulmonary Disease Complicated by Respiratory Failure](#)

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Affiliations Expand

- PMID: 41512102
- DOI: [10.1177/08850666251412806](#)

Abstract

Objective This paper was designed to investigate the clinical efficacy of combining the Average Volume Assured Pressure Support (AVAPS) mode of non-invasive ventilation (NIV) with high-flow nasal cannula oxygenation (HFNC) oxygen therapy in managing chronic obstructive pulmonary disease (COPD) patients complicated by respiratory failure. **Methods** Ninety-six patients with COPD and respiratory failure were enrolled and classified into a control group and an observation group. Both groups received conventional treatment. The control group was treated with AVAPS-mode NIV, while the observation group received additional HFNC. Clinical outcomes, adverse reactions, clinical indicators, blood gas parameters, serum inflammatory markers, and pulmonary function indicators were compared between the two groups. **Results** The observation group had a significantly higher overall clinical response rate (93.75% vs 75.00%, $P < 0.05$), shorter ICU stays and mechanical ventilation times, lower respiratory rates, higher PaO_2 , SaO_2 , FEV_1 , FVC, and FEV_1/FVC values, and lower PaCO_2 , IL-6, IL-8, $\text{TNF-}\alpha$, and sTREM-1 levels than the control group (all $P < 0.05$). Heart rate did not differ significantly between the two groups ($P > 0.05$). The adverse reaction rate was significantly lower in the observation group relative to the control group (4.17% vs 18.75%, $P < 0.05$). **Conclusion** This combined approach demonstrates superior efficacy in treating COPD patients with respiratory failure, improving arterial blood gas and pulmonary function, reducing inflammatory responses, and exhibiting a high safety profile.

Keywords: average volume assured pressure support mode; chronic obstructive pulmonary disease; clinical efficacy; high-flow nasal cannula oxygen therapy; non-invasive ventilation; respiratory failure.

Conflict of interest statement

Declaration of Conflicting Interests The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Supplementary info

MeSH terms [Expand](#)

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

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. 2026 Sep 1;12(5):00157-2026.

doi: 10.1183/23120541.00157-2026. eCollection 2026 Sep.

Managing multimorbidity in severe asthma: comparison of resources and perspectives between severe asthma specialists and general respiratory physicians across Europe

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Affiliations Expand

- PMID: 42683255
- PMCID: [PMC13531303](#)
- DOI: [10.1183/23120541.00157-2026](#)

Abstract

Background: Multimorbidity refers to the presence of multiple coexisting conditions, but is often underappreciated in the context of severe asthma (SA) management. We sought to identify differences in approaches to multimorbidity management in SA, variability in access to multidisciplinary team (MDT) resources, and whether physician perspectives on multimorbidity differ between SA specialists and general respiratory physicians.

Methods: The Severe Heterogeneous Asthma Registry, Patient-centred (SHARP) Clinical Research Collaboration circulated an online physician survey via European national respiratory societies to assess 1) available resources to address multimorbidity and 2) physician perspectives on multimorbidity in SA.

Results: 495 responses from 25 European countries included 48% SA specialists and 52% general respiratory physicians. SA specialists had more experience with SA patients (20% were seeing >60 patients per month) compared to general respiratory physicians. SA specialists had greater access to multidisciplinary care - including better access to MDTs, allied health professionals and referrals to external

specialists, and therefore more routinely assessed comorbidities and considered them greater influences on their practice. They also considered multimorbidity to a greater degree and rated its impact on their patients' asthma outcomes (and general health outcomes) as more substantial.

Conclusions: Alongside more experience of treating SA, SA specialists have increased awareness of multimorbidity and better resources to manage it. However, access to MDTs remains a significant gap for both SA specialists and general respiratory physicians. Furthermore, both groups identified a high need for further education and training about multimorbidity. These findings highlight key areas for improvement in clinical practice, resources and training.

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Conflict of interest statement

Conflict of interest: D. Matīsa reports personal fees for lectures, presentations, speaker bureau activities, manuscript writing and educational events from Berlin-Chemie/Menarini Baltic and AstraZeneca, and support for attending meetings and/or travel from AstraZeneca, MSD, Boehringer Ingelheim and Norameda. A.T. Bansal reports consulting fees from GSK, Chiesi, Teva, Sanofi and Novartis, paid via the European Respiratory Society (ERS) Clinical Research Collaboration to Acclarogen. S. Rink reports personal fees for lectures, presentations, speaker bureau activities, manuscript writing and educational events from Chiesi, AstraZeneca, Berlin-Chemie and Medis, and support for attending meetings and/or travel from Chiesi and AstraZeneca. A. Freeman reports agreed support for attending meetings and/or travel from Chiesi for the ERS Congress 2025. B. Frankenmölle, M. Singh, M. Hyland, G.A.M.L. Costanzo, A. Egesten, E. Jusufovic, F. Jaun, B. Milenkovic, J. Varkonyi-Sepp, O. Goksel, A.M. Pereira, A. Rizzi, R. Hou, A. Štajduhar, L. Brussino, H.M. Haitchi, K. Bieksiene, E. Damadoglu, V. Yasinka, I. Kroiča and R.J. Kurukulaaratchy report no conflicts of interest. J.K. Sont reports research grants from the Dutch RAPSODI severe asthma registry, the SHARP severe asthma registries, AstraZeneca and ZonMW. A. Bossios reports institutional research grants from AstraZeneca; institutional honoraria and lecture fees from Chiesi, GSK, Sanofi and AstraZeneca; and participation in a data safety monitoring board and advisory board for AstraZeneca; and holds leadership roles as Head of Assembly 5 (Airway diseases, asthma, COPD and chronic cough) of the ERS and as a member of the steering committee of the Swedish National Airway Register. B. Ainsworth reports institutional research funding from the National Institute for Health and Care Research, PhD research funding and a research contract with Neurify.io to conduct a research project without associated payment; and reports personal honoraria from AstraZeneca for educational meetings and for grant review activities from the Agència de Qualitat i Avaluació Sanitàries de Catalunya, received travel expense support from the Centre for Applied Respiratory Research Innovation and Impact, and participates in a scientific advisory board for Medito Inc. and is a member of the UK Taskforce for Lung Health; both roles are unpaid. R. Chaudhuri reports research grants from AstraZeneca for an investigator-led study; consulting fees from Connect Biopharma for a conference presentation; honoraria for lectures from GSK, AstraZeneca, Chiesi and Sanofi; support for attending meetings and/or travel from Sanofi; and participation in advisory board meetings for GSK, AstraZeneca and Celltrion. F. Mihaltan reports an unpaid leadership role as President of the Romanian Society of Pneumology. A. Spanavello reports research grants and

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- [6 figures](#)

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2

Lancet Psychiatry

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. 2026 Sep;13(9):725-726.

doi: 10.1016/S2215-0366(26)00237-3.

[Early prevention of multimorbidity for those with severe mental illness](#)

[Tomáš Formánek](#)¹, [Oleguer Plana-Ripoll](#)², [Linda Ejlskov](#)³

Affiliations Expand

- PMID: 42586078
- DOI: [10.1016/S2215-0366\(26\)00237-3](#)

No abstract available

Conflict of interest statement

We declare no competing interests.

Full text links



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Cite

3

Future Healthc J

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. 2026 Jun 25;13(3):100548.

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[Generalism and specialism: Reasserting the value of specialist knowledge in an era of multimorbidity](#)

[Waqas Akhtar](#)¹, [Luigi Camporota](#)¹

Affiliations Expand

- PMID: 42471978

- PMID: [PMC13380196](#)
- DOI: [10.1016/j.fhj.2026.100548](#)

Abstract

Emphasis has increasingly been placed on expanding medical generalism in response to an ageing population and the rising prevalence of multimorbidity. While the ability to manage complex, undifferentiated illness across multiple conditions is undeniably important, modern healthcare is simultaneously becoming more technologically advanced and clinically specialised. Breakthroughs in diagnostics, therapeutics and procedural medicine demand deep, focused expertise to deliver safe and effective care, particularly for high-risk patients. Rather than viewing generalism and specialism as competing models, healthcare systems must recognise them as complementary. Generalists are essential for holistic assessment, coordination and continuity, while specialists provide advanced interventions and nuanced disease-specific management. In an era defined by both multimorbidity and rapid medical innovation, the central challenge is not to prioritise one approach over the other, but to strike an appropriate balance which ensures that patients receive the right expertise at the right time.

Keywords: Generalism; Medical training; Specialism.

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Conflict of interest statement

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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Cite

4

Review

Curr Opin HIV AIDS

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. 2026 Sep 1;21(5):347-354.

doi: 10.1097/COH.0000000000001057. Epub 2026 Jul 16.

[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.

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Cite

5

Br J Health Psychol

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. 2026 Sep;31(3):e70091.

doi: 10.1111/bjhp.70091.

[Transforming multimorbidity care: Organizational barriers and provider behaviour in type 2 diabetes and cardiovascular disease](#)

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Affiliations Expand

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- PMCID: [PMC13354874](#)
- DOI: [10.1111/bjhp.70091](#)

Abstract

Background: Healthcare professionals' behaviours are central to effective multimorbidity management yet remain underexplored in behavioural medicine. Co-existing type 2 diabetes (T2D) and cardiovascular disease (CVD) present intertwined behavioural and biomedical challenges; however, the organizational and professional factors that shape integrated care are poorly understood.

Objectives: The objective of this study was to identify behavioural and organizational determinants of integrated T2D-CVD care and to apply behaviour change theory to provider practice.

Design: Sixteen healthcare professionals in North-West England participated in semi-structured interviews.

Methods: Data were analysed inductively using reflexive thematic analysis within a critical realist framework. The COM-B model (capability, opportunity, motivation, behaviour) informed interpretation of these inductive findings.

Results: Three interconnected themes: Compartmentalized conditions; inhibition of meaningful interactions; and gap between understanding and supporting illustrate

how limitations in capability (confidence and training), opportunity (siloed records, absence of psychological pathways) and motivation (risk aversion and entrenched norms) collectively reinforce fragmented biomedical care. These mechanisms operate across organizational and cultural boundaries and explain persistent gaps in risk communication, cross-disciplinary collaboration and limited psychological support.

Conclusions: This study provides a theory-informed qualitative application of the COM-B model to healthcare professional behaviour in multimorbidity care, demonstrating how system design and professional culture shape interacting determinants. Conceptualizing cardiometabolic care as a behavioural and communicative system identifies priority intervention targets: staff training, service redesign, interoperable records and leadership development. These support practitioner well-being, interdisciplinary collaboration and patient engagement. The findings reframe integrated T2D-CVD care as a multidirectional capability model, informing policy and practice.

Keywords: Cardiovascular Diseases; Diabetes Mellitus, Type 2; Health Personnel; Integrated Care; Qualitative Research; multimorbidity.

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- [63 references](#)

Supplementary info

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Cite

6

JACC Asia

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. 2026 Sep;6(9):2080-2093.

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Multimorbidity Status Worsening and Clinical Outcomes of Patients With Atrial Fibrillation

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Affiliations Expand

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- DOI: [10.1016/j.jacasi.2026.05.016](https://doi.org/10.1016/j.jacasi.2026.05.016)

Free article

Abstract

Background: Comorbidities are associated with adverse outcomes in patients with atrial fibrillation (AF).

Objectives: The authors aimed to assess the impact of changes in multimorbidity status on clinical outcomes and the impact of Atrial Fibrillation Better Care (ABC) adherence of patients with AF.

Methods: In the prospective nationwide COOL-AF registry, patients with nonvalvular AF were enrolled and followed up every 6 months until 3 years. Multimorbidity status was assessed at baseline and every 6 months. The composite outcomes were death, heart failure, major bleeding, and ischemic stroke/systemic embolism. Multimorbidity worsening was defined as an increase in multimorbidity group at 1 year.

Results: A total of 3,096 patients were studied (mean age: 67.6 ± 11.1 years; 41.8% female). Four patient groups were derived from 3,096 patients as follows: low (0-1), n = 833 (26.9%); moderate (2), n = 779 (25.2%); high (3), n = 653 (21.1%); and very high comorbidities (≥4), n = 831 (26.8%). The median duration of follow-up was 24.3 months (IQR: 23.4-24.8 months; mean: 23.0 ± 4.4 months). Patients with multimorbidity worsening had an increased risk of composite outcomes (adjusted HR: 1.39; 1.13-1.71), compared to patients with no change in multimorbidity status). Patients with ABC pathway compliance were associated with a lower risk of the composite outcome, both in patients with multimorbidity worsening (HR: 0.49; 95% CI: 0.32-0.75) and "no change" groups (HR: 0.56; 95% CI: 0.45-0.70).

Conclusions: Patients with multimorbidity worsening had an increased risk of adverse outcomes, which were mitigated by ABC pathway compliance.

Keywords: atrial fibrillation; bleeding; death; heart failure; ischemic stroke; multimorbidity.

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Conflict of interest statement

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Cite

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Eur J Intern Med

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. 2026 Sep:151:107036.

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[Neutrophil-to-lymphocyte ratio: A disease severity biomarker in stable chronic obstructive pulmonary disease?](#)

[Marco Vanetti](#)¹, [Dina Visca](#)¹, [Francesco Ardesi](#)¹, [Martina Zappa](#)², [Sara Pessano](#)³, [Patrizia Pignatti](#)⁴, [Leonardo M Fabbri](#)⁵, [Antonio Spanevello](#)⁶

Affiliations Expand

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- DOI: [10.1016/j.ejim.2026.107036](#)

Abstract

Background: The neutrophil-to-lymphocyte ratio (NLR) is a biomarker of systemic inflammation that has been investigated in different chronic diseases. However, its role as biomarker of severity in patients with stable chronic obstructive pulmonary disease (COPD), and particularly its association with cardiovascular risk, remains

unclear. This retrospective study aimed to evaluate whether a higher NLR (HNLR) is associated with worse disease control and increased cardiovascular risk compared to a lower NLR (LNLR) in stable COPD.

Methods: Data from inpatients admitted to a pulmonary rehabilitation center between 2021 and 2024 were analyzed. Patients were divided in two groups (HNLR ≥ 2.26 and LNLR < 2.26) based on the NLR threshold best associated with severe exacerbations according to ROC analysis. Comparison between groups and multivariate logistic regression analysis were performed. Cardiovascular risk was assessed using the European Society of Cardiology-recommended algorithm.

Results: A total of 247 patients were included. The HNLR group included a significantly ($p < 0.05$) higher number of patients with severe exacerbations in the previous year, lower forced expiratory volume in 1 second, higher residual volume, and increased partial pressure of carbon dioxide in arterial blood than the LNLR group. Chronic respiratory failure, atrial fibrillation and lung cancer were significantly more frequent in the HNLR group, and these patients had a significantly higher 10-year cardiovascular risk.

Conclusion: Our data suggest that NLR used together with other clinical and functional parameters could represent a useful biomarker in stable COPD, associated with increased disease severity and higher estimated 10-year cardiovascular risk.

Keywords: Chronic bronchitis; Emphysema; Leukocytes; Multimorbidity; Smoking.

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Conflict of interest statement

Declaration of competing interest Marco Vanetti: no conflict of interest. Dina Visca: no conflict of interest Francesco Ardesi: no conflict of interest Martina Zappa: no conflict of interest Sara Pessano: no conflict of interest Patrizia Pignatti: no conflict of interest Leonardo M Fabbri declares consulting fees from Chiesi, GlaxoSmithKline, AstraZeneca, Novartis, and Verona Pharma, payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing or educational events from Chiesi, GlaxoSmithKline, Glenmark, Lusofarmaco, and Sanofi, and participation in a Data Safety Monitoring Board or Advisory Board for Chiesi, Novartis and ICON. All are outside the scope of the current manuscript. Antonio Spanevello declares consulting fees from GlaxoSmithKline, Merck Sharp & Dohme, Sanofi, AstraZeneca and Chiesi, payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing or educational events from GlaxoSmithKline, Merck Sharp & Dohme, Sanofi, AstraZeneca and Chiesi, and participation in a data safety monitoring board or advisory board for GlaxoSmithKline, Merck Sharp & Dohme, Sanofi, AstraZeneca and Chiesi. All are outside the scope of the current manuscript.

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Arch Gerontol Geriatr

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. 2026 Sep;148:106273.

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[Cross-sectional and longitudinal associations of self-perceptions of aging with physical activity in multimorbidity: The role of depressive symptoms](#)

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Affiliations Expand

- PMID: 42127543
- DOI: [10.1016/j.archger.2026.106273](#)

Free article

Abstract

Objective: This study investigated, among middle-aged and older individuals with multimorbidity, the cross-sectional and four-year associations of Awareness of Age-Related Gains and Losses (AARC-Gains, AARC-Losses) with physical activity and whether depressive symptoms mediate these associations.

Methods: The study used UK PROTECT data collected in 2019 and 2021. Measures used included the Community Healthy Activities Model Program for Seniors, the Awareness of Age-Related Change questionnaire, and the Patient Health Questionnaire. Multiple linear regressions and structural equation modeling were used.

Results: The cross-sectional and longitudinal sample comprised 4947 (mean age= 67.5, 73.3% female) and 1814 individuals, respectively. Cross-sectionally, higher AARC-Gains were associated with greater number ($\beta = 0.13$, 95% CI [0.10, 0.16]), duration ($\beta = 0.12$, 95% CI [0.09, 0.15]), and intensity ($\beta = 0.12$, 95% CI [0.09, 0.15]) of physical activity. Lower AARC-Losses were associated with higher number ($\beta = -0.19$, 95% CI [-0.22, -0.16]), duration ($\beta = -0.20$, 95% CI [-0.23, -0.16]), and intensity ($\beta = -0.21$, 95% CI [-0.24, -0.18]) of physical activity. Longitudinally, higher baseline AARC-Losses were associated with lower number ($\beta = -0.05$, 95% CI [-0.07, -0.03]),

duration ($\beta = -0.05$, 95% CI [-0.08, -0.02]), and intensity ($\beta = -0.06$, 95% CI [-0.08, -0.04]) of physical activity at follow-up. Depressive symptoms partially mediated these associations. AARC-Gains showed inconsistent or non-significant associations with physical activity.

Conclusions: Perceiving many age-related losses may hinder engagement in physical activity directly and indirectly through depressive symptoms. Interventions promoting physical activity among individuals with multimorbidity may benefit from strategies that reframe negative self-perceptions of aging and address depressive symptoms, complementing clinical recommendations.

Keywords: Awareness of age-related change; Depressive symptoms; Middle-aged and older adults; Physical health conditions; Subjective aging.

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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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Diabetes Care

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[Life Course Cumulative BMI Burden From Childhood to Adulthood and Risk of Metabolic Multimorbidity: A 36-Year Prospective Cohort Study](#)

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Affiliations Expand

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Abstract

Objective: To examine the associations between cumulative BMI burden from childhood to adulthood and the risk of adult metabolic multimorbidity.

Research design and methods: This prospective cohort study used data from the Hanzhong Adolescent Hypertension Study (1987-2023). A total of 2,446 participants with at least two BMI measurements in both childhood (6-18 years) and adulthood (19-52 years) were included. Cumulative BMI exposure was quantified using total and incremental area under the curve (AUC). Outcomes included metabolic multimorbidity, defined as the presence of two or more or three or more metabolic diseases, specifically hypertension, diabetes, dyslipidemia, elevated liver enzymes/bilirubin, and kidney damage.

Results: Higher total and incremental BMI AUC during childhood, adulthood, and over the life course were consistently associated with an increased risk of adult metabolic multimorbidity (two or more diseases). For total AUC, odds ratios (ORs) ranged from 1.51 to 2.59 (all $P < 0.05$); for incremental AUC, ORs ranged from 1.94 to 4.33 (all $P < 0.05$). Compared with total AUC, incremental AUC showed a stronger association with metabolic multimorbidity in childhood (OR 4.33 [95% CI 2.93, 6.40] vs. 1.51 [1.17, 1.95], respectively). Conversely, total AUC exhibited a stronger association in adulthood than in childhood (OR 2.51 [2.08, 3.04] vs. 1.94 [1.62, 2.31]). Furthermore, the associations for adulthood and life course BMI AUC were significantly stronger in males than in females (P for interaction <0.05).

Conclusions: These findings highlight the importance of life stage-specific strategies: curbing rapid BMI gain in childhood and maintaining long-term weight control throughout adulthood.

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Supplementary info

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Review

Expert Opin Drug Saf

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[GLP-1 receptor agonists in older people with type 2 diabetes: safety evidence from the real world](#)

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Affiliations Expand

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Abstract

Introduction: GLP-1 receptor agonists (GLP-1RA) are glucose- and body weight-lowering therapies provided with cardio-renal benefits. Use of GLP-1RA in older adults with type 2 diabetes mellitus (T2DM) is increasing but concerns remain about their safety in this age group, particularly in light of multimorbidity, frailty, and polypharmacy, as well as age-related vulnerability to adverse events (AEs).

Areas covered: We discuss the opportunities and challenges of GLP-1RA in older people with T2DM, focusing on real-world (RW) safety evidence. Available RW studies confirm the established GLP-1RA safety profile, with AEs in 10-30% of older users, predominantly gastrointestinal and mild-to-moderate in severity. Age-stratified analyses provide mixed results on AE susceptibility, but discontinuation due to intolerance appears more frequent in older adults. Weight loss is preserved across age groups, with no consistent evidence of harmful unintended reductions. However, the effects on muscle mass and sarcopenia risk remain largely unexplored.

Expert opinion: Current RW evidence supports GLP-1RA as a safe therapeutic option for older individuals with T2DM, without age-specific safety signals. Clinical phenotype-driven selection is essential to balance benefits and risks, particularly regarding nutritional status and frailty. Prospective, phenotype-stratified studies with body composition assessment are needed to guide optimal, individualized use in aging populations.

Keywords: Diabetes; incretin; older; sarcopenia; weight.

Supplementary info

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Clin Res Cardiol

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. 2026 Sep;115(9):1615-1628.

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[Prevalence and prognosis of multimorbidity in heart failure with mildly reduced ejection fraction](#)

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Affiliations Expand

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- PMCID: [PMC13457439](#)
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Abstract

Background and objective: Related to ongoing demographic, the number of patients with cardiac and non-cardiac comorbidities increases. Heart failure with mildly reduced ejection fraction (HFmrEF) represents a heterogeneous population with diverse clinical profiles. The study investigates the prevalence and prognostic impact of multimorbidity in patients hospitalized with HFmrEF.

Methods: Consecutive patients with HFmrEF were retrospectively included at one institution from 2016 to 2022 and divided into four groups based on the number of concomitant comorbidities taking into account 12 comorbidities (i.e., 0-1, 2-3, 4-5, ≥ 6 comorbidities). The prognostic impact of the number of comorbidities was investigated with regard to the primary endpoint all-cause mortality at 30 months.

Results: From 2,184 patients hospitalized with HFmrEF, 37% presented with 4-5 comorbidities, 17% with ≥ 6 comorbidities. Compared to patients with 4-5, 2-3, 0-1

comorbidities, patients with ≥ 6 comorbidities were more frequently discharged with beta-blockers (83.6% vs. 78.7% vs. 77.6% vs. 64.7%; $p = 0.001$) and mineralocorticoid receptor antagonists (MRA) (17.2% vs. 15.7% vs. 12.8% vs. 7.9%; $p = 0.004$). The risk of all-cause mortality at 30 months was higher in patients with ≥ 6 comorbidities compared to patients with less comorbidities (i.e., 4-5, 2-3, 0-1) (59.5% vs. 38.6% vs. 17.0% vs. 7.9%, $p = 0.001$). Both cardiovascular (HR = 1.106; 95% CI 1.030 - 1.188; $p = 0.006$) and non-cardiovascular (HR = 1.564; 95% CI 1.470 - 1.664; $p = 0.001$) comorbidities predicted the risk of long-term all-cause mortality.

Conclusion: In patients hospitalized with HFmrEF, more than 50% had at least 4 comorbidities. Both cardiovascular and non-cardiovascular comorbidities predicted the risk of long-term all-cause mortality in HFmrEF.

Keywords: Comorbidities; HFmrEF; Heart failure with mildly reduced ejection fraction; Mortality; Multimorbidity.

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Conflict of interest statement

Declarations. Conflict of interests: No conflict of interest for all authors.

- [49 references](#)
- [5 figures](#)

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

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Review

Nat Rev Immunol

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[Interleukin-33 and its receptor: multifaceted roles and emerging therapeutic potential](#)

[Sebastian Serve](#)^{1,2,3}, [Max Löhning](#)^{4,5}

Affiliations Expand

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Abstract

Interleukin-33 (IL-33) is an alarmin and cytokine that has potent biological effects in various tissues. It acts on a broad array of immune cell populations and is involved in many processes associated with health and disease. This Review discusses the biology of IL-33 and its receptor, ST2, and the functional relevance of IL-33-ST2 signalling. It focuses particularly on the differential regulation of IL-33 sensitivity in distinct cell types in diverse tissue settings. Furthermore, we describe the effects of IL-33 in various diseases, including viral infections, cancer, graft-versus-host disease, colitis, autoimmunity, chronic obstructive pulmonary disease, asthma and allergy. We also consider the roles of IL-33 in physiological reactions such as fat tissue biology and tissue regeneration. The Review aims to provide a comprehensive understanding of IL-33 signalling, including its potential as a target for developing new treatments, and to suggest future research directions.

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Conflict of interest statement

Competing interests: The authors declare no competing interests.

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Allergy

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Classification of Seasonal Allergic Rhinitis Patients by Prospective Patient-Recorded Symptoms: The @IT.2020 Project

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Affiliations Expand

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Abstract

Background: Seasonal allergic rhinitis (SAR) has been so far classified according to frequency and severity by retrospective information based on the ARIA (Allergic Rhinitis and its Impact on Asthma) classification. Electronic symptom diaries (e-Diaries) are feasible tools to collect prospective patient-reported data.

Objective: To test the consistency between prospectively recorded symptoms and retrospective ARIA classification and to generate a new SAR classification based on prospective e-Diary data.

Methods: Within the @IT.2020 multicentre observational study, we recruited 815 children and adults with SAR in nine study centres from Mediterranean countries. Participants recorded daily organ-specific (Rhinoconjunctivitis Total Symptom Score; RTSS) and general symptoms (visual analogue scale, VAS) plus quality-of-life measures via an e-Diary app. Retrospective clinical questionnaires were performed at the beginning (T0) and end (T1) of the pollen season. Unsupervised clustering analyses around medoids were implemented to classify SAR by prospective patient-reported data.

Results: One third (56/164, 34.1%) and almost half (173/366, 47.3%) of the patients retrospectively over- or underestimated the frequency of their symptoms, respectively. A moderate correlation was found between SAR severity reported at T1 and prospectively recorded symptom severity. An unsupervised clustering approach was able to identify distinct groups (mild, moderate, severe cluster) of patients based on the prospective severity of organ-specific (RTSS) and overall symptoms (VAS), as well as quality of life criteria.

Conclusions: A significant recall bias regarding frequency and severity of symptoms emerged by comparing the retrospective ARIA classification with prospectively recorded data by an e-Diary. A prospective approach to SAR

classification, inspired by the retrospective ARIA classification, may facilitate a more precise evaluation of the patient for improved disease management.

Keywords: cluster analysis; e-Diary; mHealth; patient-reported outcomes; seasonal allergic rhinitis classification.

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[Managing multimorbidity in severe asthma: comparison of resources and perspectives between severe asthma specialists and general respiratory physicians across Europe](#)

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- PMCID: [PMC13531303](#)
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Abstract

Background: Multimorbidity refers to the presence of multiple coexisting conditions, but is often underappreciated in the context of severe asthma (SA) management. We sought to identify differences in approaches to multimorbidity management in SA, variability in access to multidisciplinary team (MDT) resources, and whether physician perspectives on multimorbidity differ between SA specialists and general respiratory physicians.

Methods: The Severe Heterogeneous Asthma Registry, Patient-centred (SHARP) Clinical Research Collaboration circulated an online physician survey *via* European national respiratory societies to assess 1) available resources to address multimorbidity and 2) physician perspectives on multimorbidity in SA.

Results: 495 responses from 25 European countries included 48% SA specialists and 52% general respiratory physicians. SA specialists had more experience with SA patients (20% were seeing >60 patients per month) compared to general respiratory physicians. SA specialists had greater access to multidisciplinary care - including better access to MDTs, allied health professionals and referrals to external specialists, and therefore more routinely assessed comorbidities and considered them greater influences on their practice. They also considered multimorbidity to a greater degree and rated its impact on their patients' asthma outcomes (and general health outcomes) as more substantial.

Conclusions: Alongside more experience of treating SA, SA specialists have increased awareness of multimorbidity and better resources to manage it. However, access to MDTs remains a significant gap for both SA specialists and general respiratory physicians. Furthermore, both groups identified a high need for further education and training about multimorbidity. These findings highlight key areas for improvement in clinical practice, resources and training.

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Conflict of interest statement

Conflict of interest: D. Matīsa reports personal fees for lectures, presentations, speaker bureau activities, manuscript writing and educational events from Berlin-Chemie/Menarini Baltic and AstraZeneca, and support for attending meetings and/or travel from AstraZeneca, MSD, Boehringer Ingelheim and Norameda. A.T. Bansal

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- [6 figures](#)

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. 2026 Sep 1;12(5):00252-2026.

doi: 10.1183/23120541.00252-2026. eCollection 2026 Sep.

[Prevalence of type 2 multimorbidities in COPD compared to asthma and relationship to blood eosinophilic counts](#)

[David M G Halpin](#)^{1,2}, [Jaspreet Kaur](#)³, [Heath Heatley](#)³, [Freya Tyrer](#)³, [Cono Ariti](#)³, [Rachel Pullen](#)², [Shelly Pathak](#)⁴, [Victoria Carter](#)³, [David Price](#)^{2,3,5}

Affiliations Expand

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- PMCID: [PMC13531282](#)
- DOI: [10.1183/23120541.00252-2026](#)

Abstract

Background: Type 2 (T2) inflammation is increasingly recognised in COPD, though its immunopathological profile may differ from asthma. T2 inflammatory diseases often coexist, but their prevalence in COPD patients without asthma remains underexplored. This study investigated the prevalence of T2 inflammatory multimorbidities in individuals with COPD (without asthma) and compared it with those in people with asthma. It also examined the relationship between these multimorbidities and blood eosinophil counts (BEC).

Methods: Using data from the Optimum Patient Care Research Database (OPCRD), we identified patients with COPD or asthma and assessed lifetime and adjusted prevalence of T2 comorbidities including allergic rhinitis, atopic dermatitis/eczema, nasal polyps, chronic rhinitis with or without polyps, eosinophilic oesophagitis and ulcerative colitis. Prevalence was stratified by BEC and adjusted for demographic and clinical variables.

Results: Among 122 509 COPD and 1 154 094 asthma patients, T2 multimorbidities were present in both groups but significantly less common in COPD. Allergic rhinitis and nasal polyps were notably less prevalent in COPD, even at higher BEC levels. Prevalence of multimorbidities increased with BEC in both groups, with stronger associations observed for nasal polyps and ulcerative colitis. Eosinophilic oesophagitis was rare across both cohorts.

Conclusion: T2 multimorbidities are present in COPD and their prevalence increases with BEC, though they are generally less prevalent than in asthma, suggesting distinct immunopathology.

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Conflict of interest statement

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Novartis, Medscape, Teva Pharmaceuticals; owns 74% of the social enterprise Optimum Patient Care Ltd (Australia and UK) and 92.61% of Observational and Pragmatic Research Institute Pte Ltd (Singapore); is peer reviewer for grant committees of the UK Efficacy and Mechanism Evaluation Programme, and Health Technology Assessment; and he was an expert witness for GlaxoSmithKline.

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Lung India

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. 2026 Sep 1;43(5):496-506.

doi: 10.4103/lungindia.lungindia_812_25. Epub 2026 Aug 29.

[SWORD survey: Seasonal trends in hospitalisation and mortality among patients with respiratory illnesses in India](#)

[Sheetu Singh](#)¹, [Bharat B Sharma](#)², [Arvind K Sharma](#)³, [Nishtha Singh](#)⁴, [Krishna K Sharma](#)⁵, [Tejraj Singh](#)⁶, [Nirmal K Jain](#)⁷, [Parvaiz A Koul](#)⁸, [Sundeep Salvi](#)⁹, [Virendra Singh](#)¹⁵; [SWORD Study Group](#)

Affiliations Expand

- PMID: 42671408
- DOI: [10.4103/lungindia.lungindia_812_25](#)

Free article

Abstract

Objective: The SWORD study examined seasonal variations in respiratory disease related hospitalisations and mortality across India. It also assessed risk factors and comorbidities influencing these outcomes.

Methods: This multicentre, questionnaire-based, point prevalence study was conducted across four seasonal weeks in 2017-2018. Data on respiratory admissions on the first day and deaths over the following week were collected.

Results: At 245 centres, 2,886 patients were hospitalised, and 394 deaths occurred. COPD was the leading cause of both hospitalisations and deaths, followed by tuberculosis (TB), respiratory tract infections (RTI), asthma, pleural effusion, lung cancer, bronchiectasis, and interstitial lung disease (ILD). Respiratory admissions and deaths peaked in winter (28.7% and 32.7%) and were lowest in summer (21.1% and 18.0%). COPD hospitalisations were significantly higher in winter than summer (OR: 1.39; 95% CI: 1.1-1.8), with mortality showing a similar pattern. Key risk factors for hospitalisation and death varied by disease.

Conclusion: Respiratory hospitalisations and deaths in India follow a clear seasonal trend, with winter posing the highest risk and summer the lowest. COPD, TB, RTI, asthma, pleural effusion, lung cancer, bronchiectasis, and ILD were the most frequent causes. These findings underscore the need for targeted, season-specific strategies to manage respiratory diseases effectively.

Keywords: Asthma; bronchiectasis; chronic obstructive pulmonary disease; respiratory tract infection; seasonal trends; tuberculosis.

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Review

Scand J Immunol

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doi: 10.1111/sji.70146.

[Revisiting CD8⁺ T Cells in Allergy: The Emerging Role of Tc2 Cells](#)

[Sabrina de Souza Ferreira^{1,2}](#), [Christopher Andrew Tibbitt^{1,2}](#)

Affiliations Expand

- PMID: 42644295
- PMCID: [PMC13507951](#)
- DOI: [10.1111/sji.70146](#)

Abstract

Type 2 CD8⁺ T (Tc2) cells are increasingly recognised as contributors to allergic inflammation, yet remain less well understood than T helper 2 (Th2) cells and Group 2 innate lymphoid cells (ILC2s). Defined by production of IL-4, IL-5 and IL-13, Tc2 cells have been implicated in eosinophilic inflammation, airway hyperresponsiveness, mucus production, and chronic tissue inflammation in diseases including asthma, atopic dermatitis, and chronic rhinosinusitis. Emerging evidence suggests that Tc2 differentiation and function are shaped by alarmins, lipid mediators, hypoxia, and immunometabolic pathways involving glycolysis, fatty acid metabolism, and serotonin signalling. Compared with Th2 cells, Tc2 cells may exhibit distinct features including tissue adaptation, responsiveness to innate inflammatory cues, and relative corticosteroid resistance, suggesting non-redundant roles in sustaining chronic allergic inflammation. Current biologic therapies targeting Type 2 pathways likely influence Tc2 activity, although their effects on Tc2-driven inflammation remain unclear. Here, we review current understanding of Tc2 cell phenotype, differentiation, immunometabolic regulation, and effector functions, and summarise evidence linking Tc2 cells to allergic disease. We also highlight key unanswered questions regarding Tc2 lineage stability, tissue residency, antigen specificity, and therapeutic targeting. Together, these findings position Tc2 cells as emerging amplifiers of Type 2 immunity and potential contributors to treatment-resistant allergic disease.

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Conflict of interest statement

The authors declare no conflicts of interest.

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- [1 figure](#)

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Nature

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. 2026 Sep;657(8130):11.

doi: 10.1038/d41586-026-02611-4.

[Asthma in some boys stops at puberty: mouse results hint at why](#)

No authors listed

- PMID: 42642477
- DOI: [10.1038/d41586-026-02611-4](#)

No abstract available

Keywords: Immunology.

- [1 reference](#)

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Observational Study

Pharmacotherapy

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. 2026 Sep;46(9):e70194.

doi: 10.1002/phar.70194.

Antihyperglycemic Drugs and Risk of Asthma Exacerbation in Patients With Asthma and Type 2 Diabetes: A Multinational Retrospective Cohort Study

Chun-Tse Hung¹, Chen-Yen An², Yao-Cheng Tsai^{3,4}, Chi-Won Suk⁵, Chung-Hsuen Wu⁶

Affiliations Expand

- PMID: 42618217
- PMCID: [PMC13489788](#)
- DOI: [10.1002/phar.70194](#)

Abstract

Background: Antihyperglycemic drugs have shown benefits in asthma control. However, evidence regarding the comparative effectiveness of glucagon-like peptide-1 receptor agonists (GLP-1 RAs) and sodium-glucose cotransporter-2 inhibitors (SGLT-2is) in reducing asthma exacerbations remains inconsistent.

Objective: We aimed to evaluate the association of GLP-1 RAs versus SGLT-2is with risk of asthma exacerbation among patients with asthma and type 2 diabetes.

Methods: This retrospective cohort study used electronic health record data from the TriNetX Global Collaborative Network. Adults with asthma and type 2 diabetes who initiated GLP-1 RAs or SGLT-2is between January 1, 2013, and June 30, 2024, were included. The primary outcome was the time to first asthma exacerbation. Secondary outcomes included first episode of asthma symptoms or systemic corticosteroid use. Patients were followed for up to 6 months in the main analysis. Propensity score matching was performed to balance baseline characteristics between groups. Cox proportional hazards models were used to estimate hazard ratios (HRs) with 95% confidence intervals (CIs).

Results: A total of 100,746 patients were included, comprising 61,955 GLP-1 RA users and 38,791 SGLT-2i users. After 1:1 matching, both groups consisted of 28,831 patients. GLP-1 RAs were associated with a decreased risk of asthma exacerbation compared with SGLT-2is (HR, 0.88; 95% CI, 0.85-0.91). GLP-1 RAs were also associated with a decreased risk of experiencing asthma symptoms (HR, 0.89; 95% CI, 0.82-0.97) and receiving systemic corticosteroids (HR, 0.79; 95% CI, 0.76-0.82). Results from sensitivity analyses were generally consistent, but the association for asthma exacerbation was not observed when follow-up was extended to 1 year (HR, 0.95; 95% CI, 0.89-1.02).

Conclusion: GLP-1 RAs were associated with a decreased risk of asthma exacerbation compared to SGLT-2is among patients with asthma and type 2 diabetes. As these findings reflect associations rather than causal effects, further investigation through randomized trials is warranted.

Keywords: asthma; asthma exacerbation; electronic health records; glucagon-like peptide-1 receptor agonists; sodium-glucose cotransporter-2 inhibitors; type 2 diabetes.

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Conflict of interest statement

The authors declare no conflicts of interest.

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Randomized Controlled Trial

Pediatrics

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. 2026 Sep 1;158(3):e2025074267.

doi: 10.1542/peds.2025-074267.

[Asthma Exacerbation Risk and School Asthma Readiness](#)

[Chén C Kenyon](#)^{1 2 3}, [DanaRose Negro](#)^{1 2 3}, [Jaime Fluehr](#)⁴, [Justine Shults](#)^{5 6}, [Hannah Seay](#)⁷, [Julie Pappas](#)⁸, [Tyra Bryant-Stephens](#)^{1 2 3 4}

Affiliations Expand

- PMID: 42571890
- DOI: [10.1542/peds.2025-074267](#)

Abstract

Objectives: School-based asthma management is a key facet of child asthma care. We aimed to describe the proportion of students whose schools have child-specific components of asthma care, derive a composite metric of these components ("school asthma readiness"), and assess its association with asthma exacerbations (asthma risk) in the preceding year.

Methods: Within a nested cohort of children enrolled in a larger randomized clinical trial, we assessed the baseline proportion of children whose school had elements of necessary asthma care. We then derived a "school asthma readiness" composite and used ordinal logistic regression to model the association between number of asthma exacerbations in the preceding year and the composite, accounting for demographic, clinical, and school characteristics.

Results: Of 202 participants aged 5 to 13 years, most identified as Black (95%) and non-Hispanic (98%), and most participants (73%) had an emergency department visit for asthma in the year before enrollment. Most students' schools (79%) had awareness of the child's asthma diagnosis, whereas fewer had reliever medications and valved holding chambers (both 31%) and asthma care plans (7%). Asthma exacerbations in the prior year were associated with a significantly higher school asthma readiness in bivariate (odds ratio [OR], 1.44 [95% CI, 1.14-1.82]; $P = .002$) and multivariable analysis (OR, 1.31 [95% CI, 1.02-1.7]; $P = .037$).

Conclusions: A minority of children attended schools that were equipped to manage asthma symptoms. More past exacerbations were associated with higher school readiness, suggesting that more work is needed to support proactive asthma care in schools.

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Comment in

- [Preparing for School Asthma Readiness.](#)

Brunner WM, Kjolhede C. *Pediatrics*. 2026 Sep 1;158(3):e2026077133. doi: 10.1542/peds.2026-077133. PMID: 42571888 No abstract available.

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Editorial

Pediatrics

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. 2026 Sep 1;158(3):e2026077133.

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[Preparing for School Asthma Readiness](#)

[Wendy M Brunner](#)¹, [Chris Kjolhede](#)¹

Affiliations Expand

- PMID: 42571888
- DOI: [10.1542/peds.2026-077133](#)

No abstract available

Comment on

- [Asthma Exacerbation Risk and School Asthma Readiness.](#)

Kenyon CC, Negro D, Fluehr J, Shults J, Seay H, Pappas J, Bryant-Stephens T. Pediatrics. 2026 Sep 1;158(3):e2025074267. doi: 10.1542/peds.2025-074267. PMID: 42571890 Clinical Trial.

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Observational Study

Respir Med

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. 2026 Sep;261:109076.

doi: 10.1016/j.rmed.2026.109076. Epub 2026 Aug 3.

De-escalation of inhaled corticosteroids and other maintenance asthma therapies in dupilumab-treated patients with severe asthma: a real-world study

Matteo Bonato¹, Elisabetta Favero², Michele Ciresi³, Elisabetta Marcon⁴, Francesca Savoia³, Anna Talia Gaccione⁴, Matteo Dalla Libera³, Martina Turrin⁴, Marco Stellin⁵, Massimo Sonogo⁵, Enzo Emanuelli⁵, Marco Caminati⁶, Gianenrico Senna⁷, Micaela Romagnoli³

Affiliations Expand

- PMID: 42546934
- DOI: [10.1016/j.rmed.2026.109076](https://doi.org/10.1016/j.rmed.2026.109076)

Abstract

Background: Biologic therapies for severe T2-high asthma demonstrated oral corticosteroid-sparing effects, but evidence on the harmlessness of de-escalating inhaled corticosteroids and other in patients controlled with dupilumab remains limited.

Objective: To evaluate, in a real-world setting, the clinical impact of de-escalating high-dose ICS, LAMA and LTRA in patients with severe asthma controlled with dupilumab.

Methods: We conducted a retrospective bicentric observational study including 54 patients with severe asthma who initiated dupilumab between January 2022 and December 2023. Changes in maintenance therapy during the first year were classified as de-escalation, continuation, or never treated. Primary outcomes at 18 months included ACT score, acute exacerbation rate (AER), FEV₁, their variation from baseline, chronic OCS use and clinical remission.

Results: Dupilumab significantly improved asthma control, lung function, AER, and OCS use. The proportion of patients receiving high-dose ICS decreased from 85.1% at baseline to 47.1% at 18 months ($p < 0.001$). Similar trends for LAMA and LTRA. Primary outcomes at 18 months did not differ significantly between patients who de-escalated maintenance therapy and those who continued treatment. Clinical remission was achieved in 53.7% of patients at 12 months and 63.4% at 18 months. Maintenance therapy de-escalation did not affect the likelihood of achieving clinical remission, although nearly half of patients in remission remained on low-to-medium dose ICS.

Conclusions: In patients with severe asthma controlled with dupilumab, de-escalation of high-dose ICS, LAMA, or LTRA was not associated with clinical deterioration and did not preclude achievement of clinical remission.

Keywords: Biologics; ICS; LAMA; LTRA; Leukotriene; Remission.

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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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Respir Med

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. 2026 Sep:261:109070.

doi: 10.1016/j.rmed.2026.109070. Epub 2026 Jul 30.

[Impact of obstructive lung disease on survival in patients with rheumatoid arthritis related interstitial lung disease](#)

[Lee M Fidler](#)¹, [Omri A Arbiv](#)², [Jolene H Fisher](#)³, [Shane Shapera](#)³, [Andrea S Gershon](#)⁴

Affiliations Expand

- PMID: 42532360
- DOI: [10.1016/j.rmed.2026.109070](#)

Abstract

Chronic obstructive pulmonary disease (COPD) and asthma are common comorbidities in rheumatoid arthritis related interstitial lung disease (RA-ILD), yet their impact on health outcomes is poorly understood. Using health services data from Ontario, Canada, we aimed to evaluate the effect of COPD, asthma and COPD/asthma overlap (ACO) on survival in patients with RA-ILD. Among 6470 RA-ILD patients 4437 (68.6%) had obstructive lung disease. COPD and ACO were associated with significantly increased mortality compared to RA-ILD with asthma and RA-ILD alone. These results highlight the burden and deleterious effects of COPD in patients with RA-ILD.

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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: Lee Fidler reports financial support was provided by Canadian Pulmonary Fibrosis Foundation. Lee Fidler reports financial support was provided by University of Toronto Temerty Faculty of Medicine. 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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Observational Study

Respir Med

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[Baseline predictors of short- and long-term clinical remission under mepolizumab in severe eosinophilic asthma in real-world practice](#)

[Belén Muñoz Sánchez¹](#), [Antonio León Lloreda²](#), [David Carlos Echavarría Kashmiri¹](#), [María Polonio González¹](#), [Juan Francisco Medina Gallardo¹](#), [Marta Ferrer Galván¹](#), [Auxiliadora Romero Falcón¹](#), [Rocío Martínez Núñez³](#), [Krasimira Baynova¹](#), [María Victoria Maestre Sánchez¹](#), [Javier Díez Sierra⁴](#), [Francisco Javier Álvarez Gutiérrez¹](#)

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Abstract

Clinical remission has emerged as a relevant treatment target in severe uncontrolled asthma (SUA), although predictors of remission under long-term biologic therapy remain insufficiently characterized. We aimed to identify baseline predictors of clinical remission in SUA patients treated with mepolizumab in routine clinical practice. We conducted a retrospective observational cohort study including consecutive adult SUA patients initiating mepolizumab at a tertiary asthma unit in southern Spain from January 2017 onwards. Clinical remission was assessed at 12 months and at 3-year follow-up according to the SEPAR-REMAS criteria. Baseline demographic, clinical, functional, and inflammatory variables were analyzed. Multivariable logistic regression models were constructed to identify independent predictors of remission. A total of 134 patients were evaluable at 12 months and 85 at 3 years. Clinical remission was achieved in 26.9% and 24.7% of patients, respectively. Patients achieving remission showed significantly higher baseline blood eosinophil counts and greater type 2 inflammatory burden. In multivariable analyses, after rescaling eosinophil counts to 100-cell/ μ L increments, higher baseline eosinophil counts remained independently associated with clinical remission at both 12 months (adjusted OR 1.082, 95% CI 1.014-1.154; $p = 0.017$) and 3 years (adjusted OR 1.172, 95% CI 1.035-1.326; $p = 0.012$), whereas nasal polypsis was independently associated with clinical remission only at 12 months. In conclusion, higher baseline blood eosinophil counts were independently associated with clinical remission at both follow-up time points, suggesting their potential value as a readily available biomarker for patient stratification in clinical practice.

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Conflict of interest statement

Declaration of competing interest BM-S has received honoraria for travel related to congress attendance from Chiesi, FAES, Grifols, Gebro, and Sanofi/Regeneron. AL-L has received travel support from Chiesi, Bial, Menarini, and FAES. DCE has received travel support from AstraZeneca and FAES. MP-G has received travel support from FAES. JFM-G has received consulting fees from AstraZeneca, Sanofi, GSK, Chiesi, and Menarini, as well as travel support from AstraZeneca, Bial, Orion, and Sanofi. MF-G has received support for attending meetings and/or travel from Chiesi, Bial, and Menarini. AR-F has received fees from AstraZeneca, GSK, and Chiesi. KB certifies that she has no affiliations with or involvement in any organization or entity with any financial or non-financial interest (such as honoraria, educational grants, participation in speakers' bureaus, membership, employment, consultancies, stock ownership, or other equity interest, as well as personal or professional relationships) in the subject matter or materials discussed in this manuscript. MVM-S certifies that she has no affiliations with or involvement in any organization or entity with any financial or non-financial interest (such as honoraria, educational grants, participation in speakers' bureaus, membership, employment, consultancies, stock ownership, or other equity interest, as well as personal or professional relationships) in the subject matter or materials discussed in this manuscript. JD-S certifies that he has no affiliations with or involvement in any organization or entity with any financial or non-financial interest (such as honoraria, educational grants, participation in speakers' bureaus, membership, employment, consultancies, stock ownership, or other equity interest, as well as personal or

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[Step-DAWN: an Italian algorithm proposed for the management of inhaled corticosteroids in severe asthma](#)

[Laura Pini](#)¹, [Bianca Beghe](#)², [Matteo Bonini](#)³, [Marco Caminati](#)⁴, [Giovanna Elisiana Carpagnano](#)⁵, [Carlotta Facchini](#)⁶, [Manuela Latorre](#)⁷, [Laura Malerba](#)⁶, [Andrea Matucci](#)⁸, [Pierachille Santus](#)⁹, [Nicola Scichilone](#)¹⁰, [Gianenrico Senna](#)¹¹, [Antonio Spanevello](#)¹², [Pierluigi Paggiaro](#)¹³, [Francesco Blasi](#)¹⁴, [Giorgio Walter Canonica](#)¹⁵

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Free article

Abstract

Purpose of research: Biologics have transformed the management of severe asthma, establishing clinical remission as a realistic treatment objective. Moreover, they offer the potential to reduce background treatment with inhaled corticosteroids (ICS). Although guidelines recommend ICS dose reduction in patients achieving

disease control, they provide limited guidance on how to implement tapering. In this context, we developed Step-DAWN (De-escalation of ICS in Asthma With a Novel algorithm), a consensus-based protocol that guides ICS tapering in adults with severe asthma receiving biologic therapy.

Methods: Step-DAWN was ideated through a modified Delphi process; a Steering Committee consisting of two Italian specialists and two pharmaceutical Medical Affairs professionals drafted 30 statements, which were voted on by an Expert Panel comprising 12 specialists.

Results: Consensus was reached on 21 of 30 statements in the first round; three other statements reached consensus in the second round; six statements did not reach consensus. The Step-DAWN protocol was designed based on 24 statements that achieved consensus. Patients eligible for Step-DAWN should have maintained the four criteria of complete clinical remission (cCR) for at least 6 months. ICS dose should be reduced gradually, with follow-up assessments not exceeding 6 months. In case of loss of eligibility criteria, potential causes should be addressed before reattempting tapering. Fractional exhaled nitric oxide (FeNO) and blood eosinophil count (BEC) were identified as key biomarkers for monitoring airway inflammation.

Conclusion: Step-DAWN is the first consensus-based protocol designed by Italian specialists to provide guidance for ICS tapering in patients with severe asthma treated with biologics.

Keywords: Algorithm; Biologics; Inhaled corticosteroids; Remission; Severe asthma; Tapering.

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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: FB reports grants and/or personal fees from AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, Grifols, Insmmed, Menarini, OM Pharma, Pfizer, Vertex, and Zambon. MB has received research grants, consultancy and speaker fees from AstraZeneca, Celltrion, Chiesi, Grifols, Glaxo Smith Kline, Lallemand, Lusofarmaco, Menarini, Niox, Omron, Regeneron and Sanofi. MC has received speaker/advisory board fees or research grants from AstraZeneca, Chiesi, GSK and Sanofi. GWC reports having received research grants as well as being lecturer or having received advisory board fees from: A. Menarini, Anallergo, Allergy Therapeutics, AstraZeneca, Celltrion, Chiesi Farmaceutici, Faes, Firma, Genentech, Guidotti, Glaxo Smith Kline, Hal Allergy, Innovacaremd, Novartis, OmPharma, RedMaple, Sanofi-Aventis, Sanofi-Genzyme, Stallergenes-Greer, Uriach Pharma. GEC has nothing to declare. CF and LM are AstraZeneca employees. AM reports having received lecturer and advisory board fees from: Allergy Therapeutics, AstraZeneca, Chiesi Farmaceutici, CSL Behring, Glaxo Smith Kline, Novartis, Sanofi-Aventis, Sanofi-Genzyme, Takeda. LP has received fees for grants, lectures and scientific boards from AstraZeneca, Glaxo Smith Kline, Chiesi Farmaceutici S.p.A, Menarini, Grifols. PS has received speaker/advisory board fee or research grants from AstraZeneca, Chiesi, GSK, Dompè, Zambon, Menarini International, Edmondpharma, Neopharmed Gentili, Sanofi. NS has received research grants from AstraZeneca, Sanofi and Vivisol; consultancy and speaker fees from AstraZeneca, Chiesi,

GlaxoSmithKline, Menarini, and Sanofi. GS reports having received advisory board and lecturer fees from: GSK, Sanofi, Regeneron, AstraZeneca, Menarini, and Chiesi. AS has received fees from AstraZeneca, GSK, Chiesi, Zambon, Menarini, Guidotti, Neopharmed, MSD. BB, ML, PP have nothing to declare.

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Review

Clin Chest Med

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[Airflow Obstruction and Dynamic Hyperinflation](#)

[John J Marini](#)¹

Affiliations Expand

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- DOI: [10.1016/j.ccm.2026.04.005](#)

Abstract

Dynamic hyperinflation with gas trapping, a key element of the shared pathophysiology of acutely exacerbated asthma and chronic airflow obstruction (COPD), underpins the serious consequences of positive pressure ventilation-increased workload, impaired muscular efficiency, and hemodynamic compromise. Although the basic therapeutic approach to ventilatory assistance is similar for both conditions, noninvasive ventilation, high-flow nasal cannula, and positive end-expiratory pressure are predictably more effective in COPD than asthma. The expanding deployment of extracorporeal gas exchange (extracorporeal membrane

oxygenation) now provides an attractive option in tertiary centers for the care of life-threatening and refractory ventilatory failure due to airflow obstruction.

Keywords: Asthma; Auto-PEEP; COPD; Dynamic hyperinflation; Extracorporeal gas exchange; Mechanical ventilation.

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Conflict of interest statement

Disclosure The author has no financial or ethical conflicts relevant to this work.

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Lancet Respir Med

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[FEF_{25-75%} trajectories from age 7 to 53 years, associations with childhood and parental preconception factors, and midlife COPD risk: a prospective cohort study](#)

[Jiacheng Liu](#)¹, [Caroline J Lodge](#)¹, [Jennifer L Perret](#)², [Don Vicendese](#)³, [N Sabrina Idrose](#)¹, [Daniel J Tan](#)⁴, [Adrian J Lowe](#)⁵, [Gayan Bowatte](#)⁶, [Garun S Hamilton](#)⁷, [Bircan Erbas](#)⁸, [Robert J Adams](#)⁹, [Iain Feather](#)¹⁰, [Christine R Jenkins](#)¹¹, [David Martino](#)¹², [Gita D Mishra](#)¹³, [Seif O Shaheen](#)¹⁴, [George R Washko](#)¹⁵, [John W Holloway](#)¹⁶, [Cecilie Svanes](#)¹⁷, [Richard R Wood-Baker](#)¹⁸, [David P Johns](#)¹⁹, [Michael J Abramson](#)²⁰, [E Haydn Walters](#)¹⁹, [Shyamali C Dharmage](#)²¹, [Dinh S Bui](#)¹

Affiliations Expand

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Free article

Abstract

Background: Existing trajectory studies have emphasised large-airway indices, but chronic obstructive pulmonary disease (COPD) might originate in smaller airways. This study aimed to investigate mid-to-small-airway function trajectories, their associated factors, and COPD risk.

Methods: In this prospective cohort study, probands (referred to throughout as offspring) were recruited to the Tasmanian Longitudinal Health Study from local schools across Tasmania, Australia at age 7 years. Pre-bronchodilator mean forced expiratory flow between 25% and 75% of the forced vital capacity (FEF_{25-75%}) of offspring was measured at age 7 years as a proxy measure of mid-to-small-airway function. Parents completed a comprehensive respiratory health survey on themselves and their offspring. Offspring were followed up at mean ages of 13, 18, 45, 50, and 53 years. Follow-up included pre-bronchodilator spirometry, demographic surveys, lifestyle factors, respiratory symptoms, and illnesses. Post-bronchodilator spirometry was measured at mean ages of 45 and 53 years. Parents were later approached to complete the 2010 Tasmanian Longitudinal Health Study Parents Postal Survey, which collected information on parental preconception factors, including exposures during their own childhood and adolescence. Group-based trajectory modelling was used to identify FEF_{25-75%} trajectories. Regression models were used to assess associations of FEF_{25-75%} trajectories with childhood and parental preconception factors, and with COPD risk by age 53 years.

Findings: Between Feb 23, 1968, and Nov 8, 2016, 2314 offspring from the Tasmanian Longitudinal Health Study were included. Six FEF_{25-75%} trajectories were identified: persistently low (144 [6.2%]); early normal-reduced growth-rapid decline (168 [7.3%]); early below average-reduced growth (740 [32.0%]); early low-accelerated growth (80 [3.5%]); average (976 [42.2%]; reference); and persistently high (206 [8.9%]). Three impaired trajectories across the lifespan were associated with COPD: persistently low (adjusted odds ratio 112 [95%CI 42-304]), early normal-reduced growth-rapid decline (41 [15-112]), and early below average-reduced growth (3.1 [1.0-9.2]) trajectories. Factors associated with impaired trajectories included no breastfeeding, the presence of asthma or wheeze, allergic rhinitis, and pneumonia or pleurisy during childhood, maternal asthma or wheeze, and parental smoking before conception. The persistently high trajectory was associated with parental preconception microbial-related exposures (ie, fathers sharing a childhood bedroom with three or more siblings and maternal cat keeping before completing puberty).

Interpretation: FEF_{25-75%} across the life course, particularly from early life, could be more relevant to COPD than previously recognised. Several childhood and novel parental preconception factors were associated with FEF_{25-75%} trajectories, although causality cannot be inferred due to no clear temporality of these associations. Our findings on the relationship between FEF_{25-75%} and COPD should be interpreted as life-course associations rather than as predictive. As COPD was rare in the average trajectory, the magnitude of effect estimates could be inflated.

Funding: National Health and Medical Research Council of Australia; The University of Melbourne; Clifford Craig Medical Research Trust; the Victoria, Queensland, and Tasmania Asthma Foundations; The Royal Hobart Hospital Research Foundation; Helen MacPherson Smith Trust; GlaxoSmithKline; China Scholarship Council.

Conflict of interest statement

Declaration of interests CJL, JLP, AJL, MJA, and SCD have received an investigator-initiated grant from GlaxoSmithKline for unrelated research. JLP and SCD also hold a similar grant from AstraZeneca for unrelated research. AJL has received fellowship funding from the Faculty of Medicine, Dentistry, and Health Sciences at The University of Melbourne. AJL has received an investigational product (EpiCeram) free of charge from Primus Pharmaceuticals for use in unrelated research. AJL and SCD have received grant funding from Sanofi Regeneron for unrelated research. RJA has received research grants from the National Health and Medical Research Council, Medical Research Future Fund, Hospital Research Foundation, Flinders Foundation, SafeWork SA, Sydney Trains, and Lifetime Support Authority for unrelated research; consulting fees from Takeda for participation in the Narcolepsy Expert Advisory Panel unrelated to this research; has participated in the Avecho Safety Monitoring Board; and has received equipment from Withings, ResMed, and Philips for unrelated research. GRW reports grants from the National Institutes of Health, paid to their institution for unrelated research; consulting fees from 35Pharma, Argenx, AstraZeneca, Genentech, GlaxoSmithKline, Inmed, Merck, Montai Therapeutics, PulmonX, Rage Biotech, Regeneron, and Sanofi unrelated to this research; and travel support from AstraZeneca and GlaxoSmithKline for advisory board meetings unrelated to this research. GRW is a co-founder and equity shareholder in Quantitative Imaging Solutions, a company that provides consulting services for image and data analytics. GRW also reports that their spouse works for Biogen. MJA has received investigator-initiated grants from Pfizer, Boehringer-Ingelheim, and Sanofi for unrelated research. MJA has also undertaken an unrelated consultancy for Sanofi and received a speaker's fee from GlaxoSmithKline. All other authors declare no competing interests.

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Immune checkpoint inhibitors were not associated with poor asthma control in patients with pre-existing asthma

Parker Cordial¹, Sritej Devineni¹, Jianing Ma², Iman Quadri³, Ryan Wilson³, Joanne Kim⁴, Kevin Ho⁵

Affiliations Expand

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- DOI: [10.1016/j.rmed.2026.109047](https://doi.org/10.1016/j.rmed.2026.109047)

Free article

Abstract

Background: Immune checkpoint inhibitors (ICIs) are associated with various pulmonary toxicities. Their impact on pre-existing asthma remains poorly characterized.

Methods: We conducted a retrospective cohort study of adult cancer patients with pre-existing asthma who received at least one ICI dose. Asthma control before and after ICI therapy was assessed based on changes in asthma medications, exacerbations requiring systemic corticosteroids, and asthma-related hospitalizations. Poor asthma control was defined as worsening in any of these parameters following ICI initiation.

Results: Among 340 patients, 56 (16.5%) experienced poor asthma control after ICI initiation, including medication escalation in 40 (11.7%), increased corticosteroid-treated exacerbations in 22 (6.5%), and increased asthma-related hospitalizations in 9 (2.7%). ICI doses and CIP were associated with poor asthma control in univariate analyses, and ICI doses remained independently associated in multivariable analysis. Traditional clinical factors associated with poor asthma control or ICI-related pulmonary toxicity were not associated with poor asthma control. Sensitivity analyses excluding patients with CIP yielded similar findings.

Conclusions: Most patients with pre-existing asthma did not experience poor asthma control during ICI treatment and within 6 months of discontinuation. No clear baseline clinical predictors were identified, and the observed association with ICI doses may reflect longer treatment exposure and follow-up time rather than a dose-dependent effect. These findings support the continued use of ICIs in patients with asthma, with appropriate monitoring. Larger, prospective studies are needed to determine whether specific patient populations are at higher risk for poor asthma control after ICI treatment.

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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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[**The PEACE-24 study: Tezepelumab improves exercise tolerance and symptoms control in severe asthma**](#)

[Benedetta Bondi](#)¹, [Fulvio Braidò](#)¹, [Alessandro Pilo](#)², [Marcello Mincarini](#)³, [Federico Di Marco](#)¹, [Anna Maria Riccio](#)¹, [Ilaria Baiardini](#)⁴, [Francesca Ricchiuto](#)¹, [Diego Bagnasco](#)⁵

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 profile¹⁻⁵. 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 6-min walking test (6 MW T).

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 6 MW T. 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 6 MW T, 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 FEV₁ and distance covered ($\rho = 0.658$, $p = 0.028$).

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: Effort; Real life; Severe asthma; TSLP; Tezepelumab; Walking test.

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J Allergy Clin Immunol Glob

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Effect of once-daily ICS/LAMA/LABA triple therapy versus ICS/LABA on respiratory symptoms (E-RS: Asthma): Analysis of the phase IIIA CAPTAIN trial

Emilio Pizzichini^{1,2}, Guy Brusselle³, Jodie Crawford⁴, Hiromasa Inoue⁵, Huib A M Kerstjens⁶, John Oppenheimer⁷, Alberto Papi⁸, Ian D Pavord⁹, David Slade¹⁰, Liza Yuanita¹¹, Alison Moore¹²

Affiliations Expand

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- PMCID: [PMC13356626](#)
- DOI: [10.1016/j.jaciq.2026.100741](#)

Abstract

Background: Addition of the long-acting muscarinic antagonist umeclidinium (UMEC) to the inhaled corticosteroid/long-acting β_2 -agonist (ICS/LABA) combination fluticasone furoate/vilanterol (FF/VI) improved lung function in adults with uncontrolled moderate to severe asthma in the CAPTAIN (Clinical study of Asthma Patients receiving Triple therapy through A single INhaler) study; however, the impact on symptoms requires further investigation.

Objective: We sought to evaluate the effect of adding UMEC to FF/VI on asthma symptoms.

Methods: The CAPTAIN study was a phase IIIA, randomized, controlled, 24- to 52-week study of patients with uncontrolled moderate to severe asthma despite ICS/LABA receiving once-daily single-inhaler FF/VI (100/25 or 200/25 μ g) or FF/UMEC/VI (100/31.25/25, 100/62.5/25, 200/31.25/25, or 200/62.5/25 μ g). Here, we compare the effect of pooled FF/UMEC 62.5/VI (100/62.5/25 and 200/62.5/25 μ g) versus FF/VI (100/25 and 200/25 μ g) on symptom control using prespecified analyses of change from baseline in Evaluating Respiratory Symptoms in Asthma (E-RS: Asthma) total and domain scores, and proportion of patients meeting an E-RS: Asthma total score responder threshold. We also performed *post hoc* analyses assessing the impact of baseline type 2 inflammation status on treatment response.

Results: Least-squares mean (95% CI) reductions from baseline in E-RS: Asthma total score exceeded the minimum clinically important difference (-2.0 units) and were numerically greater with FF/UMEC 62.5/VI (-2.89 [-3.15 to -2.64]; n = 814) versus FF/VI (-2.47 [-2.73 to -2.22]; n = 813). The proportion of responders (45% [n = 360] vs 41% [n = 327]) and odds of response (odds ratio, 1.18 [95% CI, 0.96 to 1.45]) were numerically greater with FF/UMEC 62.5/VI versus FF/VI. Similar trends were observed irrespective of type 2 status.

Conclusions: Patients with symptomatic asthma may benefit from optimized treatment interventions, such as adding a long-acting muscarinic antagonist to ICS/LABA.

Keywords: Asthma; Evaluating Respiratory Symptoms; fluticasone furoate; inhaled corticosteroid; long-acting muscarinic antagonist; long-acting β 2-agonist; symptoms; triple therapy; umeclidinium; vilanterol.

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Conflict of interest statement

This study was funded by GSK (GSK study no. 205715; NCT02924688). Disclosure of potential conflict of interest: E. Pizzichini was an employee of GSK at the time of the study and owned stocks/shares in GSK. G. Brusselle has received speaker fees from and served on advisory boards for AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, Novartis, and Sanofi. J. Crawford, D. Slade, L. Yuanita, and A. Moore are employed by GSK and hold financial equities in GSK. H. Inoue has received institutional grants or personal fees for consulting or lecturing from AstraZeneca, Boehringer Ingelheim, GSK, Kyorin, Novartis, Omron, Sanofi, and Teijin-Pharma. H. A. M. Kerstjens has received research or educational grants and served on advisory boards for Boehringer Ingelheim, GSK, and Novartis and has served on advisory boards for Chiesi and AstraZeneca, all paid to their institution. J. Oppenheimer has served on adjudication committees or data and safety monitoring boards for AstraZeneca, GSK, Novartis, and Sanofi-Regeneron; and has received grants and personal fees from GSK. A. Papi has received research grants from Chiesi, AstraZeneca, GSK, Boehringer Ingelheim, Teva, and Sanofi; has received consulting fees from Chiesi, AstraZeneca, GSK, Novartis, Sanofi, IQVIA, Avillion, Elpen Pharmaceuticals, and MSD; has received payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing, or educational events from Chiesi, AstraZeneca, GSK, Boehringer Ingelheim, Menarini, Novartis, Zambon, Mundi Pharma, Teva, Sanofi, Edmond Pharma, and IQVIA; and has participated on a data safety monitoring board or advisory board for Chiesi, AstraZeneca, GSK, Novartis, Sanofi, IQVIA, Avillion, Elpen Pharmaceuticals, and MSD. I. D. Pavord has received speaker's fees, payments for organizing education events, honoraria for attending advisory panels, sponsorship to attend international scientific meetings, research grants or payments to support Food and Drug Administration approval meetings from Aerocrine, Almirall, AstraZeneca, Boehringer Ingelheim, Chiesi, Circassia, Roche-Genentech, GSK, Knopp, Merck, Novartis, Sanofi-Regeneron, and Teva; has acted as an expert witness for a patent dispute involving AstraZeneca and Teva; is a co-patent holder for the Leicester Cough Questionnaire; and has received payments for use of the Leicester Cough Questionnaire in clinical trials from Bayer, Insmed, and Merck.

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Observational Study

Respir Med

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. 2026 Sep;261:109030.

doi: 10.1016/j.rmed.2026.109030. Epub 2026 Jul 11.

[Exhaled acetylcholine in breath condensate as a non-invasive biomarker of asthma control: Insights from patients treated with extrafine single-inhaler triple therapy](#)

[Vitaliano Nicola Quaranta¹](#), [Francesca Montagnolo¹](#), [Giulia Amoroso¹](#), [Teresa Ranieri¹](#), [Piera Soccio²](#), [Donato Lacedonia²](#), [Giulia Scioscia²](#), [Andrea Portacci¹](#), [Silvano Dragonieri³](#), [Alessio Marinelli¹](#), [Leonardo Maselli¹](#), [Giovanna Elisiana Carpagnano¹](#)

Affiliations Expand

- PMID: 42435915
- DOI: [10.1016/j.rmed.2026.109030](#)

Free article

Abstract

A substantial proportion of patients with asthma remain uncontrolled despite high-dose ICS/LABA therapy, often due to persistent small-airway dysfunction and heightened cholinergic activation. Acetylcholine (ACh) produced by neuronal and non-neuronal airway cells amplifies inflammation, bronchoconstriction, and remodelling. Exhaled breath condensate (EBC) provides a non-invasive means to sample the distal airways, but ACh has never been quantified in EBC in asthma. Extrafine single-inhaler triple therapy (SITT) may modulate cholinergic activity through muscarinic blockade and improved small-airway deposition. To determine whether ACh concentration in EBC (ACh-EBC) distinguishes patients with not-well-controlled asthma on high-dose ICS/LABA from those achieving good control under extrafine SITT, and to evaluate its relationship with functional and inflammatory markers. In this cross-sectional observational study, 22 adults with asthma managed at the University Hospital of Bari were stratified by asthma control and treatment: uncontrolled asthma on high-dose ICS/LABA (n = 15) and controlled asthma on extrafine SITT (n = 7), alongside healthy controls (n = 7). ACh-EBC was quantified using a competitive high-sensitivity ELISA (A3574). Secondary assessments included FeNO50/FeNO350, spirometry, plethysmography, and impulse oscillometry (IOS). Group comparisons, ROC analysis, and discriminant analysis were performed. ACh-EBC exhibited a clear gradient: highest in uncontrolled ICS/LABA patients (3.23 pg), intermediate in SITT-controlled patients

(2.97 pg), and lowest in healthy controls (2.75 pg; $p = 0.001$). F_{res} was significantly higher in uncontrolled asthma (18.80 vs. 13.50 Hz; $p = 0.037$), while FeNO50 was also elevated ($p = 0.037$). ROC analysis showed strong discriminatory accuracy for ACh-EBC (AUC 0.867; $p = 0.007$), with an optimal threshold of 3.000 pg. A multivariable discriminant model combining oscillometric and biochemical markers achieved 77.3% cross-validated accuracy. ACh-EBC is a promising non-invasive biomarker reflecting cholinergic activation and small-airway dysfunction in asthma. Elevated ACh-EBC identifies patients remaining uncontrolled on ICS/LABA, whereas lower levels in those receiving extrafine SITT mirror improved control and reduced cholinergic signalling. Integration of ACh-EBC with FeNO and IOS indices may support precision-medicine approaches aimed at identifying cholinergic-driven asthma and optimizing escalation to triple therapy.

Keywords: Acetylcholine; Asthma control; Biomarkers; Cholinergic activation; Exhaled breath condensate; Extrafine triple therapy; LAMA; Small-airway dysfunction.

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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

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21

J Allergy Clin Immunol Glob

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. 2026 Jun 11;5(5):100746.

doi: 10.1016/j.jacig.2026.100746. eCollection 2026 Sep.

[Biologic effectiveness increases with earlier biologic initiation after severe asthma onset](#)

[Arijun Mohan](#)¹, [Reynold A Panettieri Jr](#)², [Wendy C Moore](#)³, [Njira L Lugogo](#)¹, [Wenjiong Zhou](#)⁴, [Andrew W Lindsley](#)⁵, [Donna D Carstens](#)⁶, [Christopher S Ambrose](#)⁷

Affiliations Expand

- PMID: 42433269
- PMCID: [PMC13351466](#)
- DOI: [10.1016/j.jaciq.2026.100746](#)

Abstract

Background: Patients with long-standing, uncontrolled, severe asthma can develop airway fibrosis and remodeling due to chronic inflammation, causing irreversible pulmonary damage.

Objective: This analysis evaluated the effect of the time from severe asthma onset to initiation of a biologic on treatment effectiveness in US patients with subspecialist-treated severe asthma.

Methods: CHRONICLE (ClinicalTrials.gov identifier [NCT03373045](#)) was an observational study of US adults with subspecialist-treated severe asthma who were receiving biologics or maintenance systemic corticosteroids or had persistently uncontrolled asthma despite high-dose inhaled corticosteroids and additional controllers. Annualized asthma exacerbation rates in the 12 months before and 12 months after initiation of biologic treatment were compared. Factors with a univariate association ($P < .1$) with the rate of exacerbation during treatment (12 months after initiation) were included in a multivariable model to identify independent, statistically significant associations.

Results: This analysis included 244 patients enrolled between February 2018 and February 2024 who initiated biologic treatment and had complete data. Exacerbation rates decreased by 59% from the pre-biologic initiation period to the post-biologic initiation period. Multivariable analyses demonstrated a significant association between the rate of exacerbation during treatment and time from severe asthma onset to initiation of treatment with a biologic (rate coefficient = 1.04 [95% CI = 1.02-1.07]; $P < .001$) after adjustment for the preinitiation exacerbation rate (rate coefficient = 1.48 [95% CI = 1.30-1.68]; $P < .001$) and Black versus White race (rate ratio: 2.40 [95% CI = 1.25-4.61]; $P = .009$).

Conclusion: With adjustment for factors including prior exacerbations and race, a shorter time from severe asthma onset to initiation of a biologic was associated with a lower rate of exacerbation during treatment and increased effectiveness of treatment with a biologic.

Keywords: Allergists; biologic therapy; effectiveness; exacerbations; longitudinal; observational; pulmonologists; real-world; severe asthma.

Conflict of interest statement

The study sponsors, AstraZeneca and Amgen, contributed to the study design and data interpretation and provided funding for medical writing assistance.

AstraZeneca conducted the study and coordinated the data management and statistical analysis in collaboration with investigators at academic centers. Data sharing statement: The data supporting the findings of this study are available from the corresponding author on reasonable request. Individuals who were or were not involved in the CHRONICLE study may submit publication proposals to the study's publication steering committee by contacting the corresponding author. Disclosure of potential conflict of interest: A. Mohan has participated in advisory boards for Regeneron Pharmaceuticals and Verona Pharma. R. A. Panettieri Jr has participated in advisory boards for and received grant support from AstraZeneca, Genentech, Novartis, Regeneron Pharmaceuticals, and Sanofi. W. C. Moore has participated in advisory boards for AstraZeneca, GSK, Regeneron Pharmaceuticals, and Sanofi; in addition, she has received grant support from Areteia Therapeutics; AstraZeneca; Boehringer Ingelheim; Genentech; GSK; the National Heart, Lung, and Blood Institute (National Institutes of Health); Regeneron Pharmaceuticals, Sanofi, and Teva Pharmaceuticals. N. L. Lugogo has participated in advisory boards for Amgen, AstraZeneca, Genentech, GSK, Novartis, Regeneron Pharmaceuticals, Sanofi, and Teva Pharmaceuticals; in addition, she has received the following: fees for non-speaker bureau presentations from AstraZeneca and GSK; speaker fees (her own content) from NIOX group; travel support from AstraZeneca; and grant support from Amgen, AstraZeneca, Avillion, Genentech, Gossamer Bio, GSK, Regeneron Pharmaceuticals, Sanofi, and Teva Pharmaceuticals. W. Zhou is a consultant for ClinChoice, which was contracted by AstraZeneca for statistical analysis. A. W. Lindsley is an employee and shareholder of Amgen. D. D. Carstens and C. S. Ambrose are employees and shareholders of AstraZeneca.

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Editorial

Am J Respir Crit Care Med

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. 2026 Sep 1;212(9):2075-2078.

doi: 10.1093/ajrccm/aamag329.

Eosinophil-derived breath biomarkers and response to anti-IL-5/5R biologics in severe asthma

Thibault Massenet¹, Pierre-Hugues Stefanuto¹, Rosa Peltrini², Rebecca Cordell³, Hnin Aung², Eleanor Quek⁴, Shahd Abuhelal⁴, Matthew Richardson², Christopher Brightling², Paul Monks³, Neil Greening², Michael Wilde⁵, Agnieszka Smolinska⁶, Florence Schleich⁷, Salman Siddiqui⁴

Affiliations Expand

- PMID: 42421225
- DOI: [10.1093/ajrccm/aamag329](https://doi.org/10.1093/ajrccm/aamag329)

No abstract available

Comment in

- [To the airway and beyond: introduction to an AJRCCM special section on airway disease.](#)

Bush A, Chotirmall SH, Han MK, Harhay M. Am J Respir Crit Care Med. 2026 Sep 1;212(9):1879-1881. doi: 10.1093/ajrccm/aamag368. PMID: 42518197 No abstract available.

Comment on

- [To the airway and beyond: introduction to an AJRCCM special section on airway disease.](#)

Bush A, Chotirmall SH, Han MK, Harhay M. Am J Respir Crit Care Med. 2026 Sep 1;212(9):1879-1881. doi: 10.1093/ajrccm/aamag368. PMID: 42518197 No abstract available.

Supplementary info

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Editorial

Respirology

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. 2026 Sep;31(9):854-855.

doi: 10.1002/resp.70287. Epub 2026 Jul 8.

[Not All Flares Are Equal: Stratifying Risk During Asthma/COPD Overlap Exacerbations](#)

[Helen O'Brien](#)^{1,2}, [Alessandro N Franciosi](#)^{1,2}

Affiliations Expand

- PMID: 42419728
- PMCID: [PMC13535705](#)
- DOI: [10.1002/resp.70287](#)

No abstract available

Keywords: acute exacerbation; asthma/COPD overlap; eosinophil; inflammatory phenotyping; neutrophil-to-lymphocyte ratio.

Conflict of interest statement

The authors declare no conflicts of interest.

- [7 references](#)

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. 2026 Jun 12;5(5):100749.

doi: 10.1016/j.jacig.2026.100749. eCollection 2026 Sep.

Early response toward clinical remission with dupilumab in severe asthma: Real-world cohort

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Affiliations Expand

- PMID: 42405351
- PMCID: [PMC13331999](#)
- DOI: [10.1016/j.jacig.2026.100749](#)

Abstract

Background: Clinical remission is an important treatment goal in severe asthma; however, durable remission frameworks generally require sustained disease control over longer periods. Whether dupilumab induces an early response toward this goal in real-world practice remains unclear.

Objective: We sought to evaluate early response toward clinical remission at 24 weeks after dupilumab initiation and to identify baseline factors associated with this outcome.

Methods: In this multicenter, prospective cohort at 13 Japanese institutions, adults with severe asthma treated with dupilumab were followed for 24 weeks. Given the limited observation period, an early response toward clinical remission was defined as meeting modified 4-component remission-oriented criteria: Asthma Control Test score 20 or higher, FEV₁ % predicted 80% or higher at week 24, no exacerbations, and no oral corticosteroid use (weeks 16-24). Multivariable logistic regression identified baseline factors associated with this outcome, and receiver-operating characteristic analysis evaluated baseline fractional exhaled nitric oxide (Feno).

Results: Of 103 enrolled patients, 70 had complete data; 38 (54.3%; 95% CI, 41.9%-66.3%) met the modified remission-oriented criteria at week 24. Higher baseline Feno, higher FEV₁ % predicted, and absence of maintenance oral corticosteroid use were associated with this outcome. Baseline Feno showed modest discrimination (area under the curve, 0.65; 95% CI, 0.51-0.78).

Conclusions: Approximately half of the patients met the modified remission-oriented criteria at 24 weeks after dupilumab initiation, representing an early response toward clinical remission rather than sustained clinical remission itself. Baseline Feno and lung function may help identify patients more likely to show this response.

Keywords: Feno; Severe asthma; baseline factors; biomarkers; dupilumab; early response toward clinical remission.

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Conflict of interest statement

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors. Disclosure of potential conflict of interest: K. Mizumura received honoraria for lectures from AstraZeneca, Boehringer Ingelheim, Novartis, and GlaxoSmithKline. Y. Gon received research funding from Novartis, AstraZeneca, and GlaxoSmithKline and honoraria for lectures from AstraZeneca, GlaxoSmithKline, and Sanofi. A. Tanaka received honoraria for lectures from AstraZeneca, GlaxoSmithKline, and Sanofi. S. Maruoka received honoraria for lectures from AstraZeneca, GlaxoSmithKline, Novartis, Sanofi, Kyorin, and Takeda. H. Sagara received honoraria for lectures from AstraZeneca, GlaxoSmithKline, Kyorin, MSD, Sanofi, Boehringer Ingelheim, Novartis, and Kracie. N. Harada received research funding from AstraZeneca, Daikin (China) Investment, Sanofi, and TOSOH Corporation and honoraria for lectures from AstraZeneca, GlaxoSmithKline, Kyorin, and Sanofi. K. Takahashi received research funding from Asahi Kasei Pharma Corporation, Bayer Yakuhin, Chugai, Daiichi Sankyo, Eli Lilly, Kyorin, Kyowa Kirin, Nippon Boehringer Ingelheim, Nippon Kayaku, Nippon Shinyaku, Nipro, Novartis, Ono, Pfizer, Sanofi, Shionogi, Taiho, Takeda, Teijin, and Tsumura; honoraria for lectures from Abbott Japan, AstraZeneca, Bristol-Myers, Chugai, Eli Lilly, Janssen, Kyorin, Meiji Seika, Merck, MSD, Nippon Boehringer Ingelheim, Nippon Kayaku, Novartis, Ono, Pfizer, Sumitomo Dainippon Pharma, Taiho, Takeda, Thermo Fisher Scientific, and Viatris outside the submitted work; and holds a patent (P6840330) for detecting cells, managed by Juntendo University in Japan. T. Shirai received honoraria for lectures from Sanofi. K. Masaki received honoraria for lectures from AstraZeneca, GlaxoSmithKline, Sanofi, Kyorin, and Novartis. K. Fukunaga received research funding from Boehringer Ingelheim and Chugai and honoraria for lectures from Boehringer Ingelheim, Novartis, Sanofi, GlaxoSmithKline, AstraZeneca, and Kyorin. K. Kobayashi received honoraria for lectures from AstraZeneca, GlaxoSmithKline, and Novartis. H. Nagase received research funding from GlaxoSmithKline; consulting fees from AstraZeneca, GlaxoSmithKline, and Sanofi; and honoraria for lectures from AstraZeneca, GlaxoSmithKline, Sanofi, and Novartis, and served on the advisory boards of AstraZeneca and GlaxoSmithKline. N. Miyahara received honoraria for lectures from AstraZeneca, GlaxoSmithKline, Sanofi, and Boehringer Ingelheim. A. Kanehiro received honoraria for lectures from AstraZeneca, GlaxoSmithKline, Boehringer Ingelheim, Sanofi, and Novartis. N. Kitamura received honoraria for lectures from

AbbVie, Asahi Kasei, Astellas, Esai, Pfizer, Sanofi, Bristol-Myers, Chugai, Eli Lilly, GlaxoSmithKline, and Mitsubishi Tanabe. N. Sugihara received honoraria for lectures from AstraZeneca, GlaxoSmithKline, and Sanofi. J. Terada-Hirashima received honoraria for lectures from GlaxoSmithKline, AstraZeneca, and Sanofi. M. Hojo received honoraria for lectures from AstraZeneca, GlaxoSmithKline, and Novartis. E. Tagaya received honoraria for lectures from Sanofi, AstraZeneca, and GlaxoSmithKline. The rest of the authors declare that they have no relevant conflicts of interest.

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Editorial

Am J Respir Crit Care Med

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. 2026 Sep 1;212(9):1885-1887.

doi: 10.1093/ajrccm/aamag350.

[When an exacerbation signals a different future in nonsevere asthma](#)

[Kaharu Sumino](#)¹, [Monica Tang](#)²

Affiliations Expand

- PMID: 42398016
- DOI: [10.1093/ajrccm/aamag350](#)

Free article

No abstract available

Comment on

- [From mild-to-moderate to severe asthma: risk factors and patient profiles from the NORDSTAR cohort.](#)

Hansen S, von Bülow A, Cooper A, Sandin P, Ernstsson O, Ulrik CS, Bossios A, Kankaanranta H, Janson C, Aarli BB, Geale K, Hjoberg J, Packham S, Sekulic D, Altraja A, Backman H, Karjalainen J, Sverrild A, Viinanen A, Lúdvíksdóttir D, Kilpeläinen M, Hilberg O, Lehmann S, Sandström T, Bjórnsdóttir U, Schmid JM, Bjermer L, Backer V, Kauppi P, Yasinska V, Lehtimäki L, Porsbjerg C. *Am J Respir Crit Care Med.* 2026 Sep 1;212(9):1975-1987. doi: 10.1093/ajrccm/aamag242. PMID: 42133832

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26

J Allergy Clin Immunol Glob

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. 2026 Jun 1;5(5):100739.

doi: 10.1016/j.jacig.2026.100739. eCollection 2026 Sep.

[Fractional exhaled nitric oxide and blood eosinophils in relation to lung function, allergy and nasal polyps in asthma](#)

[Reshed Abohalaka](#)¹, [Lauri Lehtimäki](#)^{2,3}, [Selin Ercan](#)¹, [Daniil Lisik](#)^{1,4}, [Saliha Selin Özuygur Ermis](#)¹, [Pinja Ilmarinen](#)^{3,5}, [Teet Pullerits](#)¹, [Helena Backman](#)⁴, [Madeleine Rådinger](#)¹, [Bright I Nwaru](#)¹, [Hannu Kankaanranta](#)^{1,3,5}

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- PMID: 42382046
- PMCID: [PMC13315671](#)
- DOI: [10.1016/j.jacig.2026.100739](#)

Abstract

Background: Type 2 inflammation plays a central role in asthma, but blood eosinophil count (BEC) and fractional exhaled nitric oxide (Feno) levels may reflect different type 2 pathways. Their associations with different asthma characteristics in unselected populations remain unclear.

Objectives: To examine how BEC and Feno, independently and synergistically, are related to lung function, allergy, and nasal polyps in a population-based asthma cohort.

Methods: Data were analyzed from 1567 participants with physician-diagnosed asthma in the West Sweden Asthma Study. Lung function, bronchodilator responsiveness, and presence of allergy and nasal polyps were evaluated across categories of BEC and Feno labeled as low, medium, or high using various cutoffs. Associations were assessed using linear and logistic regression models in participants who were inhaled corticosteroid (ICS)-naïve and ICS-treated separately.

Results: Of participants, 49% (n = 767) were on ICS treatment at the time of examination. Among those who were ICS-treated, BEC, independently of Feno, was associated with reduced FEV₁ and forced vital capacity percentages, higher nasal polyps and clinical allergy, and together with Feno contributed to bronchodilator responsiveness. Interaction effects between Feno and BEC were observed primarily for FEV₁ and forced vital capacity percentages, at high range of cutoff values. In contrast, among participants who were ICS-naïve, neither Feno nor BEC showed independent associations with outcomes; instead, their synergistic effect was associated with lower FEV₁ and forced vital capacity percentages and a higher prevalence of clinical allergy, with consistent effects across a range of cutoff values.

Conclusion: BEC and Feno reflect distinct yet complementary aspects of type 2 inflammation in asthma. These findings support the joint use of BEC and Feno for obstructive airway diseases phenotyping.

Keywords: Blood eosinophil count; Feno; allergic sensitization; allergy; asthma; fractional exhaled nitric oxide; lung function.

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Conflict of interest statement

The study was supported by the VBG Group Herman Krefting Foundation for Asthma and Allergy Research (Trollhättan, Sweden), Swedish Research Council (Stockholm, Sweden), the Swedish Heart-Lung Foundation (Stockholm, Sweden), the Swedish Asthma and Allergy Foundation (Stockholm, Sweden), Tampere Tuberculosis Foundation (Tampere, Finland), and Avtal om Läkarutbildning och Forskning (ALF) agreement (grant from the Swedish state under the agreement between the Swedish Government and the county councils, Sweden). Disclosure of potential conflict of interest: R. Abohalaka reports grants to attend international meetings from the European Respiratory Society (ERS), the Swedish Heart and Lung Foundation (HLF), the Adlerbertska foundations, and the American Thoracic Society (ATS) outside the current work. L. Lehtimäki reports personal fees from ALK-Abelló, AstraZeneca, Berlin Chemie, Boehringer-Ingelheim, Chiesi, GSK, Menarini, Orion Pharma, and Sanofi outside the current work. S.S. Özüygür Ermis reports conference-attendance related costs from Thermo Fisher Scientific outside

the current work. P. Ilmarinen is employed by GSK as medical advisor. H. Backman reports personal fees for Chiesi for Advisory Board outside the current work. M. Rådinger reports fees for lectures from AstraZeneca and GSK. B.I. Nwaru reports personal fees for lectures and consulting from DBV Technologies and AstraZeneca outside the current work. H. Kankaanranta reports fees for lectures and/or consulting from AstraZeneca, Boehringer-Ingelheim, Chiesi, Covis Pharma, GSK, MedScape, MSD, Orion Pharma, and Sanofi outside the current work. The rest of the authors declare that they have no relevant conflicts of interest.

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- [6 figures](#)

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Review

Respir Med

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. 2026 Sep;261:109006.

doi: 10.1016/j.rmed.2026.109006. Epub 2026 Jun 29.

[Targeting the neutrophil-DPP-1-protease axis in airway disease: current evidence and future indications](#)

[Luigi Pastorino¹](#), [Melissa Ferraris²](#), [Michela Robbiano¹](#), [Chiara Staffiere¹](#), [Anna Maria Riccio¹](#), [Fulvio Braido¹](#)

Affiliations Expand

- PMID: 42372954
- DOI: [10.1016/j.rmed.2026.109006](#)

Abstract

Neutrophils contribute to chronic airway diseases with variable pathogenic relevance across conditions. In bronchiectasis, persistent airway neutrophilia and

sustained activity of neutrophil serine proteases (NSPs) - neutrophil elastase (NE), proteinase 3 (PR3), and cathepsin G (CatG) - directly drive structural damage and exacerbations. In Chronic Obstructive Pulmonary Disease (COPD), neutrophils participate in parenchymal destruction and systemic inflammation within a broader network of oxidative and immune dysregulation. In T2-low asthma, neutrophilic inflammation is heterogeneous and context-dependent, suggesting a less uniform contribution of NSP-mediated injury. Therapeutic strategies targeting neutrophils downstream have yielded limited clinical success: selective NE inhibitors and C-X-C motif chemokine receptor 2 (CXCR2) antagonists reduced protease activity or neutrophil recruitment but failed to produce consistent improvements in lung function or exacerbation rates. These evidences reflect redundancy among NSPs, compensatory inflammatory pathways, and the presence of pre-activated circulating neutrophils whose proteolytic potential is already established before tissue recruitment. This has shifted attention upstream to the neutrophil-DPP-1-protease axis. Dipeptidyl peptidase-1 (DPP-1) activates NSPs during neutrophil maturation in the bone marrow; its inhibition reduces the protease load of circulating neutrophils without broadly suppressing innate immunity. In bronchiectasis, DPP-1 inhibitors have demonstrated clinically meaningful reductions in exacerbations and airway NSP activity, providing proof of concept for disease modification. In COPD, this strategy is biologically compelling, particularly in neutrophil-predominant phenotypes, but requires dedicated clinical validation. In asthma, any therapeutic role is likely restricted to highly selected T2-low, neutrophil-driven subsets. Future progress will depend on biomarker-guided stratification to define where modulation of the neutrophil-NSP axis can meaningfully alter disease trajectory.

Keywords: Bronchiectasis; Chronic obstructive airway diseases; DPP1-Inhibitors; Neutrophils.

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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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28

Ann Am Thorac Soc

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. 2026 Sep 1;23(9):1235-1256.

doi: 10.1093/annalsats/aaog166.

Deployment-related respiratory health: bridging the gap between clinical and epidemiological associations and disease mechanisms: an official American Thoracic Society Workshop Report

Bradley W Richmond^{1 2}, Barrak Alahmad³, Coleen P Baird⁴, Paul D Blanc⁵, Paul Ciminera⁶, Michael J Falvo^{7 8}, Vincent S Fan^{9 10}, Meredith Franklin¹¹, Sergey S Gutor¹², Jaime E Hart^{3 13}, Stella E Hines¹⁴, Andrew J Hoisington¹⁵, Ilona Jaspers¹⁶, Kirk D Jones¹⁷, Farrah Kheradmand¹⁸, Silpa D Krefft^{19 20}, Michael R Lewin-Smith²¹, Jennifer R Maccarone^{22 23}, John J Osterholzer^{24 25}, Vasiliy V Polosukhin²⁶, Alexander S Rabin²⁵, Carrie A Redlich²⁷, Cecile Rose²⁸, David A Savitz²⁹, Johannes Saers³⁰, Anays M Sotolongo^{31 32}, Ranu Surolia³³, Susan R Woskie³⁴, Lauren Zell-Baran³⁵, Eric Garshick³⁶; American Thoracic Society Assembly on Environmental, Occupational and Population Health

Collaborators, Affiliations Expand

- PMID: 42360728
- DOI: [10.1093/annalsats/aaog166](https://doi.org/10.1093/annalsats/aaog166)

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Abstract

Land-based military deployers to Afghanistan and/or Southwest Asia (SWA) encountered exposure to high concentrations of respirable particulate matter (PM) from multiple sources, including desert dust, burn pit smoke, and military occupations. Adverse lung health effects following deployment have been noted, including upper and lower respiratory tract symptoms, asthma, and small airway and other abnormalities on lung biopsy. The American Thoracic Society (ATS) convened a workshop in 2018 to review studies assessing postdeployment respiratory health, describe emerging research, and highlight knowledge gaps. Progress on understanding postdeployment health prompted a second ATS workshop to update current knowledge by (1) reviewing new studies linking exposure assessments to symptoms and/or clinical disease; (2) describing the spectrum of lung pathology reported in previously deployed personnel; (3) evaluating current knowledge of long-term health outcomes after deployment; (4) reviewing data from recent experimental models of deployment-related respiratory diseases (DRRDs); and (5) providing recommendations for future research priorities. Workshop participants agreed that there is substantial evidence linking deployment-related exposures to respiratory symptoms, pulmonary diagnoses, and lung pathology. Knowledge gaps include understanding: (1) the extent and mechanisms through which specific exposures result in impaired pulmonary function, small airways disease, and potentially future chronic pulmonary diseases; (2) the contribution of exposure-related foreign material in the lung to clinical and

pathologic findings; and (3) the relationship of pathologic findings to respiratory health, especially those involving small airways.

Keywords: deployment-related respiratory disease; military health; occupational and environmental health; small airways disease.

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Editorial

Am J Respir Crit Care Med

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. 2026 Sep 1;212(9):2113-2114.

doi: 10.1093/ajrccm/aamag295.

[Switching biologics in severe asthma: cautionary lessons from NIMBLE](#)

[Krystelle Godbout](#)¹, [Felix J F Herth](#)², [Jeremy Charriot](#)³, [Arnaud Bourdin](#)³, [Marco Caminati](#)⁴

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- PMID: 42340678
- DOI: [10.1093/ajrccm/aamag295](https://doi.org/10.1093/ajrccm/aamag295)

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Chang Y, Mao W. Am J Respir Crit Care Med. 2026 Sep 1;212(9):2115. doi: 10.1093/ajrccm/aamag298.PMID: 42340663 No abstract available.

- [Prioritizing efficacy over convenience.](#)

Siddiqui S, Brooks L, Menzies-Gow A, Akuthota P. Am J Respir Crit Care Med. 2026 Sep 1;212(9):2111-2112. doi: 10.1093/ajrccm/aamag294.PMID: 42343587 Free PMC article. No abstract available.

Comment on

- [Switching to twice-yearly depemokimab from mepolizumab/benralizumab in severe asthma: a multicenter, randomized, double-blind, phase 3A clinical trial \(NIMBLE\).](#)

Chupp G, Nagase H, Skowasch D, Devouassoux G, Côté A, Jackson DJ, Jackson DJ, Wechsler ME, Imber V, McGinniss JE, O K S, Howarth P, Pavord ID; NIMBLE Study Investigators. Am J Respir Crit Care Med. 2026 May 1;212(5):921-935. doi: 10.1093/ajrccm/aamag031.PMID: 41738176 Free PMC article. Clinical Trial.

- [NIMBLE did not establish noninferior switching to depemokimab.](#)

Chang Y, Mao W. Am J Respir Crit Care Med. 2026 Sep 1;212(9):2115. doi: 10.1093/ajrccm/aamag298.PMID: 42340663 No abstract available.

- [Reply to Siddiqui et al., Godbout et al., and Chang and Mao.](#)

Chupp G, Nagase H, Skowasch D, Devouassoux G, Côté A, Jackson DJ, Jackson DJ, Wechsler ME, Howarth P, Pavord ID; all authors of 'Switching to twice-yearly depemokimab from mepolizumab/benralizumab in severe asthma: a multicenter, randomized, double-blind, phase 3A clinical trial (NIMBLE)'. Am J Respir Crit Care Med. 2026 Sep 1;212(9):2116-2118. doi: 10.1093/ajrccm/aamag300.PMID: 42340676 Free PMC article. No abstract available.

- [Prioritizing efficacy over convenience.](#)

Siddiqui S, Brooks L, Menzies-Gow A, Akuthota P. Am J Respir Crit Care Med. 2026 Sep 1;212(9):2111-2112. doi: 10.1093/ajrccm/aamag294.PMID: 42343587 Free PMC article. No abstract available.

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. 2026 Sep 1;212(9):2116-2118.

doi: 10.1093/ajrccm/aamag300.

[Reply to Siddiqui et al., Godbout et al., and Chang and Mao](#)

[Geoffrey Chupp](#)¹, [Hiroyuki Nagase](#)², [Dirk Skowasch](#)³, [Gilles Devouassoux](#)⁴, [Andréanne Côté](#)⁵, [Daniel J Jackson](#)⁶, [David J Jackson](#)⁷, [Michael E Wechsler](#)⁸, [Peter Howarth](#)⁹, [Ian D Pavord](#)¹⁰; [all authors of 'Switching to twice-yearly depemokimab from mepolizumab/benralizumab in severe asthma: a multicenter, randomized, double-blind, phase 3A clinical trial \(NIMBLE\)'](#)

Collaborators, Affiliations Expand

- PMID: 42340676
- PMCID: [PMC13519336](#)
- DOI: [10.1093/ajrccm/aamag300](#)

No abstract available

Conflict of interest statement

Please see the ICMJE disclosure forms, which have been provided as supplementary material.

Comment in

- [NIMBLE did not establish noninferior switching to depemokimab.](#)

Chang Y, Mao W. Am J Respir Crit Care Med. 2026 Sep 1;212(9):2115. doi: 10.1093/ajrccm/aamag298. PMID: 42340663 No abstract available.

- [Switching biologics in severe asthma: cautionary lessons from NIMBLE.](#)

Godbout K, Herth FJF, Charriot J, Bourdin A, Caminati M. Am J Respir Crit Care Med. 2026 Sep 1;212(9):2113-2114. doi: 10.1093/ajrccm/aamag295. PMID: 42340678 No abstract available.

- [Prioritizing efficacy over convenience.](#)

Siddiqui S, Brooks L, Menzies-Gow A, Akuthota P. Am J Respir Crit Care Med. 2026 Sep 1;212(9):2111-2112. doi: 10.1093/ajrccm/aamag294. PMID: 42343587 Free PMC article. No abstract available.

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Multicenter Study

Respirology

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. 2026 Sep;31(9):882-892.

doi: 10.1002/resp.70275. Epub 2026 Jun 23.

[Clinical and Inflammatory Phenotypes During Exacerbations Predict In-Hospital Adverse Outcomes in Asthma-COPD Overlap](#)

[Lishan Yuan](#)¹, [Lei Wang](#)¹, [Yulai Yuan](#)², [Yilai Li](#)¹, [Li Zhang](#)¹, [Ying Liu](#)¹, [Lei Liu](#)¹, [Lingyun Lu](#)¹, [Min Feng](#)^{3,4}, [Gang Wang](#)⁵, [Shuwen Zhang](#)⁶, [Chongyang Zhao](#)⁷, [Qin Wang](#)⁷, [Deying Kang](#)^{7,8}, [Xin Zhang](#)¹

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- PMID: 42337860
- PMCID: [PMC13535756](#)
- DOI: [10.1002/resp.70275](#)

Abstract

Background and objectives: Exacerbations of asthma-chronic obstructive pulmonary disease overlap (EACO) are associated with high mortality, yet the acute-phase heterogeneity remains poorly characterized. This study aimed to identify distinct inflammatory phenotypes of EACO during hospitalization and evaluate their associations with clinical outcomes.

Methods: A prospective two-centre cohort study enrolled 2444 EACO patients (training and validation cohort). Baseline inflammatory markers and clinical data were collected. Unsupervised k-means clustering identified inflammatory phenotypes, with sensitivity analysis excluding demographic variables. In-hospital clinical outcomes (ICU admission, invasive ventilation, in-hospital mortality) were assessed. Logistic regression and causal mediation analysis evaluated phenotype-outcome associations. A nomogram was developed and validated using receiver operating characteristic curves (AUC).

Results: Three distinct phenotypes were identified: Cluster T1 (neutrophil-to-lymphocyte ratio [NLR]-elevated hypoeosinophilic systemic inflammatory), Cluster T2 (eosinophilic), and Cluster T3 (eosinophil-neutrophil balanced). Cluster T1 exhibited systemic hyperinflammation (elevated white blood cell count, neutrophils, NLR, C-reactive protein (CRP), procalcitonin (PCT), and interleukin-6 (IL-6)), and the highest composite adverse outcome rate (24.2%; $p < 0.001$). Logistic regression revealed absolute neutrophil count ($\beta = 0.38$, $p < 0.001$), D-dimer ($\beta = 0.25$, $p < 0.001$), and absolute lymphocyte count ($\beta = -0.41$, $p < 0.001$) as key outcome predictors, confirmed by causal mediation analysis. The nomogram showed robust predictive performance (AUC training = 0.775; validation = 0.766).

Conclusion: Inflammatory phenotypes during EACO predict differential in-hospital outcomes, with neutrophil-dominant phenotypes conferring the highest risk. Early phenotype-based risk stratification using simple blood biomarkers may guide individualized EACO management.

Keywords: acute exacerbation; asthma-COPD overlap; biomarkers; inflammatory phenotypes; precision medicine.

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Conflict of interest statement

The authors declare no conflicts of interest.

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Review

Am J Respir Crit Care Med

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. 2026 Sep 1;212(9):1947-1961.

doi: 10.1093/ajrccm/aamag309.

[Airway mucus plugs in asthma and chronic obstructive pulmonary disease: pathobiology, imaging, and implications for clinical trials](#)

[Christopher B Bosma¹](#), [Shawn D Aaron²](#), [Bartolome R Celli³](#), [Grace Parraga⁴](#), [Sally Seymour⁵](#), [George R Washko⁶](#), [James P Allinson⁷](#), [Federico Baraldi⁸](#), [Richard C Boucher⁹](#), [Mario Castro¹⁰](#), [Sanjay H Chotirmall^{11 12}](#), [Alejandro A Diaz⁶](#), [John V Fahy¹³](#), [Jonathan G Goldin¹⁴](#), [Andrew J Halayko¹⁵](#), [David M G Halpin¹⁶](#), [Eric Hoffman¹⁷](#), [Wassim W Labaki¹](#), [Njira Lugogo¹](#), [Ella Kazerooni¹⁸](#), [Mehmet Kesimer⁹](#), [Alberto Papi⁸](#), [Sundaresh Ram¹⁹](#), [Kathryn A Ramsey²⁰](#), [Raúl San José Estépar²¹](#), [Naoya Tanabe²²](#), [Kyle Whelan²³](#), [Jadwiga A Wedzicha⁷](#), [Fernando J Martinez²³](#), [MeiLan K Han¹](#)

Affiliations Expand

- PMID: 42330343
- PMCID: [PMC13519308](#)
- DOI: [10.1093/ajrccm/aamag309](#)

Abstract

Mucus plugs have been previously recognized as an important pathological feature in asthma and chronic obstructive pulmonary disease (COPD), but their clinical role in these diseases has not been explored in depth until recently. Mucus plug formation is driven by mucus hyperconcentration, changes in mucus viscoelastic properties, impaired clearance, and mucociliary collapse. Scoring systems, such as the bronchopulmonary segment mucus plug score, have been used to associate greater mucus plug burden with poor clinical outcomes. Additional scoring methods obtained through quantitative image processing are currently under development. Mucus plug burden has been associated with greater exacerbations and spirometric decline in both asthma and COPD, as well as greater mortality in

COPD. Recently, mucus plug burden has been used as an endpoint in clinical trials to evaluate the effectiveness of biologic therapies in asthma; multiple biologic therapies demonstrated decreases in mucus plug burden and associated improvements in spirometry with treatment. Together, these data suggest that mucus plugs may be a treatable trait in asthma and COPD. Mucus plug burden has current clinical, phenotypic, and predictive utility and shows promise as a future biomarker. Increased incorporation into clinical trials, expanded evidence of treatment effect, and standardization of methodology and imaging protocols will be needed. Computed tomographic detection of mucus plug burden is ready for greater incorporation into both research outcomes and clinical care.

Keywords: COPD; asthma; mucus plug score; mucus plugs.

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Conflict of interest statement

Please see the ICMJE disclosure forms, which have been provided as supplementary material. C.B.B. reports support for meeting travel by AstraZeneca. S.D.A. served on advisory boards for GlaxoSmithKline, AstraZeneca, Sanofi, and Methapharm. B.R.C. received grants or contracts, consulting fees, payment or honoraria, and/or travel support from GlaxoSmithKline, AstraZeneca, Menarini, Roche, Galvanize, Chiesi, Sanofi-Aventis, and Regeneron; received royalties or licenses from UpToDate; and served on advisory boards for AstraZeneca, Sanofi-Aventis, and HiFlo. G.P. received study funding from GlaxoSmithKline, Sanofi-Regeneron, and Trudell Medical; received honoraria and travel support from GlaxoSmithKline and AstraZeneca; received study drug from GlaxoSmithKline and Sanofi-Regeneron; and holds a leadership or fiduciary role with the Canadian Thoracic Society. S.S. provides consulting services through Seymour Pharmaceutical Consulting to clients in pulmonary and allergy pharmaceutical development. G.R.W. received grants or contracts from the NIH paid to his institution; received consulting fees from 35Pharma, Argenx, AstraZeneca, Boehringer Ingelheim, Eli Lilly, Genentech, GlaxoSmithKline, Insmmed, Merck, Montai Therapeutics, Polarean, PulmonX, Rage Biotech, Regeneron, and Sanofi; received travel support from AstraZeneca and GlaxoSmithKline; is a co-founder and equity shareholder in Quantitative Imaging Solutions; and reports that his spouse works for Biogen. J.P.A. received grants or contracts paid to his institution from AstraZeneca and Asthma + Lung UK; received speaker fees paid to his institution from AstraZeneca, Chiesi, and GlaxoSmithKline; received meeting/travel support paid to his institution from AstraZeneca and Fondazione Menarini; and serves as unpaid co-chair of the Global Lung Function Initiative of the European Respiratory Society. F.B. received payment or honoraria for lectures from AstraZeneca, Zambon, GlaxoSmithKline, Chiesi, and IQVIA. R.C.B. received consulting fees from Parion Sciences; received payment or honoraria and travel support from AstraZeneca; holds stock or stock options in Parion Sciences, Enterprise Therapeutics, and BioCryst; and reports patents held by him and/or the University of North Carolina that are not related to the manuscript. M.C. received grants or contracts paid to his institution from the American Lung Association, Apogee Therapeutics, AstraZeneca, Celldex, Connect BioPharma, Enveda, Expedition Therapeutics, Gala Therapeutics, Genentech, GlaxoSmithKline, Kinaset Therapeutics, Kymera, NIH, Nacion, Novartis, the Patient-Centered Outcomes Research Institute, Pfizer,

Pulmatrix, Sanofi-Aventis, Shionogi, Teva, and Regeneron; received consulting fees from Admin Physicians World, Allakos, Amgen, Apogee, Apreo Health, Arrowhead Pharmaceuticals, AstraZeneca, Blueprint Medicines, Citrus Health, Connect BioPharma, Enveda, Evommune, Genentech, Generate: Biomedicines, GlaxoSmithKline, Genzyme, IQVIA, ITA Group, Jasper Therapeutics, Johnson & Johnson, Kinaset, Kymera, Meetings by Design, Novartis, Om Pharma, Pfizer, Pioneering Medicines, Polarean, Regeneron, Sanofi-Aventis, Syneos, Teva, Third Rock Ventures, Uniquity Bio, Upstream Bio, Verona Pharmaceuticals, and VIDA; received payment or honoraria from Amgen, AstraZeneca, Med Learning Group, Regeneron, and Sanofi-Aventis; and holds stock or stock options in Aer Therapeutics. S.H.C. received grants or contracts paid to his institution from the Singapore Ministry of Health's National Medical Research Council and the National Research Foundation Singapore; received consulting fees from CSL Behring, Boehringer Ingelheim, Pneumagen Ltd, Chiesi Farmaceutici, Sanofi, GlaxoSmithKline, and Zaccha Pte Ltd.; received lecture fees from AstraZeneca, Chiesi Farmaceutici, CSL Behring, and Boehringer Ingelheim; and served on advisory boards for Inovio Pharmaceuticals Inc. and Imam Abdulrahman Bin Faisal University. A.A.D. received grants from the NHLBI; received speaker fees from Zambon and Johnson & Johnson; received travel support from the COPD Foundation and the Global Initiative for Chronic Obstructive Lung Disease (GOLD); and holds US patent number 11,946,928 B2, "Methods and compositions relating to airway dysfunction." J.V.F. received research grants from the NIH/NHLBI; received consulting fees from Suzhou Connect Biopharmaceuticals, Aer Therapeutics, and AirNexis; received honoraria from Boston Children's Hospital; is an inventor on patents PCT/US2014/028656 and PCT/US19/50475 related to thiol-modified saccharides for mucus-associated lung disease; holds stock or stock options in Suzhou Connect Biopharmaceuticals and Aer Therapeutics; and served on the scientific advisory board for Suzhou Connect Biopharmaceuticals and the company board for Aer Therapeutics. J.G.G. received NIH grant support; is founder of MedQIA LLC, now VoiantClinical LLC; and reports no other conflicts to declare. A.J.H. reported no relevant financial relationships with ineligible companies. D.M.G.H. received personal fees for lectures, presentations, speakers bureaus, manuscript writing, or educational events from AstraZeneca, Boehringer Ingelheim, Chiesi, GlaxoSmithKline, Inogen, Novartis, Sanofi, Menarini, and Berlin-Chemie; received personal fees for participation on advisory boards from Chiesi, Synairgen, and Sanofi; and is a member of the GOLD Board of Directors and Science Committee. E.H. received NIH support paid to the University of Iowa for the present manuscript, travel support from NIH paid to the University of Iowa, and NIH support paid to the University of Iowa for purchase of a CT scanner; served as a nonremunerated member of the Siemens Healthineers photon-counting advisory committee; and is a founder and shareholder of VIDA Diagnostics. W.W.L. received grants from the NIH and the Respiratory Health Association/Solovy Award for Advancement in COPD through his institution; received consulting fees from Inogen and Verona; received payment or honoraria and travel support from Inogen; and served as data and safety monitoring board (DSMB) executive secretary for a pilot trial on aspirin in COPD conducted at Johns Hopkins University. N.L. received grants or contracts from Amgen, AstraZeneca, Avillion, Bellus, Evidera, Gossamer Bio, Genentech, GlaxoSmithKline, Janssen, Pfizer, Regeneron, Roche, Sanofi, Novartis, and Teva; received consulting fees from AbbVie, Amgen, Apogee, AstraZeneca, Avillion, Foresee, Genentech, GlaxoSmithKline, Incyte, Niox, Novartis, Pfizer, Regeneron, Sanofi, and Teva; received honoraria for non-speakers bureau

presentations from GlaxoSmithKline, Teva, Sanofi/Regeneron, and AstraZeneca; received travel support from AstraZeneca, Sanofi, Teva, Regeneron, and GlaxoSmithKline; and served on a DSMB or advisory board for Incyte. E.K. reported no relevant financial relationships with ineligible companies. M.K. received grants from the NHLBI and the Cystic Fibrosis Foundation. A.P. received grants or contracts paid to his institution from AstraZeneca, Chiesi, GlaxoSmithKline, and Sanofi; received consulting fees from AstraZeneca, Avillion, Chiesi, GlaxoSmithKline, Moderna, Regeneron, Roche, Sanofi, Zambon, and Zentiva; and received payment or honoraria for lectures from AstraZeneca, Avillion, Chiesi, Regeneron, Moderna, GlaxoSmithKline, Roche, Sanofi, and Zambon. S.R. reported no relevant financial relationships with ineligible companies. K.A.R. received grants paid to her institution from the National Health and Medical Research Council Australia Investigator Fellowship, Medical Research Future Fund Australia Chronic Respiratory Conditions, and Western Australia Child Health Research Fund; and serves as unpaid chair of the 7.01 Group, Paediatric Respiratory Physiology and Diagnostic Testing, European Respiratory Society. R.S.J.E. received support for the present manuscript from NHLBI paid to his institution; received contracts or sponsored research agreements from Lung Biotechnology, Boehringer Ingelheim, Gossamer Bio, and 35Pharma; received consulting fees from Mount Sinai and Sanofi; reports a provisional patent for Methods Relating to Impaired Respiratory Health Therapeutics and 3 patents in the lung cancer diagnostic space assigned to Johnson & Johnson; serves as an unpaid scientific advisory board member for the CRIS Cancer Foundation; and is co-founder and stockholder of Quantitative Imaging Solutions. N.T. received grants from Fujifilm and Daiichi Sankyo; and received lecture fees from Sanofi, Regeneron, GlaxoSmithKline, AstraZeneca, and Insmed. K.W. serves as site principal investigator for the Sanofi STRIDE Registry, a future study characterizing patients with COPD started on dupilumab, with no financial compensation. J.A.W. received grants paid to her institution from AstraZeneca, Boehringer Ingelheim, Chiesi, GlaxoSmithKline, and Novartis; received advisory board fees from AstraZeneca, Epiendo, GlaxoSmithKline, Empirico, Gilead, Sanofi, Roche, Pfizer, NEATstix, Altesa, MucPharm, CSL Behring, and Forbion; received speaker fees from AstraZeneca, GlaxoSmithKline, Boehringer Ingelheim, Recipharm, Handok, Novartis, Roche, Sanofi, Altesa, and Glenmark; and served as DSMB chair for Virtus. F.J.M. received support for the present manuscript from the NHLBI; received grant or in-kind support from AstraZeneca, Chiesi, GlaxoSmithKline, and Sanofi/Regeneron, and reports payments made to the COPD Foundation from AstraZeneca, Chiesi, Boehringer Ingelheim, GlaxoSmithKline, Novartis, and Sanofi/Regeneron for partnership in SPIROMICS and/or CAPTURE; received travel support and/or consulting fees from AstraZeneca, Chiesi, GlaxoSmithKline, and Sanofi/Regeneron; participated in COPD steering committee, advisory board, or consultation activities for Chiesi, DevPro, Roche, and Sanofi/Regeneron; received payment or honoraria from UpToDate for COPD continuing medical education; received travel support for disease-state presentations from AstraZeneca and GlaxoSmithKline; gave a disease-state presentation for Roche without honoraria or travel support; and received writing support from AstraZeneca, Chiesi, GlaxoSmithKline, and Sanofi/Regeneron. M.K.H. received grants or contracts paid to her institution from Chiesi, GlaxoSmithKline, and Pfizer; received consulting fees from GlaxoSmithKline, AstraZeneca, Sanofi, Chiesi, Pfizer, Austral, Biosency, and Roche; received payment or honoraria from GlaxoSmithKline, AstraZeneca, Sanofi, Chiesi, Pfizer, Zambon, MSD, and Menarini; and received travel support from Chiesi, AstraZeneca, and GlaxoSmithKline.

Comment in

- [To the airway and beyond: introduction to an AJRCCM special section on airway disease.](#)

Bush A, Chotirmall SH, Han MK, Harhay M. Am J Respir Crit Care Med. 2026 Sep 1;212(9):1879-1881. doi: 10.1093/ajrccm/aamag368. PMID: 42518197 No abstract available.

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Am J Epidemiol

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. 2026 Sep 3;195(9):2334-2346.

doi: 10.1093/aje/kwag132.

[Antibiotic treatment for non-specific upper respiratory tract infections and exacerbation risk in children with asthma: a target trial emulation study](#)

[Carmen Cañete Ramirez](#)^{1,2}, [Albina Tskhay](#)^{2,3}, [Ana C Blanchard](#)², [Amélie Forget](#)¹, [Marie-Élaine Métras](#)^{1,2}, [Tibor Schuster](#)³, [Lucie Blais](#)¹, [Cristina Longo](#)^{1,2}

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- PMCID: [PMC13537853](#)
- DOI: [10.1093/aje/kwag132](#)

Abstract

Antibiotics are often prescribed to children with asthma for non-specific upper respiratory tract infections (NS-URTIs), but their association with exacerbation risk in children with pre-existing asthma is unclear. We aimed to determine if antibiotics are associated with asthma exacerbation risk in the 6 months following NS-URTI resolution. Using Quebec administrative health and drug claims data, we emulated a series of target trials among children (0-17 years) with asthma visiting an outpatient physician for an NS-URTI. Treatment strategies were no, narrow-, or broad-spectrum antibiotics initiated within 3 days following the index visit. The primary outcome was exacerbation during the 6 months following an initial 10-day induction period, defined as oral corticosteroid use, emergency department visits, or hospitalizations for asthma. Risk ratios (RR) and differences (RDs) were estimated using inverse probability of treatment weighted log-binomial models. Among 13 646 children (24 139 person-trials), 8.8% and 11.4% received narrow- and broad-spectrum antibiotics, respectively. Compared with no antibiotics, narrow-spectrum antibiotics were associated with an RR of 1.26 (95%CI, 0.99-1.53; RD, 0.07%), while broad-spectrum antibiotics were associated with an RR of 1.28 (95%CI, 1.03-1.54; RD, 0.08%). Broad-spectrum antibiotics were associated with modestly higher exacerbation risks, although absolute RDs were small (<0.1%).

Keywords: antibiotics; exacerbation; non-specific respiratory tract infections; pediatric asthma; target trial emulation.

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Conflict of interest statement

Carmen Cañete Ramirez and Albina Tskhay were funded by the Fonds de Recherche Québec-Santé (FRQ-S) and CHU Sainte-Justine graduate scholarships and do not have any conflicts of interest to declare. Cristina Longo discloses salary support from the FRQ-S, the Canadian Institutes of Health Research, IVADO, Foundation CHU Sainte-Justine, and the Canadian Asthma Allergy and Immunology Foundation but does not have any conflicts of interest to declare. Lucie Blais discloses grants, personal fees and research contracts from AstraZeneca, grants from Teva, outside the submitted work. Ana C. Blanchard, Amélie Forget, Marie-Élaine Métras, and Tibor Schuster do not have any conflicts of interest to declare.

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Review

Pulm Pharmacol Ther

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. 2026 Sep;94:102432.

doi: 10.1016/j.pupt.2026.102432. Epub 2026 Jun 8.

[The preclinical discovery and development of depemokimab for severe eosinophilic asthma](#)

[Mario Cazzola](#)¹, [Vincenzo Patella](#)², [Raffaella Pagliaro](#)³, [Andrea Bianco](#)⁴, [Paola Rogliani](#)⁵, [Maria Gabriella Matera](#)⁶

Affiliations Expand

- PMID: 42264210
- DOI: [10.1016/j.pupt.2026.102432](#)

Abstract

Severe eosinophilic asthma is driven by interleukin (IL)-5-mediated type 2 inflammation and frequently requires long-term biologic therapy. Depemokimab was designed to achieve sustained IL-5 neutralization with a twice-yearly dosing schedule, addressing key unmet needs related to treatment burden and adherence. This review summarizes the molecular design, preclinical pharmacology, model-informed drug development (MIDD) strategy, Phase I-III clinical trial program, and regulatory approvals of depemokimab in asthma and chronic rhinosinusitis with nasal polyps. Depemokimab exemplifies how rational antibody engineering, including Fc modification and high-affinity IL-5 binding, can enable sustained pharmacodynamic activity and ultra-long-acting cytokine inhibition. A twice-yearly dosing regimen may offer advantages in terms of treatment adherence, patient convenience, and long-term disease control. The application of MIDD approaches facilitated efficient clinical development and supported the progression of pivotal trials, potentially shortening development timelines by approximately two to three years. Although efficacy and safety data are encouraging, longer-term real-world evidence will be necessary to better define immunogenicity, rare adverse events, and adherence patterns. Comparative effectiveness studies of depemokimab versus other approved anti-IL-5 therapies and type 2-targeted biologics will be critical to establish its relative clinical value. Further investigation into additional eosinophilic diseases, pediatric populations, and diverse healthcare settings may expand its therapeutic utility, positioning depemokimab as a representative example of next-generation long-acting biologics that target cytokine-mediated inflammatory diseases.

Keywords: Asthma; Biologics; Depemokimab; Eosinophils; IL-5; Preclinical and clinical development.

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Conflict of interest statement

Declaration of competing interest Mario Cazzola, Vincenzo Patella, Raffaella Pagliaro, Andrea Bianco, Paola Rogliani, and Maria Gabriella Matera declare that they have no relevant affiliations or financial involvement with any organisation or entity that could be perceived as having a financial or other appropriate interest in the subject matter or materials discussed in this manuscript. This includes, but is not limited to, employment, consultancies, honoraria, stock ownership or options, expert testimony, grants or patents received or pending, and royalties.

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Observational Study

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. 2026 Sep;261:108951.

doi: 10.1016/j.rmed.2026.108951. Epub 2026 Jun 6.

[Infertility in women with asthma - does asthma also exist in the uterus?](#)

[Anne Vejen Hansen¹](#), [Casper Tidemandsen²](#), [Henriette Svarre Nielsen³](#), [Reza Serizawa⁴](#), [Antje Johanne Katrine Stubsgaard⁴](#), [Elisabeth Juul Gade⁵](#), [Pia Egerup⁶](#), [Lea Langhoff Thuesen³](#), [Agnete Troen Lundgaard⁶](#), [Thomas Hartvig Lindkær Jensen⁷](#), [Paul S Foster⁸](#), [Vanessa M McDonald⁹](#), [Peter G Gibson⁹](#), [Charlotte Suppli Ulrik¹⁰](#), [Vibeke Backer¹¹](#), [Nina la Cour Freiesleben³](#)

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- PMID: 42251918

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Free article

Abstract

Prolonged time to pregnancy, increased need for fertility treatment, and increased pregnancy loss have been reported in women with asthma. However, it is unknown whether uterine inflammatory cells negatively affects fertility in this group. We explored whether women with asthma undergoing fertility treatment have increased inflammatory cells in the endometrium compared to women without asthma. Thirty women with and without asthma (1:1) undergoing fertility treatment were included in this explorative observational study. Asthma was defined by symptoms and a positive bronchial challenge test. Participants underwent questionnaires, fractional exhaled nitric oxide measurement, blood sampling, spirometry, methacholine challenge, induced sputum, and 2/3D ultrasound scan of the uterus followed by endometrial biopsy near ovulation. Endometrial biopsies revealed no significant differences in inflammatory cell types between women with asthma versus women without asthma. Women with asthma had higher airway responsiveness, atopy, IgE, and eosinophil counts, as expected, but similar reproductive history and treatment characteristics. No differences were observed in plasma cells/mm² (median(IQR) 0.15(0.14-0.65); 0.33(0.21-0.92), ns), mast cells/mm² (median(IQR) 2.99(1.31-3.47); 3.72(3.25-9.57), ns) nor CD3⁺ or CD20⁺ lymphocytes or eosinophils. Biomarker analysis across tissues showed no significant association with asthma after multiple testing correction. This exploratory study found no evidence of differences in endometrial inflammatory cells between infertile women with and without asthma. However, the small sample size limits statistical power and a Type II error cannot be excluded.

Keywords: Asthma; Endometrium; In vitro fertilization; Infertility; Meso scale; Reproduction.

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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

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Cite

Review

Ann Allergy Asthma Immunol

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. 2026 Sep;137(3):300-313.

doi: 10.1016/j.anai.2026.05.027. Epub 2026 May 27.

[After the escalator: Narrative review of biomarker-guided asthma care](#)

[Morgane Gronnier](#)¹, [Sanjay Ramakrishnan](#)², [Richard W Beasley](#)³, [Ian D Pavord](#)⁴, [Simon Couillard](#)⁵

Affiliations Expand

- PMID: 42208733
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Free article

Abstract

Asthma, the most common chronic respiratory disease, is characterized by variable symptoms, airflow limitation, and airway inflammation. Current management relies largely on a symptom-focused stepwise escalation approach, which often leads to suboptimal outcomes. This review examines how type 2 inflammatory biomarkers—blood eosinophils and fractional exhaled nitric oxide—can complement symptom-based assessment to optimize care pathways. We synthesize evidence for biomarker-guided management across 5 critical decision points: diagnostic triage, inhaled corticosteroid initiation and dose escalation, acute attack phenotyping, and biologic selection. Across trials and observational cohorts, biomarker-high patients derived substantially greater benefit from inhaled corticosteroid-based therapy, while biomarker-low patients had a worse benefit-harm profile. Each section is balanced by a review of data that are not in favor of biomarker-based management. Indeed, tests for type 2 inflammation may be criticized in terms of accessibility or variability and require threshold validation. Nevertheless, the accumulated evidence suggests that future trials and studies of biomarker integration into diagnostic and treatment pathways may help streamline management for the most at-risk patients, from diagnosis to treatment intensification. The analogy of "fast and slow lanes" for diagnostic and treatment algorithms is developed. The utility of alternative treatable traits, including chronic airway infection, persistent airflow limitation, and breathing pattern disorders, is also explored. The quality and counterpoints of the reviewed evidence emphasize that biomarkers should complement rather than replace comprehensive clinical assessment to optimize care for all phenotypes. Trials and studies of interventions tailored according to blood eosinophils, fractional exhaled

nitric oxide, and other key treatable traits are urgently needed across diagnostic and treatment algorithms for asthma.

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Conflict of interest statement

Disclosures Dr Ramakrishnan reports receiving salary support from the National Institute for Health and Social Care Research UK and Charlie's Foundation for Research unrelated to this work; received speaker fees from GlaxoSmithKline (GSK), Sanofi, Chiesi, Boehringer Ingelheim, and AstraZeneca; received conference travel support from GSK, Sanofi, and AstraZeneca unrelated to this work; have GSK and Sanofi advisory board memberships unrelated to this work; and is the deputy convenor of the chronic obstructive pulmonary disease special interest group for the Thoracic Society of Australia and New Zealand. Dr Beasley has received institutional research funding from AstraZeneca, Teva, HRC (NZ), Cure Kids (NZ), and Perpetual Guardian; has received personal fees from AstraZeneca, Avillion, and Teva; is Chair of the Asthma Foundation of New Zealand adolescent and adult asthma guidelines; is a reviewer for Global Initiative for Asthma; and is an ex-member of the Global Initiative for chronic obstructive pulmonary disease Board. Dr Pavord has received speaker's honoraria for speaking at sponsored meetings from AstraZeneca, Circassia, Amgen-Novartis, Chiesi, Sanofi/Regeneron, Menarini, and GSK; received payments for organizing educational events from AstraZeneca, GSK, Sanofi/Regeneron, and Teva; received honoraria for attending advisory panels with Genentech, Sanofi/Regeneron, AstraZeneca, GSK, Novartis, Teva, Merck, Circassia, and Amgen; and has received sponsorship to attend international scientific meetings from GSK, AstraZeneca, Sanofi, and Regeneron. Dr Couillard reports receiving nonrestricted research grants from the National Institute for Health and Social Care Research Oxford BRC, the Québec Respiratory Health Research Network, the Association Pulmonaire du Québec, the Academy of Medical Sciences, AstraZeneca, bioMérieux, Circassia Niox Group, and Sanofi-Genzyme-Regeneron; is the holder of the Association Pulmonaire du Québec's Research Chair in Respiratory medicine; is a clinical research scholar of the Fonds de recherche du Québec; received speaker honoraria from AstraZeneca, GSK, Sanofi-Regeneron, Circassia Niox Group, and Valeo Pharma; received consultancy fees from FirstThought, Apogee Therapeutics, Upstream Bio, AstraZeneca, GSK, Sanofi-Regeneron, Access Biotechnology, and Access Industries; received sponsorship to attend or speak at international scientific meetings from AstraZeneca and Sanofi-Regeneron; is an advisory board member and holds stock options for Biometry Inc, a company developing a fractional exhaled nitric oxide device (myBiometry); is a coinventor of the patent filed as "Method for alleviating dyspnea with neuromodulation;" advised the Institut national d'excellence en santé et services sociaux on an update of the asthma general practice information booklet for general practitioners and therapeutic indications for Enerzair; and is a member of the asthma steering committee of the Canadian Thoracic Society. Dr Gronnier has no conflicts of interest to report.

Supplementary info

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Clinical Trial

Ann Allergy Asthma Immunol

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. 2026 Sep;137(3):320-328.

doi: 10.1016/j.anai.2026.05.019. Epub 2026 May 23.

[Improved asthma outcomes with dupilumab plus medium-dose inhaled corticosteroids vs placebo plus high-dose inhaled corticosteroids](#)[William W Busse](#)¹, [Mario Castro](#)², [Njira L Lugogo](#)³, [Paul M O'Byrne](#)⁴, [Leonard B Bacharier](#)⁵, [Changming Xia](#)⁶, [Olivier Ledanois](#)⁷, [Mena Soliman](#)⁶

Affiliations Expand

- PMID: 42178021
- DOI: [10.1016/j.anai.2026.05.019](#)

Free article

Abstract

Background: Escalating from medium-dose inhaled corticosteroid (ICS) to high-dose ICS in patients with asthma offers limited clinical benefit.

Objective: To assess the advantages of adding dupilumab to medium-dose ICS vs continuing high-dose ICS in patients with uncontrolled, moderate-to-severe asthma.

Methods: In the phase 3 QUEST study ([NCT02414854](#)), patients receiving medium- or high-dose ICS (>250-500 or >500 µg/d fluticasone propionate or equivalent) and long-acting β₂-agonists (± third controller) initiated dupilumab 200/300 mg every 2 weeks or placebo for 52 weeks. This post hoc analysis of 1584 patients with baseline eosinophils of at least 150 cells/µL or fractional exhaled nitric oxide greater than or equal to 20 parts per billion and 1 or more exacerbations in the past year assessed annualized severe exacerbation rates, changes from baseline in prebronchodilator forced expiratory volume in 1 second, type 2 inflammatory biomarkers over 52 weeks, and the proportion of patients achieving asthma control

(5-item Asthma Control Questionnaire score < 1.5), grouped by treatment (dupilumab or placebo plus medium- or high-dose ICS).

Results: Dupilumab improved clinical outcomes and reduced biomarker levels across ICS-dose subgroups. Dupilumab plus medium-dose ICS (n = 513) reduced exacerbations by 70% vs placebo plus high-dose ICS (n = 287) (P < .0001). At week 52, dupilumab plus medium-dose ICS improved prebronchodilator forced expiratory volume in 1 second by 0.22 L (P < .0001) and increased the odds ratio for achieving asthma control to 2.26 (P < .0001) vs placebo plus high-dose ICS.

Conclusion: Add-on dupilumab with medium-dose ICS improved outcomes in patients with uncontrolled asthma compared with high-dose ICS and placebo. The QUEST study was not designed to compare add-on dupilumab with ICS dose escalation, but these findings from this post hoc analysis warrant future studies directly comparing ICS dose escalation with add-on dupilumab.

Trial registration: ClinicalTrials.gov Identifier: [NCT02414854](https://clinicaltrials.gov/ct2/show/study/NCT02414854).

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Conflict of interest statement

Disclosures Dr Busse reports receiving consultant and speaker fees from GlaxoSmithKline (GSK), Regeneron Pharmaceuticals Inc., and Sanofi. Dr Castro has received research support from the American Lung Association, AstraZeneca, Gala Therapeutics, Genentech, GSK, National Institutes of Health, Novartis, PCORI (Patient-Centered Outcomes Research Institute), Pulmatrix, Sanofi-aventis, Shionogi, and Theravance Biopharma; has served as a consultant for Genentech, Novartis, Sanofi, and Teva; has received consultant fees/honoraria from Allakos, Amgen, Arrowhead Pharmaceuticals, AstraZeneca, Genentech, Merck, Novartis, OM Pharma, Regeneron Pharmaceuticals Inc., Sanofi, and Teva; and has received royalties from Aer Therapeutics and Elsevier. Dr Lugogo has received consulting fees from AbbVie, Amgen, Apogee, AstraZeneca, Avillion, Foresee, Genentech, GSK, NIOX, Novartis, Regeneron Pharmaceuticals Inc., Sanofi, and Teva; has received honoraria for non-speakers bureau presentations from AstraZeneca, GSK, Regeneron Pharmaceuticals Inc., Sanofi, and Teva; has received travel support from AstraZeneca, GSK, Regeneron Pharmaceuticals Inc., Sanofi, and Teva; has had research support paid to institution from Amgen, AstraZeneca, Avillion, Bellus, Evidera, Genentech, Gossamer Bio, GSK, Janssen, Novartis, Regeneron Pharmaceuticals Inc., Sanofi, and Teva; and is an honorary faculty member of OPRI (Observational and Pragmatic Research Institute) but does not receive compensation for this role. Dr O'Byrne has received personal fees for consulting or speaker fees from AstraZeneca, Chiesi, Covis, GSK, MedImmune, and Menarini; and research grants from AstraZeneca, Bayer, Biohaven, MedImmune, and Merck. Dr Bacharier has received speaker fees from AstraZeneca, GSK, Regeneron Pharmaceuticals Inc., and Sanofi; has received personal fees from OM Pharma; has received research support from National Institutes of Health, Sanofi, and Vectura; and has served on a data and safety monitoring board for AstraZeneca, Cystic Fibrosis Foundation, and DBV Technologies. Dr Ledanois is a Sanofi employee and may hold stock and/or stock options in the company. Dr Xia and Dr Soliman are employees and shareholders of Regeneron Pharmaceuticals Inc.

Supplementary info

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Ann Allergy Asthma Immunol

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. 2026 Sep;137(3):329-339.e7.

doi: 10.1016/j.anai.2026.05.018. Epub 2026 May 22.

[Depemokimab reduces asthma exacerbations similarly to other biologics](#)

[Arnaud Bourdin](#)¹, [Ian D Pavord](#)², [Nicholas Ballew](#)³, [Brandon Butcher](#)⁴, [Lydia Vinals](#)⁵, [Houcine El Alili](#)⁶, [Vikas Jangra](#)⁷, [Victor Laliman-Khara](#)⁸, [Grammati Sarri](#)⁹, [Anna Vichiendilokkul](#)¹⁰, [Peter Howarth](#)¹¹, [Rafael Alfonso-Cristancho](#)¹²

Affiliations Expand

- PMID: 42173441
- DOI: [10.1016/j.anai.2026.05.018](#)

Free article

Abstract

Background: Depemokimab is the first ultra-long-acting biologic, with efficacy and safety recently reported in the Phase III SWIFT-1/-2 studies, which included patients with type 2 asthma.

Objective: To estimate the relative efficacy and safety of depemokimab vs other biologics via an indirect treatment comparison.

Methods: The indirect treatment comparison evidence base was compiled via a systematic literature review to identify randomized clinical trials on the efficacy and safety of biologics in patients with severe asthma. End points were analyzed using network meta-analysis (unadjusted) and multi-level network meta-regression (partially or fully adjusted for clinically relevant or statistically feasible covariates, including prior exacerbation history, inhaled or oral corticosteroid use, and blood eosinophil count) and included annualized exacerbation rates (AERs), adverse events (AEs), and serious AEs (SAEs).

Results: Overall, 17 and 22 trials were included in the exacerbation and safety analyses, respectively. Significant differences in efficacy were observed in the unadjusted fixed-effect model for depemokimab vs placebo, omalizumab, benralizumab, and dupilumab 300 mg and in the partially adjusted fixed-effect model for depemokimab vs placebo and omalizumab. In the fully adjusted fixed-effect model, depemokimab significantly reduced AERs vs placebo; no significant differences were observed between depemokimab and other biologics in this model. The odds of experiencing AEs and SAEs were similar across treatments, with fewer SAEs observed with depemokimab than with dupilumab. The results were generally consistent across fixed- and random-effect approaches.

Conclusion: In general, no statistically significant difference was detected between depemokimab and other biologics in terms of AER reduction or safety in severe asthma, including when adjusting for differences across studies in clinically important patient characteristics.

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Conflict of interest statement

Disclosures Professor Bourdin has received grants, personal fees, nonfinancial support, and other support from Actelion, AstraZeneca, Boehringer Ingelheim, and GSK; personal fees, nonfinancial support, and other support from Chiesi, Novartis, and Regeneron; personal fees and nonfinancial support from Teva; personal fees from Gilead; nonfinancial support and other support from Roche; and other support from Nuaira. Professor Pavord in the last 5 years has received speaker's honoraria for speaking at sponsored meetings from AstraZeneca, Aerocrine, Almirall, Sanofi/Regeneron, Menarini, and GSK, and payments for organizing educational events from AstraZeneca, GSK, and Sanofi/Regeneron. He has received honoraria for attending advisory panels with Sanofi/Regeneron, AstraZeneca, GSK, Merck, Circassia, Chiesi, Upstream Bio, and Areteia. He has received sponsorship to attend international scientific meetings from GSK, AstraZeneca, and Sanofi/Regeneron. Dr Ballew, Dr Butcher, Dr Vichiendilokkul, and Dr Howarth are employees of GSK and hold financial equities in GSK. Dr Alfonso-Cristancho was an employee of GSK at the time of the study and may hold financial equities in GSK. Dr Vinals, Ms El Alili, Dr Jangra, Mr Laliman-Khara, and Dr Sarri are employees of Cytel, who received funding from GSK for the conduct of this study.

Supplementary info

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Am J Respir Crit Care Med

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. 2026 Sep 1;212(9):1962-1974.

doi: 10.1093/ajrccm/aamag232.

Airway microbiome diversity, intramucosal bacteria, and spatial immunity in asthmatic adults and controls

Miriam F Moffatt¹, Tamiko Nishimura^{2,3}, Michael J Cox⁴, Claire McBrien¹, Conor Burke⁵, Leah Cuthbertson^{1,6}, Keir Lewis^{7,8}, Richard Attanoos⁹, Gwyneth A Davies⁸, Kian Fan Chung¹, Jan Lukas Robertus^{1,10}, Jonathan Ish-Horowicz¹, Orla O'Carroll⁵, John M Bozeman¹, Aisling McGowan⁵, Julian M Hopkin⁹, G Mark Lathrop^{2,3}, Yasser Riazalhosseini^{2,3}, William O C Cookson¹

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- PMID: 42150103
- PMCID: PMC13519334 (available on 2027-09-01)
- DOI: [10.1093/ajrccm/aamag232](https://doi.org/10.1093/ajrccm/aamag232)

Abstract

Rationale: Asthma is characterized by disruption of the thoracic airway mucosae and loss of microbial diversity. Spatial profiling of the mucosal transcriptome may systematically discover mechanisms for microbial influences on immunity.

Objectives: We investigated relationships between clinical measures, microbial communities, and the host mucosal transcriptome within different strata of bronchial biopsies in subjects with and without asthma.

Methods: We performed bronchoscopy in 65 asthmatic adults and 44 healthy controls, quantifying bacterial operational taxonomic units (OTUs) in bronchial brushings by 16S ribosomal RNA (rRNA) gene amplicon sequences. Biopsy histologic features were scored blind to diagnosis. Following 16S rRNA in situ hybridization of 44 biopsies, bacterial foci were scored in epithelium, basement membrane, and stroma. Global human gene expression was quantified in epithelial and stromal compartments using digital spatial profiling.

Measurements and main results: Clinical asthma was independently predicted by basement membrane abnormalities (BaseMA), endobronchial bacterial diversity, and circulating eosinophil counts, but not by specific OTU abundances. 16S rRNA staining revealed bacteria within epithelium and mucosa of all biopsies. Intramucosal bacteria counts correlated negatively with spatially organized coexpression networks encoding antigen-specific immunity, neutrophil functions, and matrix activation, whereas BaseMA correlated positively with the adaptive

immunity module. Eosinophil counts correlated with epithelial bacterial counts and senescence pathways. Clinical asthma was accompanied by upregulation of a regulatory T-cell network.

Conclusions: Asthma and its related phenotypes are accompanied by complex mucosal events that extend beyond eosinophilic pathways. Components of diverse airway microbiota may modify immunity by beneficial interactions within the mucosa.

Keywords: airway microbiome; asthma; diversity; endosymbiosis; stroma.

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Conflict of interest statement

All authors declare that they have no competing interests. Please see the ICMJE disclosure forms, which have been provided as supplementary material.

Comment in

- [Microbial maintenance under the surface.](#)

Kozik AJ, Huang YJ. *Am J Respir Crit Care Med*. 2026 Sep 1;212(9):1882-1884. doi: 10.1093/ajrccm/aamag272. PMID: 42226004 No abstract available.

- [To the airway and beyond: introduction to an AJRCCM special section on airway disease.](#)

Bush A, Chotirmall SH, Han MK, Harhay M. *Am J Respir Crit Care Med*. 2026 Sep 1;212(9):1879-1881. doi: 10.1093/ajrccm/aamag368. PMID: 42518197 No abstract available.

- [61 references](#)

Supplementary info

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Multicenter Study

Am J Respir Crit Care Med

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. 2026 Sep 1;212(9):1988-1998.

doi: 10.1093/ajrccm/aamag225.

[Tezepelumab in real-world US patients with severe asthma across phenotypes and underrepresented populations: the phase 4 PASSAGE study](#)

[Njira L Lugogo¹, Praveen Akuthota², Kaharu Sumino³, Autumn F Burnette⁴, Sameer K Mathur⁵, Andrew W Lindsley⁶, Jean-Pierre Llanos⁷, Claudio Marchese⁸, Christopher S Ambrose⁹, Benjamin Emmanuel⁹](#)

Affiliations Expand

- PMID: 42148905
- PMCID: [PMC13519350](#)
- DOI: [10.1093/ajrccm/aamag225](#)

Abstract

Rationale: Clinical trials of severe asthma therapies often exclude or underrepresent key patient populations.

Objectives: To evaluate the effectiveness and safety of tezepelumab in a diverse, real-world US population with severe, uncontrolled asthma (SUA).

Methods: PASSAGE was a phase 4, multicenter, single-arm, open-label, 12-month study enrolling patients with SUA (≥12 years old), including different phenotypes (blood eosinophil count ≥300 or <300 cells/μL, with or without allergy) and underrepresented populations (Black/African American patients, adolescents, those with SUA with comorbid mild-to-moderate chronic obstructive pulmonary disease, people with a significant smoking history [≥10 pack-years]). The primary outcome was the annualized asthma exacerbation rate (AAER) in the 12 months before (baseline period) and after (treatment period) tezepelumab initiation.

Measurements and main results: Among 286 participants, AAER decreased by 70% (95% CI, 63%-75%) from 2.88 (baseline period) to 0.87 (treatment period) and by 54% to 77% across phenotypes and underrepresented populations. At week 52, least-squares mean pre-bronchodilator FEV1 increased from baseline by 0.122 L (95% CI, 0.07-0.17) overall and by 0.212 L (95% CI, 0.15-0.28) among participants with percent predicted pre-bronchodilator FEV1 ≤80% at baseline. Clinically meaningful improvements in Asthma Control Questionnaire-6, Asthma Impairment and Risk Questionnaire, and St George's Respiratory Questionnaire scores were observed in

51% to 91% of participants across phenotypes and underrepresented populations at week 52. No new safety signals were identified.

Conclusions: The PASSAGE study of a diverse, real-world US population with SUA treated with tezepelumab demonstrated substantial reductions in asthma exacerbations across phenotypes and underrepresented populations as well as clinically meaningful improvements in lung function, asthma control, and health-related quality of life.

Clinical trial registration: www.clinicaltrials.gov ([NCT05329194](https://clinicaltrials.gov/ct2/show/study?term=NCT05329194)).

Keywords: phenotype; real-world; severe asthma; tezepelumab; underrepresented populations.

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Conflict of interest statement

Please see the ICMJE disclosure forms, which have been provided as supplementary material. Njira L. Lugogo has received consultancy fees from AbbVie, Amgen, Apogee, AstraZeneca, Avillion, Chiesi, Foresee, Genentech, GSK, Inctye, Niox, Novartis, Pfizer, Regeneron Pharmaceuticals, Sanofi, and Teva Pharmaceuticals; has received fees for non-speakers bureau presentations and travel support from AstraZeneca, GSK, Regeneron Pharmaceuticals, Sanofi, and Teva Pharmaceuticals; her institution has received research support from Amgen, AstraZeneca, Avillion, Bellus, Evidera, Genentech, Gossamer Bio, GSK, Janssen, Novartis, Pfizer, Regeneron Pharmaceuticals, Roche, Sanofi, and Teva Pharmaceuticals; she is also an honorary faculty member of Observational and Pragmatic Research Institute but does not receive compensation for this role. Praveen Akuthota has received consultancy fees from Amgen, AstraZeneca, Connect Biopharma, Enveda, Gilead, GSK, Regeneron Pharmaceuticals, Sanofi, and Vida Ventures; has received research support from 4D Molecular Therapeutics, Advanced Research Projects Agency for Health, AstraZeneca, the Cystic Fibrosis Foundation, the National Institutes of Health, ReCode Therapeutics, and Sanofi; has received royalties from UpToDate; has received fees for continuing medical education presentations from Advancing Knowledge in Healthcare, Medlive, MJH Life Sciences, PeerView, PRIME Continuing Medical Education, Rockpointe, and Vindico Medical Education; has received fees for presentations from the Taiwan Society of COPD; and has received fees for participating in data and safety monitoring boards from Sandia National Laboratories. Kaharu Sumino has received consultancy fees for participation in an advisory board from AstraZeneca, consultancy fees from Teva Pharmaceuticals, and speaker fees from Kyorin Pharmaceutical. Autumn F. Burnette has received consultancy fees for participation in advisory boards and panel presentations from Amgen, AstraZeneca, GSK, Regeneron Pharmaceuticals, and Sanofi, and has received speakers bureau fees from Amgen, AstraZeneca, GSK, Regeneron Pharmaceuticals, and Sanofi. Sameer K. Mathur has received consultancy fees from AstraZeneca, GSK, Novartis, and Regeneron Pharmaceuticals, and has received fees for presentations from AstraZeneca and GSK. Andrew W. Lindsley and Jean-Pierre Llanos are employees of Amgen and own stock in Amgen. Claudio Marchese, Christopher S. Ambrose, and Benjamin Emmanuel are employees of AstraZeneca and may own stock or stock options in AstraZeneca.

Comment in

- [Beyond the trials: real-world insights into tezepelumab efficacy.](#)

Sharma S, Holguin F. Am J Respir Crit Care Med. 2026 Sep 1;212(9):1888-1889. doi: 10.1093/ajrccm/aamag325. PMID: 42363411 No abstract available.

- [To the airway and beyond: introduction to an AJRCCM special section on airway disease.](#)

Bush A, Chotirmall SH, Han MK, Harhay M. Am J Respir Crit Care Med. 2026 Sep 1;212(9):1879-1881. doi: 10.1093/ajrccm/aamag368. PMID: 42518197 No abstract available.

- [26 references](#)
- [4 figures](#)

Supplementary info

Publication types, MeSH terms, Substances, Associated data, Grants and funding [Expand](#)

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Cite

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Review

Clin Exp Allergy

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. 2026 Sep;56(9):1031-1047.

doi: 10.1111/cea.70329. Epub 2026 May 15.

[Asthma and Multimorbidity Amongst Ethnic Minority Groups in High Income Countries](#)

[Mamidipudi Thirumala Krishna](#)^{1,2}, [Saibal Moitra](#)³, [Anna Freeman](#)^{4,5}, [Ben Ainsworth](#)^{5,6}, [Rebecca Knibb](#)⁷, [Ramesh Kurukulaarachy](#)^{4,5,8}, [Adel H Mansur](#)⁹

Affiliations [Expand](#)

- PMID: 42136329

- PMCID: [PMC13532806](#)
- DOI: [10.1111/cea.70329](#)

Abstract

Asthma is one of the commonest noncommunicable diseases worldwide. Poor clinical outcomes have been reported in asthma amongst ethnic minority groups (EMGs) and reasons are likely to be multifactorial. There is a suggestion that underlying disease may behave differently amongst EMGs, alongside other factors including deprivation, cultural, religious, social, literacy, patient beliefs, healthcare access, treatment adherence, alongside greater burden of multimorbidity. Multimorbidity (presence of ≥ 2 long-term health conditions) in asthma is increasingly known to contribute to greater asthma burden, with differences in multimorbidity burden and patterns seen across ethnicities with a tight association with deprivation. Earlier onset of multimorbidity with relatively reduced survival has been reported amongst EMG patients, particularly those from a deprived background compared to White patients. Data regarding asthma, multimorbidity and ethnicity are scant, but emerging data suggest that multimorbidity is heterogenous, and that ethnic background is associated with variations in asthma outcomes and multimorbidity phenotypes. What is currently lacking is population-based research with a joined-up interrogation of primary care and secondary care databases to determine the prevalence and patterns of T2 and non T2 multimorbidity in asthma amongst EMGs, and analysis of patterns of associations and link to socio-demographic variables and clinical outcomes. Deeper insight into views of EMG patients and their carers regarding lived experiences of asthma and multimorbidity management, as well as those of healthcare professionals is needed, to allow development of culturally tailored resources. These studies are likely to shape a holistic culturally tailored multidimensional and an equitable approach to management of asthma with multimorbidity amongst EMGs.

Keywords: Asthma; afro-Caribbean; allergy; black; clinical outcome; deprivation; disparities; ethnicity; multimorbidity; south Asian.

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Conflict of interest statement

M.T.K. received research grants from NIHR, FSA, MRC CiC and GCRF. He is clinical lead for Equality, Diversity and Inclusion for College of Medicine and Health, University of Birmingham. A.H.M. declares no conflicts of interest in relation to this work. He otherwise received personal and institutional payments for talks, advisory board meetings, sponsorships to attend conferences from AZ, GSK, Sanofi and Chiesi, and received a research grant from NIHR. Other co-authors have no conflicts of interest to declare.

- [88 references](#)
- [4 figures](#)

Supplementary info

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42

Observational Study

Am J Respir Crit Care Med

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. 2026 Sep 1;212(9):1975-1987.

doi: 10.1093/ajrccm/aamag242.

[From mild-to-moderate to severe asthma: risk factors and patient profiles from the NORDSTAR cohort](#)

[Susanne Hansen](#)^{1 2}, [Anna von Bülow](#)^{1 3}, [Alexandra Cooper](#)⁴, [Patrik Sandin](#)⁴, [Olivia Ernstsson](#)^{4 5}, [Charlotte Suppli Ulrik](#)^{6 7}, [Apostolos Bossios](#)^{8 9 10}, [Hannu Kankaanranta](#)^{11 12 13}, [Christer Janson](#)¹⁴, [Bernt Bøgvald Aarli](#)^{15 16}, [Kirk Geale](#)⁴, [Josephine Hjøberg](#)¹⁷, [Sylvia Packham](#)^{18 19}, [Davorka Sekulic](#)²⁰, [Alan Altraja](#)^{21 22}, [Helena Backman](#)²³, [Jussi Karjalainen](#)^{11 24}, [Asger Sverrild](#)^{1 7}, [Arija Viinanen](#)^{25 26}, [Dóra Lúdvíksdóttir](#)²⁷, [Maritta Kilpeläinen](#)^{25 26}, [Ole Hilberg](#)²⁸, [Sverre Lehmann](#)^{15 16}, [Thomas Sandström](#)¹⁹, [Unnur Björnsdóttir](#)²⁹, [Johannes M Schmid](#)³⁰, [Leif Bjermer](#)³¹, [Vibeke Backer](#)³², [Paula Kauppi](#)³³, [Valentyna Yasinska](#)^{8 34}, [Lauri Lehtimäki](#)^{11 24}, [Celeste Porsbjerg](#)^{1 7}

Affiliations Expand

- PMID: 42133832
- DOI: [10.1093/ajrccm/aamag242](#)

Free article

Abstract

Background: The progression from mild-to-moderate to severe asthma remains unclear. This study aimed to assess the risk of progression following the first

asthma exacerbation in mild-to-moderate asthma and to identify risk factors and high-risk patient profiles.

Methods: This was an observational cohort study based on Danish data from the Nordic Dataset for Asthma Research collaboration platform. Adult patients with mild-to-moderate asthma experiencing their first asthma exacerbation were identified between 2000 and 2018 and followed prospectively for 5 years for the development of severe asthma according to European Respiratory Society (ERS) / American Thoracic Society (ATS) guidelines. Baseline risk factors for progression to severe asthma were assessed using multivariable logistic regression models, and risk of progression was evaluated across specific patient profiles.

Results: Among 99 748 patients with mild-to-moderate asthma experiencing the first asthma exacerbation, 4.1% progressed to severe asthma within 5 years. Risk factors included baseline age 40-49 years (odds ratio [OR] = 1.62; 95% CI, 1.49-1.77), experiencing an exacerbation despite medium-dose inhaled corticosteroid (ICS) use (OR = 3.72; 95% CI, 3.39-4.09), high use of short-acting beta agonist (OR = 1.76; 95% CI, 1.64-1.90), ≥ 2 respiratory infections (OR = 1.61; 95% CI, 1.49-1.73), and blood eosinophil counts $\geq 0.6 \times 10^9/L$ (OR = 1.97; 95% CI, 1.47-2.61). A patient aged 40-49 years with late-onset eosinophilic asthma, treated with medium-dose ICS and with recurrent respiratory infections, had a 30.4% 5-year risk of progressing to severe asthma.

Conclusion: In patients with mild-to-moderate asthma experiencing their first asthma exacerbation, few (4.1%) patients overall progressed to severe asthma within 5 years, but specific high-risk patient profiles faced risks of up to 30%. Whether early recognition can modify this risk warrants further investigation.

Keywords: asthma; asthma/epidemiology; disease progression; risk stratification.

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Comment in

- [When an exacerbation signals a different future in nonsevere asthma.](#)

Sumino K, Tang M. Am J Respir Crit Care Med. 2026 Sep 1;212(9):1885-1887. doi: 10.1093/ajrccm/aamag350. PMID: 42398016 No abstract available.

Supplementary info

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Cite

43

Editorial

Am J Respir Cell Mol Biol

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. 2026 Sep 1;74(9):1155-1156.

doi: 10.1093/ajrcmb/aanag103.

[Pirfenidone for asthma? What to do when standard therapies fail](#)

[Niyati A Borkar](#)¹, [Andrew J Halayko](#)²

Affiliations Expand

- PMID: 42113879
- DOI: [10.1093/ajrcmb/aanag103](#)

Free article

No abstract available

Comment on

- [Pirfenidone and its derivative: novel bronchodilators and leukocyte airway inflammation inhibitors.](#)

Xie Y, Abel PW, Xing T, Zhong N, Jiang H, An SS, Panettieri RA Jr, Casale TB, Tu Y. Am J Respir Cell Mol Biol. 2026 Sep 1;74(9):1189-1203. doi: 10.1093/ajrcmb/aanag047. PMID: 42089319

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44

Am J Respir Cell Mol Biol

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. 2026 Sep 1;74(9):1189-1203.

doi: 10.1093/ajrcmb/aanag047.

Pirfenidone and its derivative: novel bronchodilators and leukocyte airway inflammation inhibitors

Yan Xie¹, Peter W Abel¹, Tianzhou Xing¹, Na Zhong¹, Haihong Jiang¹, Steven S An², Reynold A Panettieri Jr², Thomas B Casale³, Yaping Tu¹

Affiliations Expand

- PMID: 42089319
- PMCID: PMC13519355 (available on 2027-03-15)
- DOI: [10.1093/ajrcmb/aanag047](https://doi.org/10.1093/ajrcmb/aanag047)

Abstract

Asthma, a chronic airway inflammatory disease, manifests as excessive obstruction of the airways and airway hyperresponsiveness (AHR) due to airway smooth muscle (ASM) contraction. Conventional bronchodilator treatments, such as β 2-adrenergic receptor (β 2-AR) agonists, often lose efficacy due to receptor desensitization, while corticosteroid-resistant neutrophilic airway inflammation remains a major challenge in severe asthma. To identify novel bronchodilators, we screened the Sigma LOPAC1280 compound library using β 2-agonist-desensitized precision-cut lung slices (PCLS) as an ex vivo model and identified pirfenidone (PFD), an FDA-approved drug for idiopathic pulmonary fibrosis, as a novel bronchodilator. We then developed CXN-8, a more potent PFD derivative. Both compounds produced rapid, concentration-dependent airway relaxation in human, mouse, and rat PCLS precontracted with multiple bronchoconstrictors, and maintained efficacy under β 2-AR-insensitive conditions. CXN-8 was ~50-fold more potent than PFD while achieving comparable maximal relaxation, with EC50 values ranging from 0.8 to 4.7 μ M across the different bronchoconstrictors. Mechanistically, PFD and CXN-8 suppressed RhoA-mediated Ca²⁺ sensitization by restoring myosin light chain phosphatase activity, which reduced phosphorylation of myosin regulatory light chain (MLC20) and promoted ASM relaxation. In vivo, acute oral administration of PFD (300 mg/kg) or CXN-8 (15 mg/kg) reduced airway resistance and AHR in house dust mite-sensitized mice. Chronic oral treatment (daily, Days 14-24) further attenuated airway inflammation and remodeling, decreasing eosinophil and neutrophil infiltration, Th2 and Th17 cytokines, ASM thickening, and peribronchial collagen deposition. Collectively, these findings identify PFD and CXN-8 as dual-acting bronchodilator and anti-inflammatory agents that also alleviate airway remodeling, offering a promising therapeutic strategy for β 2-agonist-insensitive and corticosteroid-resistant asthma.

Keywords: RhoA signaling; bronchodilator; eosinophilic and neutrophilic airway inflammation; pirfenidone; refractory asthma.

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Conflict of interest statement

Please see the ICMJE disclosure forms, which have been provided as supplementary material.

Comment in

- [Pirfenidone for asthma? What to do when standard therapies fail.](#)

Borkar NA, Halayko AJ. *Am J Respir Cell Mol Biol*. 2026 Sep 1;74(9):1155-1156. doi: 10.1093/ajrcmb/aanag103. PMID: 42113879 No abstract available.

- [50 references](#)

Supplementary info

MeSH terms, Substances, Grants and funding [Expand](#)

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45

Editorial

Am J Respir Crit Care Med

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. 2026 Sep 1;212(9):2106-2108.

doi: 10.1093/ajrccm/aamag178.

[The propensity for mucus plug formation in fatal asthma is increased by airway narrowing](#)

[Peter B Noble](#)¹, [Michael J Hackmann](#)^{1,2}, [Alvenia Cairncross](#)^{1,3}, [Francis H Y Green](#)⁴, [Alan L James](#)^{3,5}, [John G Elliot](#)^{1,3}, [Graham M Donovan](#)⁶

Affiliations Expand

- PMID: 42085313
- DOI: [10.1093/ajrccm/aamag178](https://doi.org/10.1093/ajrccm/aamag178)

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No abstract available

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- [Reply to Noble et al.: The propensity for mucus plug formation in fatal asthma is increased by airway narrowing.](#)

Hsieh A, Vasilescu DM, Hackett TL. Am J Respir Crit Care Med. 2026 Sep 1;212(9):2109-2110. doi: 10.1093/ajrccm/aamag179. PMID: 42085306 No abstract available.

Comment on

- [Reply to Noble et al.: The propensity for mucus plug formation in fatal asthma is increased by airway narrowing.](#)

Hsieh A, Vasilescu DM, Hackett TL. Am J Respir Crit Care Med. 2026 Sep 1;212(9):2109-2110. doi: 10.1093/ajrccm/aamag179. PMID: 42085306 No abstract available.

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46

Editorial

Am J Respir Crit Care Med

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. 2026 Sep 1;212(9):2109-2110.

doi: 10.1093/ajrccm/aamag179.

[Reply to Noble et al.: The propensity for mucus plug formation in fatal asthma is increased by airway narrowing](#)

[Aileen Hsieh^{1,2}](#), [Dragoş M Vasilescu^{1,2}](#), [Tillie-Louise Hackett^{1,2}](#)

Affiliations Expand

- PMID: 42085306
- PMCID: PMC13519348 (available on 2027-09-01)
- DOI: [10.1093/ajrccm/aamag179](#)

No abstract available

Conflict of interest statement

Please see the ICMJE disclosure forms, which have been provided as supplementary material.

Comment in

- [The propensity for mucus plug formation in fatal asthma is increased by airway narrowing.](#)

Noble PB, Hackmann MJ, Cairncross A, Green FHY, James AL, Elliot JG, Donovan GM. Am J Respir Crit Care Med. 2026 Sep 1;212(9):2106-2108. doi: 10.1093/ajrccm/aamag178. PMID: 42085313 No abstract available.

Comment on

- [The propensity for mucus plug formation in fatal asthma is increased by airway narrowing.](#)

Noble PB, Hackmann MJ, Cairncross A, Green FHY, James AL, Elliot JG, Donovan GM. Am J Respir Crit Care Med. 2026 Sep 1;212(9):2106-2108. doi: 10.1093/ajrccm/aamag178. PMID: 42085313 No abstract available.

- [7 references](#)

Supplementary info

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Clin Rehabil

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. 2026 Sep;40(9):1143-1159.

doi: 10.1177/02692155261441158. Epub 2026 Apr 24.

A systematic review of physical activity guidelines for adults with cardio-respiratory diseases: Stepping towards evidence-based recommendations

Eda Tonga^{1 2}, Thomas Yates^{1 2 3}, Hannah Worboys⁴, Sally J Singh^{2 5 6}, Pip Divall⁷, G Andre Ng^{2 3 8}, Rachael A Evans^{2 5 6}

Affiliations Expand

- PMID: 42029388
- PMCID: [PMC13525178](#)
- DOI: [10.1177/02692155261441158](#)

Abstract

ObjectivesPhysical activity benefits for adults with cardio-respiratory diseases are well established, and evidence-based recommendations are essential for healthcare professionals. This study systematically reviewed existing recommendations on physical activity for adults with cardio-respiratory diseases, specifically chronic obstructive pulmonary disease, asthma, and heart failure, focusing on the frequency, intensity, time and type (FITT).
Data SourcesWe searched OVID MEDLINE, EMBASE, CINAHL, and grey literature for guidelines and related documents. The comprehensive search was conducted in July 2025 and subsequently updated through March 2026. Two authors independently screened guidelines, extracted FITT components, and documented disease-specific precautions. Disagreements were resolved with a third author. The AGREE II instrument assessed methodological quality for identified CPGs. Recommendations were categorised based on the FITT framework.
ResultsWe included 29 guidelines, of which 14 were classified as Clinical Practice Guideline and assessed with AGREE II. Among the 14 guidelines, 7 demonstrated high quality, 6 were moderate, and 1 was low quality. Most guidelines recommended at least 150 minutes of moderate aerobic activity per week. Adaptive recommendations primarily addressed exacerbations and symptom management.
ConclusionWhile aerobic physical activity was consistently recommended, disease-specific guidance and adherence to FITT principles were limited. Significant gaps were noted in methodological quality, particularly in stakeholder involvement and applicability. To enhance usability, guidelines should

standardise recommendations for type, duration, intensity, and frequency, incorporating evidence grading system.

Keywords: COPD; asthma; guidelines; heart failure; physical activity.

Conflict of interest statement

Declaration of conflicting interestsThe authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

- [60 references](#)
- [1 figure](#)

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Cite

48

Am J Rhinol Allergy

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. 2026 Sep;40(5):384-393.

doi: 10.1177/19458924261436871. Epub 2026 Apr 6.

[Clinical Characteristics of Patients with Non-Type 2 Chronic Rhinosinusitis with Nasal Polyps](#)

[Pei-Wen Wu^{1 2 3}](#), [Cheng-Hsun Chiu^{2 3}](#), [Cheng-Chi Lee^{2 4}](#), [Po-Hung Chang¹](#), [Chi-Che Huang^{1 2}](#), [Ta-Jen Lee^{1 2 5}](#), [Yu-Hsi Fan¹](#), [Chien-Chia Huang^{1 2 3}](#)

Affiliations [Expand](#)

- PMID: 41940864
- DOI: [10.1177/19458924261436871](#)

Abstract

BackgroundEndotype identification based on clinical characteristics is crucial for the selection and prediction of the efficacy of various therapeutic modalities in

patients with chronic rhinosinusitis with nasal polyps (CRSwNP). **Objective** This study aimed to evaluate the clinical characteristics of patients with non-type 2 (non-T2) CRSwNP. **Methods** Clinical and laboratory data, as well as nasal tissues, were collected from adult patients who underwent endoscopic sinus surgery (ESS) for primary diffuse CRSwNP. Non-T2 CRSwNP was defined as a tissue eosinophil count <10/high power field. The levels of interleukin (IL)-5 and IL-13 in nasal polyps were measured using real-time polymerase chain reaction. **Results** A total of 199 patients with bilateral CRSwNP were recruited. Sixty-five (32.7%) exhibited non-T2 CRSwNP. Regression analysis revealed that male sex, absence of asthma, low ethmoid/maxillary (E/M) ratio, high blood neutrophil, low lymphocyte, and low eosinophil percentages were significantly associated with non-T2 inflammation in patients with CRSwNP. Age and nasal polyp score were significant predictors of postoperative residual sinus inflammation-defined as a modified Lund-Kennedy endoscopy score of ≥ 5 at 3 months after surgery-in patients with non-T2 CRSwNP. **Conclusion** Male sex, absence of asthma, E/M ratio, and the percentages of neutrophils, lymphocytes, and eosinophils were significantly associated with non-T2 CRSwNP. Age and polyp score were predictors of postoperative residual sinus inflammation in patients with non-T2 CRSwNP. These findings may help clinicians better evaluate patients with non-T2 CRSwNP and provide optimal therapeutic strategies.

Keywords: chronic rhinosinusitis; endoscopic sinus surgery; modified Lund-Kennedy endoscopy score; nasal polyp; neutrophil; non-type 2.

Conflict of interest statement

Declaration of Conflicting Interests The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Supplementary info

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Cite

49

Review

J Asthma

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. 2026 Sep;63(9):1075-1079.

doi: 10.1080/02770903.2026.2654583. Epub 2026 Apr 9.

[The asthma-anxiety connection: friends or foes?](#)

[Antia Ferreiro-Posse¹](#), [Elva Mendoza-Zambrano²](#), [Angelica Tiotiu^{3,4}](#), [Francisco-Javier Gonzalez-Barcala^{2,5,6,7}](#)

Affiliations Expand

- PMID: 41924916
- DOI: [10.1080/02770903.2026.2654583](https://doi.org/10.1080/02770903.2026.2654583)

Abstract

Objective: To analyze the relationship between anxiety and asthma.

Methods: We carried an English scientific literature search using electronic search engines (PubMed). We included articles published in peer-review journals from 2020 to December 2024. In order to perform the search for the most suitable and representative articles, keywords were selected (-asthma, and -anxiety). The evidence level was assessed according to the criteria of the Oxford Center For Evidence-Based Medicine.

Results: Across multiple studies, the prevalence of anxiety among patients with asthma ranged from 13.7% to 54.3%, consistently higher than in the general population. Anxiety was associated with poorer asthma control (lower ACQ/ACT scores), reduced quality of life (AQLQ) and, in some cases, impaired lung function and higher inflammatory markers (hs-CRP, NLR). Depression emerged as the strongest risk factor for anxiety (OR 26.00), while well-controlled asthma (ACT $\geq$ 20) and allergic asthma were associated with approximately 70% lower risk. Being female and asthma onset occurring between ages 40 and 59 were also linked to higher anxiety prevalence. Screening tools such as the mini-AQLQ, HADS, EQ-5D and PHQ-4 demonstrated potential utility in identifying anxiety in asthmatic populations. In specific subgroups, asthma-related anxiety was associated with increased symptom reporting and exacerbations, even without a deterioration in objective measurements for airway obstruction.

Conclusions: Anxiety is a common comorbidity among patients with asthma and it is associated with poorer disease control and a reduced quality of life.

Keywords: Asthma; anxiety; disease control; prevalence; quality of life.

Supplementary info

Publication types, MeSH termsExpand

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Cite

50

Review

Perfusion

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. 2026 Sep;41(6):860-869.

doi: 10.1177/02676591261438969. Epub 2026 Mar 24.

[The treatment of status asthmaticus in the intensive care unit: A narrative review](#)

[Andrew A Alberter](#)¹, [Eric W Robbins](#)², [Taylor Miller](#)¹, [Matthew J Mackin](#)¹, [Erin Niles](#)³, [Elizabeth K Powell](#)^{1 3}

Affiliations Expand

- PMID: 41875870
- DOI: [10.1177/02676591261438969](#)

Abstract

Asthma is a common chronic respiratory disease where exacerbations can be associated with significant morbidity, mortality, and economic burden. Severe asthma exacerbations (SAEs) represent life-threatening episodes of symptom burden that require intensive care treatment. While outpatient asthma management is well-established by major organizational guidelines, there are limited evidence-based recommendations for treatment of SAEs requiring intensive care. This narrative review synthesizes current literature regarding conventional inpatient asthma therapies, ventilation strategies, and emerging rescue modalities for management of SAEs, including inhaled anesthetics and veno-venous extracorporeal membrane oxygenation and discusses future areas of interest for research. Until more robust clinical data is available, intensivists should weigh the potential risks and benefits of more advanced rescue therapies and consider a multidisciplinary approach to determining those most likely to benefit from these interventions.

Keywords: VV-ECMO; inhaled anesthetics; mechanical ventilation; severe asthma exacerbation; status asthmaticus.

Conflict of interest statement

Declaration of conflicting interestsThe authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Supplementary info

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Cite

51

Review

J Asthma

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. 2026 Sep;63(9):1071-1074.

doi: 10.1080/02770903.2026.2647916. Epub 2026 Mar 26.

[Mild asthma - a deceptive danger](#)

[Daniel J Tan](#)^{1 2 3}, [Shyamali C Dharmage](#)¹

Affiliations Expand

- PMID: 41847990
- DOI: [10.1080/02770903.2026.2647916](https://doi.org/10.1080/02770903.2026.2647916)

Free article

Abstract

Asthma remains one of the commonest chronic diseases globally, affecting over 339 million people across all age-groups. It is the most prevalent chronic respiratory disease in children, and second most common in adults. While most asthma patients are labelled as having 'mild' disease, strong evidence now shows that so-called 'mild asthma' is neither benign nor stable, and can result in serious adverse outcomes including severe exacerbations, persistent airflow limitation, and even death. Here, we challenge the concept of mild asthma as a low-risk condition, highlight evidence for its hidden dangers, and propose an evidence-based approach to redefine and manage the condition.

Keywords: Mild asthma; asthma severity; exacerbations; risks; treatable traits.

Supplementary info

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Cite

52

Review

Paediatr Respir Rev

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. 2026 Sep:59:28-35.

doi: 10.1016/j.prrv.2026.01.005. Epub 2026 Jan 29.

[The need to restudy SABA regimens on discharge of children with an acute asthma exacerbation: A scoping review](#)

[Deborah Yujie Yong](#)¹, [Biju Thomas](#)², [Basil Elnazir](#)³

Affiliations Expand

- PMID: 41775584
- DOI: [10.1016/j.prrv.2026.01.005](#)

Free article

Abstract

Background: This scoping review examines the recommendations for short-acting beta-agonists (SABA) in discharge and weaning plans following acute asthma exacerbations in children. It focuses on SABA overprescription in discharge/weaning plans after acute asthma exacerbations and explores strategies to promote protocol-directed care.

Methods: National and institutional protocols from the USA, UK, Australia, Canada, and Singapore between 2000 and 2025 were reviewed. Data on SABA weaning plan recommendations, initial dosage, frequency, duration, and caregiver instructions

were extracted and analysed using descriptive statistics. Searches were conducted from December 2024 to August 2025.

Results: Significant variability in protocols was found, with no randomised controlled trials or systematic reviews supporting current SABA discharge/weaning practices, highlighting a lack of evidence-based recommendations.

Conclusions: There is an urgent need for RCTs to guide safe SABA use. Improved patient education, access to inhaled corticosteroids, and evidence-based discharge plans are key to reducing SABA overuse and improving paediatric asthma outcomes.

Keywords: Asthma exacerbations; Discharge protocols; Evidence-based practice; Outcomes; Short-acting beta-agonists.

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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

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Cite

53

Review

Arch Bronconeumol

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. 2026 Sep;62(9):644-652.

doi: 10.1016/j.arbres.2025.11.012. Epub 2025 Dec 4.

[The Worldwide Puzzle of Bronchiectasis Etiology in Adults](#)

[Article in English, Spanish]

[Miguel Angel Martinez-Garcia¹](#), [Timothy Aksamit²](#), [Takanori Asakura³](#), [Lucy Burr⁴](#), [Chang Chia-Ling⁵](#), [Rosa Maria Giron⁶](#), [Wei-Jie Guan⁷](#), [Deniz Kizilirmak⁸](#), [Yeon-Mok Oh⁹](#), [Miguel Penizzotto¹⁰](#), [Felix C Ringshausen¹¹](#), [Anthony de Soyza¹²](#), [Christina Thornton¹³](#), [Conroy Wong¹⁴](#)

Affiliations Expand

- PMID: 41421865
- DOI: [10.1016/j.arbres.2025.11.012](https://doi.org/10.1016/j.arbres.2025.11.012)

Abstract

Bronchiectasis represents in frequency the third chronic inflammatory airway disease after chronic obstructive pulmonary disease (COPD) and asthma. It is produced by more than one hundred causes, both pulmonary and extrapulmonary. Despite advances in recent years in the understanding of this condition and the publication of several national and international guidelines on its management, in most cases the etiology remains unknown. Among the identified etiological forms, post-infectious and post-tuberculous are the most frequent. It is also striking how bronchiectasis associated with COPD and severe asthma has been progressively increasing over the years, probably due to greater awareness among healthcare professionals of the importance of such associations and the wider use of chest computed tomography (the diagnostic method of choice for bronchiectasis from a radiological perspective). However, it is remarkable, according to data obtained from national and international bronchiectasis registries, the considerable geographic heterogeneity in their etiology. Thus, in socially disadvantaged regions or in those with poorer healthcare access, post-infectious and particularly post-tuberculous forms clearly predominate. It is always necessary to perform the appropriate complementary tests, as highlighted in all bronchiectasis guidelines, to exclude at least the treatable etiologies (treatable trait), since this is undoubtedly associated with a better patient prognosis.

Keywords: Asthma; Bronchiectasis; COPD; Etiology; Infection; Registry.

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Review

Paediatr Respir Rev

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. 2026 Sep:59:57-64.

doi: 10.1016/j.prrv.2025.09.002. Epub 2025 Oct 15.

[ChatGPT and other large language models for childhood asthma](#)

[David Drummond](#)¹, [Angéline Girault](#)², [Apolline Gonsard](#)³

Affiliations Expand

- PMID: 41207799
- DOI: [10.1016/j.prrv.2025.09.002](#)

Free article

Abstract

Large language models (LLMs) such as ChatGPT, Claude, and Gemini have become widely accessible since 2022. As childhood asthma remains the most common chronic paediatric condition with persistent gaps in optimal management, these tools present both opportunities and challenges for families and healthcare professionals. This narrative review examines the role of commercially available LLMs in childhood asthma care, exploring their fundamental principles, current evidence, and potential applications. Studies show that LLMs can generate medically accurate and comprehensible responses to asthma-related queries. Healthcare professionals may also benefit from rapid summarisation and tailored educational content. However, risks include hallucinations, bias, and data privacy concerns. Further research is required to evaluate the safety, clinical utility, and real-world acceptability of LLMs - particularly in acute asthma management by families and in supporting clinical decisions by healthcare professionals - and to guide the development of reliable, inclusive tools tailored to paediatric respiratory care.

Keywords: Artificial intelligence; Clinical decision support; Digital health; Health literacy; eHealth.

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Conflict of interest statement

Declaration of competing interest The authors have no conflict of interest to disclose.

Supplementary info

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

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Clin Otolaryngol

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. 2026 Sep 2.

doi: 10.1111/coa.70168. Online ahead of print.

[Azelaastine-Fluticasone Intranasal Combination Therapy in Otorhinolaryngology: Clinical Evidence, Current Practice Patterns and Future Perspectives](#)

[Giorgio Ciprandi](#)¹, [Ignazio La Mantia](#)², [Attilio Varricchio](#)¹

Affiliations Expand

- PMID: 42686353
- DOI: [10.1111/coa.70168](#)

Abstract

Background: Allergic rhinitis (AR) represents a significant burden in Ear Nose Throat (ENT) practice and markedly affects quality-of-life and work productivity of AR patients. The fixed combination of intranasal azelastine and fluticasone propionate (AzeFlu) has emerged as a valuable therapeutic option for moderate-to-severe AR. Recent updates to international guidelines and real-world evidence warrant a comprehensive review of its role in ENT practice, with particular attention to both seasonal and perennial AR.

Methods: This narrative review synthesises evidence from the ARIA-EAACI 2024-2025 guidelines, systematic reviews and network meta-analyses of randomised controlled trials, pharmacovigilance data, and results from an Italian multidisciplinary inter-societal Delphi Consensus. We evaluated efficacy, safety, patient acceptability and implementation considerations specific to otorhinolaryngology practice.

Results: Network meta-analyses demonstrate that AzeFlu provides superior symptom control compared to monotherapy for both nasal and ocular symptoms in seasonal and perennial AR, with a rapid onset of action (15-30 min). The combination shows particular efficacy in patients with moderate-to-severe symptoms inadequately controlled by monotherapy. Safety profiles are comparable to those of monotherapy, with no significant effects on growth or the HPA axis in

children. Real-world data indicate high treatment satisfaction and adherence. The Italian Delphi Consensus achieved > 80% agreement on key management principles, particularly emphasising control of Type 2 inflammation and the role of combination therapy in treatment algorithms. Evidence for perennial AR remains more limited, and future primary research specifically targeting perennial rhinitis populations is warranted.

Conclusions: Azelastine-fluticasone combination therapy represents an evidence-based, guideline-recommended option for moderate-to-severe AR in ENT practice. Its dual mechanism, rapid onset, favourable safety profile and high patient acceptability support its integration into contemporary treatment algorithms, particularly for patients requiring enhanced symptom control beyond monotherapy. The combination represents a meaningful therapeutic advancement, and further research is needed to fully characterise its role in perennial AR management.

Keywords: ARIA guidelines; allergic rhinitis; azelastine-fluticasone; combination therapy; intranasal antihistamines; intranasal corticosteroids; otorhinolaryngology.

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Allergy

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[Classification of Seasonal Allergic Rhinitis Patients by Prospective Patient-Recorded Symptoms: The @IT.2020 Project](#)

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[M Pinar](#)¹¹, [A Priftanji](#)¹⁵, [F Psarros](#)³², [C Sackesen](#)³³, [I Sfika](#)⁵, [J Suarez](#)³⁴, [M Thibaudon](#)³⁵, [U Uguz](#)³⁶, [V Verdier](#)¹⁴, [V Villella](#)⁵, [P Xepapadaki](#)³⁷, [D Yazici](#)^{38 39}, [P M Matricardi](#)^{1 10 40}

Affiliations Expand

- PMID: 42684055
- DOI: [10.1111/all.70447](#)

Abstract

Background: Seasonal allergic rhinitis (SAR) has been so far classified according to frequency and severity by retrospective information based on the ARIA (Allergic Rhinitis and its Impact on Asthma) classification. Electronic symptom diaries (e-Diaries) are feasible tools to collect prospective patient-reported data.

Objective: To test the consistency between prospectively recorded symptoms and retrospective ARIA classification and to generate a new SAR classification based on prospective e-Diary data.

Methods: Within the @IT.2020 multicentre observational study, we recruited 815 children and adults with SAR in nine study centres from Mediterranean countries. Participants recorded daily organ-specific (Rhinoconjunctivitis Total Symptom Score; RTSS) and general symptoms (visual analogue scale, VAS) plus quality-of-life measures via an e-Diary app. Retrospective clinical questionnaires were performed at the beginning (T0) and end (T1) of the pollen season. Unsupervised clustering analyses around medoids were implemented to classify SAR by prospective patient-reported data.

Results: One third (56/164, 34.1%) and almost half (173/366, 47.3%) of the patients retrospectively over- or underestimated the frequency of their symptoms, respectively. A moderate correlation was found between SAR severity reported at T1 and prospectively recorded symptom severity. An unsupervised clustering approach was able to identify distinct groups (mild, moderate, severe cluster) of patients based on the prospective severity of organ-specific (RTSS) and overall symptoms (VAS), as well as quality of life criteria.

Conclusions: A significant recall bias regarding frequency and severity of symptoms emerged by comparing the retrospective ARIA classification with prospectively recorded data by an e-Diary. A prospective approach to SAR classification, inspired by the retrospective ARIA classification, may facilitate a more precise evaluation of the patient for improved disease management.

Keywords: cluster analysis; e-Diary; mHealth; patient-reported outcomes; seasonal allergic rhinitis classification.

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3

Lancet Reg Health West Pac

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. 2026 Aug 23:74:101969.

doi: 10.1016/j.lanwpc.2026.101969. eCollection 2026 Sep.

[Efficacy, safety, and pharmacokinetics of pumecitinib nasal spray for moderate-to-severe seasonal allergic rhinitis: a multicentre, double-blind, randomised, placebo-controlled, phase 2 trial](#)

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Affiliations Expand

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- PMCID: [PMC13506314](#)
- DOI: [10.1016/j.lanwpc.2026.101969](#)

Abstract

Background: Seasonal allergic rhinitis (SAR) is a pollen-triggered condition causing nasal inflammation and quality of life impairment. Pumecitinib, a topical Janus kinase (JAK) inhibitor may modulate allergic inflammation. We evaluated the efficacy, safety, and pharmacokinetics of pumecitinib nasal spray administered over a 14-day period during the pollen season in patients with moderate-to-severe seasonal allergic rhinitis (SAR).

Methods: This phase 2, randomised, double-blind, placebo-controlled, parallel-group study was carried out at 20 centres in China. Adults aged 18-65 years with moderate-to-severe SAR were randomised 1:1:1:1 to receive placebo or pumecitinib nasal spray at doses of 0.2 mg, 1.2 mg, or 2.0 mg administered twice daily for 14 days. The primary efficacy endpoint was the mean change from baseline in daily reflective total nasal symptom score (rTNSS) over 14 days. The secondary endpoints included reflective total ocular symptoms (rTOSS), individual nasal and ocular symptoms, and rhinoconjunctivitis quality of life questionnaire (RQLQ) scores. This study is registered with chitr.org.cn, ChiCTR2400081767, and is completed.

Findings: Between March 20 and June 5, 2024, 169 patients were randomly assigned and 168 received treatment (92 male, 76 female) and were included in the full analysis set. Both the 1.2 mg and 2.0 mg doses of pumecitinib demonstrated significant improvements compared with placebo in the mean change from baseline in the daily rTNSS over 14 days (least-squares [LS] mean difference -1.2 [95% CI -2.2 to -0.2], $p = 0.021$, and -1.2 [-2.2 to -0.2], $p = 0.018$, respectively). These two dosage groups significantly improved rTOSS, individual nasal and ocular symptoms, and RQLQ scores compared to the placebo group. Treatment-emergent adverse events (TEAEs) occurred in 15% (0.2 mg), 33% (1.2 mg), 21% (2.0 mg), and 24% (placebo) of patients; most were mild, with no clear dose-response relationship.

Interpretation: Pumecitinib 1.2 mg and 2.0 mg twice daily significantly alleviated nasal and ocular symptoms and improved quality of life in moderate-to-severe SAR, with a favourable safety profile during 14-day treatment. This provides proof of concept for topical JAK inhibition in SAR, warranting larger trials.

Funding: PrimeGenX Therapeutics Co., Ltd.

Keywords: Janus kinase inhibitor; Nasal symptom; Ocular symptom; Pumecitinib; Seasonal allergic rhinitis.

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Conflict of interest statement

All authors declare that they have no competing interests, except where explicitly disclosed. LZ has been an advisory board member for Keymed and GSK. LZ has received clinical trial funding from Keymed, AZ, GSK, Genrix, PrimeGenX, Sanofi and Chia Tai Tianging. DD is an employee of PrimeGenX Therapeutics Co., Ltd. QG is an employee of PrimeGenX Therapeutics Co., Ltd. YL is an employee of PrimeGenX Therapeutics Co., Ltd.

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Meta-Analysis

Int J Pediatr Otorhinolaryngol

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. 2026 Sep:208:112973.

doi: 10.1016/j.ijporl.2026.112973. Epub 2026 Aug 10.

Efficacy and safety of nasal saline irrigation for allergic rhinitis in children and adolescents: A systematic review and meta-analysis with GRADE assessment

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Affiliations Expand

- PMID: 42579992
- DOI: [10.1016/j.ijporl.2026.112973](https://doi.org/10.1016/j.ijporl.2026.112973)

Abstract

Purpose: To critically evaluate and synthesize evidence from controlled trials regarding the efficacy and safety of nasal saline irrigation (NSI), utilizing both isotonic and hypertonic solutions, for the treatment of allergic rhinitis (AR) exclusively in children and adolescents aged 18 years or younger.

Methods: A systematic review and meta-analysis was conducted in accordance with PRISMA guidelines. A comprehensive search of PubMed/MEDLINE, Embase, Cochrane CENTRAL, Scopus, and Web of Science was performed for studies published up to May 2025. Eligibility criteria included randomized and non-randomized controlled trials comparing NSI (isotonic 0.9% or hypertonic >0.9%) against standard pharmacological care or no intervention in pediatric populations with physician-confirmed AR. Primary outcomes assessed were changes in nasal symptom scores, rescue antihistamine use, and disease control scores, with the certainty of evidence evaluated using the GRADE approach.

Results: Seven studies involving a total of 462 participants met the inclusion criteria. The pooled analysis demonstrated that NSI resulted in a large and statistically significant reduction in nasal symptom scores compared with controls (Standardized Mean Difference [SMD] -1.29; 95% CI -1.98 to -0.60), supported by low-certainty evidence. Furthermore, NSI was associated with a significant decrease in

rescue antihistamine use (SMD -1.38; 95% CI -2.50 to -0.26; very low certainty). Although a trend toward improved disease control was observed (SMD 0.53), it did not reach statistical significance (95% CI -0.03 to 1.08), and the evidence was graded as very low certainty. Adverse events were minor (e.g., nasal irritation) and infrequent, with no serious safety concerns reported.

Conclusion: Nasal saline irrigation is an effective and safe intervention for children and adolescents with allergic rhinitis, offering clinically meaningful improvements in nasal symptoms and a significant medication-sparing effect. NSI can reasonably be considered as an adjunctive therapy alongside standard pharmacological care, with the choice of saline tonicity potentially tailored to the predominant symptom phenotype, although the predominance of high risk-of-bias evidence warrants confirmation in more rigorous trials.

Keywords: Allergic rhinitis; Children; Hypertonic saline; Isotonic saline; Nasal saline irrigation.

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Conflict of interest statement

Declaration of competing interests 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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Int J Pediatr Otorhinolaryngol

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. 2026 Sep:208:112961.

doi: 10.1016/j.ijporl.2026.112961. Epub 2026 Jul 27.

[Sleep disturbances in children with allergic rhinitis: Associations with rhinitis control and treatment response](#)

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Affiliations Expand

- PMID: 42526349
- DOI: [10.1016/j.ijporl.2026.112961](https://doi.org/10.1016/j.ijporl.2026.112961)

Abstract

Introduction: Allergic rhinitis (AR), a common pediatric condition, is an established contributor to impaired sleep and sleep-disordered breathing. However, data on the relative impact of disease severity versus control on sleep remain limited. We aimed to investigate the associations between AR severity, disease control, and treatment response and sleep quality in Turkish children.

Methods: In this prospective study, 65 children aged 4-15 years with AR and 67 age-matched healthy controls were evaluated. Sleep quality, AR control, and AR severity were assessed using the Children's Sleep Habits Questionnaire (CSHQ), the Rhinoconjunctivitis Control Assessment Test (RCAT), and its Impact on Asthma (ARIA) guidelines, respectively. CSHQ scores were compared according to AR severity and control status and evaluated before and after three months of treatment.

Results: Mean CSHQ scores were higher in the AR group than in controls (53.7 ± 8.7 vs. 47.5 ± 8.0 , $p < 0.001$). AR was associated with disturbances in several CSHQ subdomains, including difficulty waking, fragmented sleep, sleep-disordered breathing, and parasomnias. CSHQ scores did not differ across AR severity categories ($p = 0.216$) but showed an inverse correlation with RCAT scores ($r = -0.40$, $p = 0.001$). Among 46 treated patients, sleep quality improved after therapy, particularly in the sleep fragmentation and sleep anxiety domains, with no significant difference between montelukast monotherapy and combined montelukast plus antihistamine therapy.

Conclusion: In children with AR, sleep impairment is more closely related to rhinitis control than to symptom-based severity. Optimizing disease control, rather than focusing solely on severity, appears crucial for improving sleep and related functional outcomes.

Keywords: Allergic rhinitis; Children; Disease control; Sleep disordered breathing; Sleep quality.

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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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Lancet Respir Med

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. 2026 Sep;14(9):809-819.

doi: 10.1016/S2213-2600(26)00163-3. Epub 2026 Jul 21.

[FEF_{25-75%} trajectories from age 7 to 53 years, associations with childhood and parental preconception factors, and midlife COPD risk: a prospective cohort study](#)

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Affiliations Expand

- PMID: 42480573
- DOI: [10.1016/S2213-2600\(26\)00163-3](#)

Free article

Abstract

Background: Existing trajectory studies have emphasised large-airway indices, but chronic obstructive pulmonary disease (COPD) might originate in smaller airways. This study aimed to investigate mid-to-small-airway function trajectories, their associated factors, and COPD risk.

Methods: In this prospective cohort study, probands (referred to throughout as offspring) were recruited to the Tasmanian Longitudinal Health Study from local schools across Tasmania, Australia at age 7 years. Pre-bronchodilator mean forced expiratory flow between 25% and 75% of the forced vital capacity (FEF_{25-75%}) of offspring was measured at age 7 years as a proxy measure of mid-to-small-airway function. Parents completed a comprehensive respiratory health survey on themselves and their offspring. Offspring were followed up at mean ages of 13, 18, 45, 50, and 53 years. Follow-up included pre-bronchodilator spirometry, demographic surveys, lifestyle factors, respiratory symptoms, and illnesses. Post-

bronchodilator spirometry was measured at mean ages of 45 and 53 years. Parents were later approached to complete the 2010 Tasmanian Longitudinal Health Study Parents Postal Survey, which collected information on parental preconception factors, including exposures during their own childhood and adolescence. Group-based trajectory modelling was used to identify FEF_{25-75%} trajectories. Regression models were used to assess associations of FEF_{25-75%} trajectories with childhood and parental preconception factors, and with COPD risk by age 53 years.

Findings: Between Feb 23, 1968, and Nov 8, 2016, 2314 offspring from the Tasmanian Longitudinal Health Study were included. Six FEF_{25-75%} trajectories were identified: persistently low (144 [6.2%]); early normal-reduced growth-rapid decline (168 [7.3%]); early below average-reduced growth (740 [32.0%]); early low-accelerated growth (80 [3.5%]); average (976 [42.2%]; reference); and persistently high (206 [8.9%]). Three impaired trajectories across the lifespan were associated with COPD: persistently low (adjusted odds ratio 112 [95%CI 42-304]), early normal-reduced growth-rapid decline (41 [15-112]), and early below average-reduced growth (3.1 [1.0-9.2]) trajectories. Factors associated with impaired trajectories included no breastfeeding, the presence of asthma or wheeze, allergic rhinitis, and pneumonia or pleurisy during childhood, maternal asthma or wheeze, and parental smoking before conception. The persistently high trajectory was associated with parental preconception microbial-related exposures (ie, fathers sharing a childhood bedroom with three or more siblings and maternal cat keeping before completing puberty).

Interpretation: FEF_{25-75%} across the life course, particularly from early life, could be more relevant to COPD than previously recognised. Several childhood and novel parental preconception factors were associated with FEF_{25-75%} trajectories, although causality cannot be inferred due to no clear temporality of these associations. Our findings on the relationship between FEF_{25-75%} and COPD should be interpreted as life-course associations rather than as predictive. As COPD was rare in the average trajectory, the magnitude of effect estimates could be inflated.

Funding: National Health and Medical Research Council of Australia; The University of Melbourne; Clifford Craig Medical Research Trust; the Victoria, Queensland, and Tasmania Asthma Foundations; The Royal Hobart Hospital Research Foundation; Helen MacPherson Smith Trust; GlaxoSmithKline; China Scholarship Council.

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Conflict of interest statement

Declaration of interests CJL, JLP, AJL, MJA, and SCD have received an investigator-initiated grant from GlaxoSmithKline for unrelated research. JLP and SCD also hold a similar grant from AstraZeneca for unrelated research. AJL has received fellowship funding from the Faculty of Medicine, Dentistry, and Health Sciences at The University of Melbourne. AJL has received an investigational product (EpiCeram) free of charge from Primus Pharmaceuticals for use in unrelated research. AJL and SCD have received grant funding from Sanofi Regeneron for unrelated research. RJA has received research grants from the National Health and Medical Research Council, Medical Research Future Fund, Hospital Research Foundation, Flinders Foundation, SafeWork SA, Sydney Trains, and Lifetime Support Authority for unrelated research; consulting fees from Takeda for

participation in the Narcolepsy Expert Advisory Panel unrelated to this research; has participated in the Avecho Safety Monitoring Board; and has received equipment from Withings, ResMed, and Philips for unrelated research. GRW reports grants from the National Institutes of Health, paid to their institution for unrelated research; consulting fees from 35Pharma, Argenx, AstraZeneca, Genentech, GlaxoSmithKline, Inmed, Merck, Montai Therapeutics, PulmonX, Rage Biotech, Regeneron, and Sanofi unrelated to this research; and travel support from AstraZeneca and GlaxoSmithKline for advisory board meetings unrelated to this research. GRW is a co-founder and equity shareholder in Quantitative Imaging Solutions, a company that provides consulting services for image and data analytics. GRW also reports that their spouse works for Biogen. MJA has received investigator-initiated grants from Pfizer, Boehringer-Ingelheim, and Sanofi for unrelated research. MJA has also undertaken an unrelated consultancy for Sanofi and received a speaker's fee from GlaxoSmithKline. All other authors declare no competing interests.

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Randomized Controlled Trial

Clin Otolaryngol

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. 2026 Sep;51(5):776-783.

doi: 10.1111/coa.70137. Epub 2026 Jun 27.

[A Novel Device to Improve the Tolerability of Intranasal Corticosteroid Sprays for Allergic Rhinitis and Postoperative Chronic Rhinosinusitis: A Crossover Trial](#)

[Sethmi Ranasinghe^{1,2}](#), [Xenia Berger¹](#), [Wandia Kimita¹](#), [Kristi Biswas¹](#), [Raymond Kim^{1,2,3}](#), [Richard Douglas^{1,2,3}](#)

Affiliations Expand

- PMID: 42363677

- PMCID: [PMC13432547](#)
- DOI: [10.1111/coa.70137](#)

Abstract

Background: Allergic rhinitis (AR) and chronic rhinosinusitis (CRS) are commonly treated with intranasal corticosteroid sprays. Despite their efficacy, unpleasant sensations associated with their application, including post-nasal drip and nasal irritation, are often cited as reasons for poor compliance. Optimising the intranasal application experience is key to improving long-term adherence. We developed a nasal adaptor for metered-dose inhalers (MDIs) to reduce the unpleasantness of nasal administration, potentially improving patient compliance.

Methods: Two crossover trials were conducted in AR and postoperative CRS participants (n = 16 per group). Participants used a standard fluticasone nasal spray (50 µg) and a fluticasone MDI (125 µg) with the adaptor for 3 weeks each, separated by a 1-week washout period. Device order was alternated, and doses were adjusted to ensure an approximately equal fluticasone dose. Device preference was determined using an adjusted Clinical Trial Patient Preference Questionnaire, and symptom improvement was assessed using Total Nasal Symptom Score and Sino-nasal Outcome Test-22 questionnaires.

Results: Symptom improvement was comparable between the devices. However, in both groups, 11/16 (69%) participants preferred the MDI with the adaptor over the standard nasal spray, citing fewer unpleasant sensations. Satisfaction score improvement was significantly greater with the novel device in the CRS cohort. Participants reported a higher likelihood of compliance with the novel device, suggesting improved adherence.

Conclusions: An MDI with the adaptor was preferred over a standard nasal spray among AR and postoperative CRS participants. The enhanced tolerability may promote improved compliance, and consequently, more effective long-term symptom control.

Keywords: AR; CRS; FESS; SNOT-22; corticosteroids; device; intranasal; postoperative.

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Conflict of interest statement

The authors declare no conflicts of interest.

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Review

Otolaryngol Head Neck Surg

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. 2026 Sep;175(3):527-546.

doi: 10.1002/ohn.70295. Epub 2026 Jun 15.

[Dupilumab Extended Interval Dosing in Chronic Rhinosinusitis With Nasal Polyps: A Systematic Review and Meta-analysis](#)

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Affiliations Expand

- PMID: 42290623
- PMCID: [PMC13525900](#)
- DOI: [10.1002/ohn.70295](#)

Abstract

Objective: To evaluate whether extending the dupilumab dosing interval beyond the standard every-two-weeks (Q2W) regimen maintains clinical, radiologic, and biomarker control in adults with chronic rhinosinusitis with nasal polyps (CRSwNP).

Data sources: PubMed, Scopus, Cochrane Library, and Web of Science were systematically searched using predefined terms related to CRSwNP and dupilumab, with the final search in September 2025. Reference lists of included studies were also screened.

Review methods: Eligible studies enrolled adults with CRSwNP who transitioned from dupilumab 300 mg Q2W to extended intervals ($\geq$ Q4W). Two reviewers

independently screened, extracted data, and assessed risk of bias using RoB2 and NIH tools. Random-effects meta-analyses synthesized sinonasal, radiologic, and biomarker outcomes. Subgroup analysis also compared switching after 6 versus 12 months of standard-dosing induction period.

Results: Nineteen studies met the inclusion criteria, and nine contributed to quantitative synthesis. Across 1075 patients, extended interval dosing preserved disease control. Pooled mean differences (Q4W vs Q2W) showed non-significant changes in 22-item Sinonasal Outcome Test (SNOT-22) (-0.56), nasal congestion (-0.73), olfaction (+0.23), nasal polyp score (-0.29), and Lund-Mackay score (-1.25). Eosinophils decreased significantly ($-0.13 \times 10^9/L$; $P = .047$). Subgroup analysis revealed a non-significant difference in clinical outcomes of Q4W dosing when comparing the 12- and 6-month induction protocols. Real-world studies showed the feasibility of further extension (Q6W-Q12W) in selected patients.

Conclusion: Dupilumab interval extension to Q4W maintains clinical stability after 6 to 12 months of standard dosing, with potential for longer intervals in selected patients. Further controlled trials are required to define optimal tapering strategies and identify predictors of successful dose spacing.

Keywords: chronic rhinosinusitis with nasal polyps (CRSwNP); de-escalation; dose; dupilumab; interval extension; monthly, biologics; spacing; tapering.

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Conflict of interest statement

The authors declare no conflicts of interest.

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- [8 figures](#)

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Comparative Study

Adv Ther

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. 2026 Sep;43(9):3810-3827.

doi: 10.1007/s12325-026-03655-8. Epub 2026 Jun 12.

Indirect Treatment Comparison of Tezepelumab Versus Other Biologics in Severe Chronic Rhinosinusitis with Nasal Polyps: A Systematic Literature Review and Network Meta-analysis

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Affiliations Expand

- PMID: 42283959
- PMCID: [PMC13499838](#)
- DOI: [10.1007/s12325-026-03655-8](#)

Abstract

Introduction: This study compared the efficacy of tezepelumab with other approved biologics and endoscopic sinus surgery (ESS) using indirect treatment comparisons (ITCs) in adults with severe, uncontrolled chronic rhinosinusitis with nasal polyps (CRSwNP).

Methods: Randomized controlled trials (RCTs) identified via a systematic literature review (SLR) were synthesized in a network meta-analysis (NMA). Outcomes included change from baseline in nasal polyp score (NPS), nasal congestion/obstruction score (NCS/NOS), difficulty with sense of smell (DSS), Sino-Nasal Outcome Test-22 (SNOT-22) score, Lund Mackay score (LMS), time to nasal polyposis (NP) surgery decision, proportions requiring NP surgery or systemic corticosteroids (SCS), time to SCS use, and the University of Pennsylvania Smell Identification Test (UPSIT). Mean differences, hazard ratios, and odds ratios with 95% credible intervals were estimated for available treatments at 52 weeks. Not all endpoints were reported across trials; comparisons were conducted only where both treatments reported the outcome.

Results: At 52 weeks, tezepelumab showed comparable efficacy to dupilumab across all evaluated endpoints, apart from the proportion of patients requiring surgery, where tezepelumab was associated with a lower surgery rate than dupilumab. Tezepelumab consistently outperformed mepolizumab, depemokimab, and placebo. In analyses of < 30-week endpoints, tezepelumab outperformed omalizumab for all outcomes except SNOT-22, where no difference was observed. Sensitivity analyses including ESS showed benefits for tezepelumab across endpoints except for NPS, for which ESS ranked highest.

Conclusion: Tezepelumab achieved similar efficacy to dupilumab across all evaluated endpoints with the exception of the proportion of patients requiring surgery, where tezepelumab demonstrated a numerically greater reduction compared with dupilumab. Results consistently favoured tezepelumab and dupilumab over depemokimab, mepolizumab, and omalizumab.

Keywords: Endoscopic sinus surgery; Indirect treatment comparison; Nasal obstruction score; Nasal polyp score; Network meta-analysis; Sino-nasal outcome test; Tezepelumab.

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Conflict of interest statement

Declarations. Conflict of Interest: Joseph K Han has received consultancy fees from AstraZeneca, Genentech, GSK, Novartis, Regeneron Pharmaceuticals and Sanofi. Joaquim Mullol is or has been a member of national and international scientific advisory boards, consulted, received fees for lectures and grants for research projects or clinical trials from Almirall, AstraZeneca, Genentech-Roche, GSK, LETI, Lilly, Menarini, Mitsubishi-Tanabe, MSD, NOUCOR/Uriach Group, Novartis, OptiNose, Proctor & Gamble, Regeneron Pharmaceuticals, Sanofi Genzyme, UCB Pharma and Viartis/MEDA Pharmaceuticals. Claire Hopkins has participated in advisory boards for AstraZeneca, GSK, Lilly and Sanofi Genzyme. Oliver Pfaar reports grants and/or personal fees and/or travel support from AEDA, Alfried Krupp Krankenhaus, ALK-Abelló, Allergopharma, Almirall, Altamira Therapeutics, ASIT Biotech, AstraZeneca, Bencard Allergie GmbH/Allergy Therapeutics, Biologixpharma, Blueprint, Breazy Health, Cliantha, Deutsche AllergieLiga e.V., Deutsche Forschungsgemeinschaft, Dustri-Verlag, ECM Expro&Conference Management GmbH, Forum für Medizinische Fortbildung, Georg-Thieme-Verlag, GSK, HAL Allergy Holding B.V./HAL Allergie GmbH, Immunotek, Ingress Health, Institut für Disease Management, IQVIA Commercial, Japanese Society of Allergology, Königlich Dänisches Generalkonsulat, Laboratorios LETI/LETI Pharma, Lilly, Lofarma, Medizinische Hochschule Hannover, med update europe GmbH, Meinhardt Congress GmbH, Novartis, Paul-Ehrlich-Institut, Paul-Martini-Stiftung, PneumoLive, Pohl-Boskamp, Procter & Gamble, Red Maple Trials Inc., Regeneron, RG Aerztefortbildung, ROXALL Medizin, Sanofi Aventis, Sanofi Genzyme, Springer Publisher, Stallergenes Greer, streamedup! GmbH, Technical University Dresden, John Wiley & sons publishers, Wort & Bild Verlag, Verlag ME; all outside the submitted work, Oliver Pfaar is Vice President of the European Academy of Allergy and Clinical Immunology (EAACI), a member of EAACI Excom as well as a member of the external board of directors of the German Society of Allergy and Clinical Immunology (DGAKI); coordinator, main- or co-author of different position papers and guidelines in rhinology, allergology and allergen-immunotherapy; and he is Editor-in-Chief of Clinical Translational Allergy and Associate Editor of Allergy. Martin Desrosiers has received grants and speaker fees from AstraZeneca, GSK, Regeneron Pharmaceuticals and Sanofi; fees for consultancy from Boehringer Ingelheim and Insmed and is an equity holder with Procionase Therapies Inc. Jason Steenkamp is an employee of EVERSANA who received funding from AstraZeneca for conducting the statistical analyses that informed this study. Danny Gibson, Andrew Foster and Christopher Ambrose are employees of AstraZeneca and may own stock or stock options in AstraZeneca. Santiago Zuluaga Sanchez is an employee of Amgen and owns stocks in Amgen. Ethical Approval: This article is

based solely on previously published studies and does not include any new research involving human participants or animals conducted by the authors.

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- [2 figures](#)

Supplementary info

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Observational Study

Adv Ther

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. 2026 Sep;43(9):4023-4041.

doi: 10.1007/s12325-026-03623-2. Epub 2026 Jun 10.

[Baseline Characteristics of Patients with Asthma Initiating Dupilumab in a Real-World Setting: The REVEAL Registry](#)

[Jorge F Máspero](#)¹, [Rand K Arnaout](#)², [Leslie Vargas-Ramírez](#)³, [Hassan Mobayed](#)⁴, [Bassam Mahboub](#)⁵, [Carla Irani](#)⁶, [Amir Bar-Shai](#)^{7 8}, [Mariko S Koh](#)⁹, [Jason Chao](#)¹⁰, [Sherif Zaghloul](#)¹¹, [Jason H Kwah](#)¹², [Jennifer Dewhurst](#)¹³, [Mona S Al-Ahmad](#)^{14 15}

Affiliations Expand

- PMID: 42268495
- PMCID: [PMC13499758](#)
- DOI: [10.1007/s12325-026-03623-2](#)

Abstract

Introduction: Dupilumab, a fully human monoclonal antibody, blocks the receptors for interleukins 4/13, key and central drivers of type 2 inflammation. Clinical trials demonstrated the safety and efficacy of dupilumab in patients with moderate-to-severe asthma. Here, we aim to describe baseline characteristics of patients initiating dupilumab for asthma, to characterize its safety and effectiveness in real-world clinical practice.

Methods: REVEAL (pRospEctiVe charactERization of asthma patients treated with dupilumAb in a reaL-world setting; [NCT04550962](#)) is a longitudinal, prospective, 3-year observational study of patients aged ≥12 years prescribed dupilumab for asthma in Latin America, the Middle East, Russian Federation, and Singapore per country-specific prescribing information.

Results: Of 376 patients enrolled, 374 were included in the effectiveness analysis set. Most were female (62.6%), white (50.3%), and non-Hispanic or Latino (51.3%). Mean (standard deviation [SD]) age was 47.8 (13.89) years. Tobacco use was rare; 312 (83.4%) patients were never smokers. Most were classified as Global Initiative for Asthma step 4 (17.8%) or 5 (69.5%). Mean (SD) number of prior-year severe exacerbations was 2.0 (4.53) (n = 374). Mean (SD) pre- and post-bronchodilator forced expiratory volume in 1 second (FEV₁) was 2.2 L (0.83) (n = 306) and 2.3 L (0.86) (n = 212), respectively. Mean (SD) pre-bronchodilator FEV₁/forced vital capacity (FVC) ratio was 0.7 (0.13) (n = 301). 242 (64.7%); 231 (61.8%) patients reported allergic rhinitis and chronic rhinosinusitis with nasal polyposis history. Median (Q1-Q3) blood eosinophil counts were 390.0 cells/μL (185.0-700.0) (n = 348) and fractional exhaled nitric oxide levels were 34.0 parts per billion (19.0-60.0) (n = 314).

Conclusion: Patients prescribed dupilumab in routine clinical practice were predominantly adult women with severe asthma. Frequent severe exacerbations, high prevalence of coexisting type 2 inflammatory conditions, and elevated type 2 inflammatory biomarkers suggest disease burden is high among patients initiating dupilumab for asthma.

Trial registration: ClinicalTrials.gov Identifier, [NCT04550962](#).

Keywords: Asthma; Asthma control; Dupilumab; Lung function; Real-world evidence; Registry study.

Plain language summary

Standard asthma treatments do not always prevent asthma attacks or improve breathing. Dupilumab is a newer prescription medicine used to treat patients with moderate-to-severe asthma who have an overreaction of their immune system called type 2 inflammation. In clinical trials, dupilumab reduced asthma attacks and improved breathing in patients with moderate-to-severe asthma. The REVEAL registry is a study observing how patients with asthma in the Middle East, Latin America, Russian Federation, and Singapore respond to dupilumab outside of clinical trial settings. The average patient had uncontrolled, severe asthma on enrollment. We summarized the characteristics of 374 enrolled patients before they started dupilumab; 60% were from the Middle East, nearly 60% were women, and half were white. More than 80% reported no history of smoking and, on average, patients were overweight. In the year before REVEAL, despite taking their medicine, patients had an average of two severe asthma attacks. Breathing tests showed

moderate asthma in most patients. Most (72%) had high numbers of blood eosinophils (an inflammatory white blood cell) and 55% had elevated fractional exhaled nitric oxide (FeNO; a marker of lung inflammation in breath), indicating presence of type 2 inflammation, common in many people with asthma. Several patients had other health problems related to type 2 inflammation, most commonly allergic rhinitis (runny nose, sneezing, and itchy eyes caused by allergies), seen in 65% of patients. Overall, patients starting dupilumab in the real world had features of uncontrolled, severe asthma, including frequent asthma attacks and type 2 inflammation.

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Conflict of interest statement

Declarations. Conflict of interest: Jorge F. Máspero is a consultant for AstraZeneca and Sanofi; has received speaker fees from GSK, Menarini, Novartis, and Uriach; and has received research grants from Novartis. Rand K. Arnaout has received honoraria for serving as a speaker and on advisory boards from AllergoTek, AstraZeneca, Biologix, GSK, Novartis, Pfizer, Regeneron Pharmaceuticals Inc., Sanofi, and Takeda. Leslie Vargas-Ramírez has served as a speaker for AstraZeneca, Boehringer Ingelheim, and GSK. Hassan Mobayed and Bassam Mahboub have no conflicts of interest to disclose. Carla Irani has received honoraria from Novartis, Sanofi, and Stallergenes Greer. Amir Bar-Shai reports advisory board member/consulting fees, speaker fees, institutional research grants from AstraZeneca, Boehringer Ingelheim, GSK, Kamada, and Sanofi. Mariko S. Koh has received research support from AstraZeneca and reports lecture and advisory board honoraria paid to her institution from AstraZeneca, Boehringer Ingelheim, GSK, Novartis, Roche, and Sanofi. Jason Chao is a former employee of Sanofi and may hold stock and/or stock options in the company. Sherif Zaghloul and Jennifer Dewhurst are employees of Sanofi and may hold stock and/or stock options in the company. Jason H. Kwah is an employee and shareholder of Regeneron Pharmaceuticals Inc. Mona S. Al-Ahmad has received honoraria for serving as a speaker and on advisory boards from AstraZeneca, GSK, Novartis, and Sanofi. **Ethical Approval:** REVEAL is being conducted in accordance with the Declaration of Helsinki, the International Conference on Harmonisation Good Clinical Practice guideline, and applicable regulatory requirements. The REVEAL protocol was reviewed and approved by the respective institutional review boards before patient recruitment. All patients provided written informed consent. For patients under the age of 18 years, both parental/legal guardian consent and patient assent were required.

- [34 references](#)
- [2 figures](#)

Supplementary info

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Am J Rhinol Allergy

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. 2026 Sep;40(5):410-417.

doi: 10.1177/19458924261448266. Epub 2026 May 19.

[Association of Depression in Patients With Chronic Rhinosinusitis Comorbid Asthma and Allergic Rhinitis: A Cross-Sectional Study With the All of Us Research Database](#)

[Sherron Thomas](#)¹, [Ashley Choi](#)¹, [Meryl Kravitz](#)², [Patrick Colley](#)², [Nadeem Akbar](#)², [Christina H Fang](#)²

Affiliations Expand

- PMID: 42153790
- DOI: [10.1177/19458924261448266](#)

Abstract

BackgroundChronic rhinosinusitis (CRS) is a persistent inflammatory condition often coexisting with asthma, allergic rhinitis (AR), and depression, impacting patients' quality of life. While the relationship between CRS and these comorbidities is recognized, their interaction with depression remains underexplored.**Objective**This study aimed to investigate the associations of comorbid asthma and AR with depression in CRS patients using the All of Us Database.**Methods**A cross-sectional analysis was conducted of 27 077 CRS and 244 101 non-CRS patients. Conditions were identified through Systematized Nomenclature of Medicine codes. Generalized linear models were used to calculate adjusted odds ratios (aORs) for associations. Stratified analyses were performed by age, sex, and income.**Results**CRS patients were more likely to have asthma (32.8% vs 12.2%), AR (52.1% vs 13.1%), and depression (41.7% vs 20.4%). The adjusted GLM revealed significant associations with depression for CRS (aOR = 2.54, 95% confidence interval [CI]: 2.43, 2.65), asthma (aOR = 2.93, 95% CI: 2.84, 3.02), and AR (aOR = 2.67, 95% CI: 2.59, 2.75). Low socioeconomic status (SES) in CRS patients was associated with higher odds of depression (aOR range: [2.70-2.90]). Patients with both CRS and asthma or AR exhibited increased odds of depression (aOR = 1.88 and 1.42). The combination of CRS, asthma, and AR showed the highest risk (aOR = 2.15).**Conclusion**This study highlights the significant impact of comorbid asthma and AR on depression in CRS patients, with low SES further increasing the

likelihood of depression. Our findings underscore the importance of comprehensive management of CRS and its comorbidities, particularly in patients with lower SES.

Keywords: allergic rhinitis; asthma; chronic rhinosinusitis; depression; mental health; sinusitis.

Conflict of interest statement

Declaration of Conflicting InterestsThe authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Supplementary info

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Cite

12

Am J Rhinol Allergy

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. 2026 Sep;40(5):384-393.

doi: 10.1177/19458924261436871. Epub 2026 Apr 6.

[Clinical Characteristics of Patients with Non-Type 2 Chronic Rhinosinusitis with Nasal Polyps](#)

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Affiliations Expand

- PMID: 41940864
- DOI: [10.1177/19458924261436871](https://doi.org/10.1177/19458924261436871)

Abstract

BackgroundEndotype identification based on clinical characteristics is crucial for the selection and prediction of the efficacy of various therapeutic modalities in patients with chronic rhinosinusitis with nasal polyps (CRSwNP).**Objective**This study aimed to evaluate the clinical characteristics of patients with non-type 2 (non-

T2) CRSwNP.MethodsClinical and laboratory data, as well as nasal tissues, were collected from adult patients who underwent endoscopic sinus surgery (ESS) for primary diffuse CRSwNP. Non-T2 CRSwNP was defined as a tissue eosinophil count <10/high power field. The levels of interleukin (IL)-5 and IL-13 in nasal polyps were measured using real-time polymerase chain reaction.ResultsA total of 199 patients with bilateral CRSwNP were recruited. Sixty-five (32.7%) exhibited non-T2 CRSwNP. Regression analysis revealed that male sex, absence of asthma, low ethmoid/maxillary (E/M) ratio, high blood neutrophil, low lymphocyte, and low eosinophil percentages were significantly associated with non-T2 inflammation in patients with CRSwNP. Age and nasal polyp score were significant predictors of postoperative residual sinus inflammation-defined as a modified Lund-Kennedy endoscopy score of ≥ 5 at 3 months after surgery-in patients with non-T2 CRSwNP.ConclusionMale sex, absence of asthma, E/M ratio, and the percentages of neutrophils, lymphocytes, and eosinophils were significantly associated with non-T2 CRSwNP. Age and polyp score were predictors of postoperative residual sinus inflammation in patients with non-T2 CRSwNP. These findings may help clinicians better evaluate patients with non-T2 CRSwNP and provide optimal therapeutic strategies.

Keywords: chronic rhinosinusitis; endoscopic sinus surgery; modified Lund-Kennedy endoscopy score; nasal polyp; neutrophil; non-type 2.

Conflict of interest statement

Declaration of Conflicting InterestsThe authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Supplementary info

MeSH terms, SubstancesExpand

chronic cough

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Lung

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. 2026 Sep 2;204(1):65.

doi: 10.1007/s00408-026-00933-8.

[Cough Hypersensitivity in Gastroesophageal Reflux-Induced Chronic Cough: Insights from Reflux Monitoring and High-Resolution Manometry](#)

[Yaxing Zhou](#)^{#1}, [Siwan Wen](#)^{#1}, [Yunfeng Zhang](#)^{#1 2}, [Tongyangzi Zhang](#)¹, [Shengyuan Wang](#)¹, [Jiaying Yuan](#)¹, [Bingxian Sha](#)¹, [Haodong Bai](#)¹, [Yanan Wu](#)¹, [Li Yu](#)³, [Xianghuai Xu](#)⁴

Affiliations Expand

- PMID: 42686877
- DOI: [10.1007/s00408-026-00933-8](https://doi.org/10.1007/s00408-026-00933-8)

Abstract

Background: Cough hypersensitivity contributes to the heterogeneity of gastroesophageal reflux-induced chronic cough (GERC), but its associated factors remain unclear. This study aimed to investigate factors associated with cough hypersensitivity and evaluate the relative contributions of reflux characteristics and esophageal motility across reflux phenotypes.

Methods: This retrospective study included 195 patients with GERC who underwent 24-hour multichannel intraluminal impedance-pH monitoring and high-resolution esophageal manometry. Cough hypersensitivity was assessed using the Hull Airway Reflux Questionnaire (HARQ). Multivariable regression assessed independent associations with continuous HARQ scores, whereas random forest and SHAP analyses ranked the relative contributions of reflux-related and esophageal motility variables to HARQ score prediction.

Results: Patients with higher cough hypersensitivity exhibited increased capsaicin cough sensitivity, poorer quality of life, lower response rates to standard anti-reflux therapy (all $P < 0.05$), and a higher prevalence of ineffective esophageal motility (62.1% vs. 32.6%, $P < 0.001$). In correlation analyses, both reflux burden and esophageal motility were associated with cough hypersensitivity; however, after stratification by reflux phenotype, only esophageal motility remained associated. Multivariable regression showed an independent inverse association between DCI and HARQ scores, while machine-learning analyses ranked DCI as the leading contributor, with both analyses suggesting a more prominent relationship in non-acid GERC.

Conclusions: GERC patients with heightened cough hypersensitivity had greater cough-related burden and poorer response to standard anti-reflux therapy. Esophageal motility abnormalities appear to be more closely associated with cough hypersensitivity than reflux burden, particularly in non-acid reflux phenotypes, highlighting a potential role for motility-targeted therapeutic strategies.

Keywords: Cough hypersensitivity; Distal contractile integral; Esophageal motility; Gastroesophageal reflux-induced chronic cough; Non-acid reflux.

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Conflict of interest statement

Declarations. Conflict of Interests: The authors declare no competing interests.
Consent to participate: The requirement for informed consent was waived by the Ethics Committee of Tongji Hospital due to the retrospective nature of the study.
Ethics approval: The study protocol was approved by the Ethics Committee of Tongji Hospital (K-2020-025).

- [52 references](#)

Supplementary info

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ERJ Open Res

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. 2026 Sep 1;12(5):00173-2026.

doi: 10.1183/23120541.00173-2026. eCollection 2026 Sep.

[Low-dose morphine and airway sensations in refractory chronic cough: a randomised control trial](#)

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Affiliations Expand

- PMID: 42683193
- PMCID: [PMC13531274](#)
- DOI: [10.1183/23120541.00173-2026](#)

Abstract

Background: Low-dose morphine is recommended as an antitussive agent for refractory chronic cough (RCC), although its precise mechanism of action remains unknown. We hypothesised that noxious airway sensations (e.g. throat irritation, tickle, urge to cough) described by RCC patients play a role in initiating coughing and are lessened by morphine.

Methods: 22 RCC patients (median age 65 years; 83% female) reporting a clinical response to low-dose morphine withdrew from therapy and enrolled in a double-blinded, randomised, placebo-controlled, crossover trial comparing the effects of

their usual dose of morphine with those of a matched placebo. The sensations evoked by citric acid inhalation were assessed at baseline and at the end of each 5-7-day treatment period. The efficacy of morphine, compared with placebo, was assessed by objective cough monitoring and patient-reported outcomes at the same time points.

Findings: Compared with placebo, low-dose morphine improved the rating of all sensations provoked by citric acid inhalation (all $p < 0.05$), but the cough threshold (C2) was not changed ($p = 0.61$). 24-hour cough frequency was reduced by 71.8% with low-dose morphine, compared with placebo treatment ($p < 0.001$), and all patient-reported outcomes significantly improved.

Interpretation: This trial suggests that the antitussive action of low-dose morphine may be a consequence of modulation of noxious airway sensations and provides the first objective evidence of its efficacy in RCC patients reporting a clinical response.

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- [5 figures](#)

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3

BMJ Open Respir Res

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doi: 10.1136/bmjresp-2025-003484.

[Risk of pneumonia in adults with chronic cough: a nationwide cohort study](#)

[Man Young Park](#)¹, [Beom-Joon Lee](#)², [Kwan-Il Kim](#)², [Jun-Hwan Lee](#)^{3 4 5 6}

Affiliations Expand

- PMID: 42680518
- PMCID: [PMC13536032](#)

- DOI: [10.1136/bmjresp-2025-003484](https://doi.org/10.1136/bmjresp-2025-003484)

Abstract

Background: Chronic cough affects approximately 10% of adults and is increasingly recognised as a distinct clinical condition. This symptom has increasingly been associated with significant outcomes such as pneumonia. Nevertheless, few large long-term population-based studies have been conducted.

Methods: This retrospective cohort study was performed using nationwide claims data from the Health Insurance Review and Assessment Service in South Korea from 2013 to 2020. Adult patients who visited outpatient clinics for cough (International Classification of Diseases, 10th Revision: R05) were enrolled. Chronic cough was defined as ≥ 8 visits or ≥ 56 days. Patients with pneumonia within 2 years before and 6 months after the index date were excluded. The main outcome was incident pneumonia during the 3 year follow-up period. The association between chronic cough and incident pneumonia was evaluated using Cox proportional hazards models, with HRs adjusted for age, sex, comorbidities and Charlson comorbidity index. Sensitivity analyses and subgroup analyses by sex and age were also performed.

Results: Among 385 417 participants (28 706 with chronic cough and 356 711 controls), the incidence of pneumonia was higher in the chronic cough group (18.87 vs 11.32 per 1000 person-years). Chronic cough was independently associated with an elevated risk of pneumonia (adjusted HR 1.13; 95% CI 1.06 to 1.19; $p < 0.001$), and the association was robust across multiple sensitivity analyses with alternative exposures. The subgroup analysis showed a stronger association among men (HR 1.72) than among women (HR 1.39) and among adults aged 40-79 years, with the highest risk observed among adults aged 40-49 years (HR 1.37).

Conclusions: Chronic cough was independently associated with increased pneumonia risk, especially in middle-aged and male patients. Clinicians should be aware that chronic cough may signal increased vulnerability to lower respiratory tract infections (eg, pneumonia) and consider preventive strategies, including vaccination and close monitoring, for high-risk individuals.

Keywords: Cough/Mechanisms/Pharmacology; Pneumonia; Pulmonary Disease, Chronic Obstructive; Respiratory Infection.

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Conflict of interest statement

Competing interests: None declared.

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- [2 figures](#)

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Respir Med

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. 2026 Sep;261:109055.

doi: 10.1016/j.rmed.2026.109055. Epub 2026 Jul 22.

[Association between vigorous-intensity work activities and cough or expectoration symptoms in individuals with mild to moderate COPD: a cross-sectional study using the NHANES database](#)

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Affiliations Expand

- PMID: 42485676
- DOI: [10.1016/j.rmed.2026.109055](#)

Abstract

Background: Structured exercise alleviates respiratory symptoms in COPD, but the effects of occupational physical activity on cough or expectoration in mild-to-moderate COPD remain unclear.

Method: This cross-sectional study used NHANES 2007-2012 data. Mild-to-moderate COPD was defined as post-bronchodilator FEV1/FVC <0.70 and FEV1 ≥ 50% predicted. Vigorous-intensity work was self-reported. The primary outcome was cough or expectoration (either symptom for ≥3 months/year). Survey-weighted logistic regression and restricted cubic splines examined associations, adjusting for age, gender, BMI, race, education, income, smoking, passive smoking, exercise, sleep disorders, moderate work activity, asthma, and hypertension (Model-4).

Result: Among 723 participants with mild-to-moderate COPD, 115 reported symptoms. After full adjustment, vigorous-intensity work was associated with higher odds of cough or expectoration (OR = 2.43, 95% CI: 1.41-4.22, P = 0.002). Similar associations were observed for cough (OR = 3.13) and expectoration (OR = 2.77), but not for wheezing or dyspnea. RCS curves confirmed a dose-response relationship between longer vigorous work duration and increased symptoms.

Conclusions: In mild-to-moderate COPD, self-reported vigorous-intensity work is associated with cough or expectoration symptoms, with longer exposure linked to greater likelihood.

Keywords: Chronic obstructive pulmonary disease; Cough; Exercise; Expectoration; Respiratory symptoms; Vigorous-intensity work activities.

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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

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Am J Respir Crit Care Med

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. 2026 Sep 1;212(9):1999-2010.

doi: 10.1093/ajrccm/aamag297.

[The frequent exacerbator phenotype in bronchiectasis revisited: data from EMBARC registry](#)

[Oriol Sibila](#)¹, [Lidia Perea](#)², [Pierre Regis Burgel](#)³, [Eva Polverino](#)⁴, [Rebecca C Hull](#)⁵, [Merete B Long](#)⁵, [Sanjay H Chotirmall](#)^{6 7}, [Michal Shteinberg](#)^{8 9}, [Jennifer Pollock](#)⁵, [Jamie Stobo](#)⁵, [Holly Lind](#)⁵, [Charles Haworth](#)¹⁰, [Katerina Dimakou](#)¹¹, [Apostolos Bossios](#)^{12 13}, [Michael R Loebinger](#)¹⁴, [Raja Dhar](#)¹⁵, [Jin-Fu Xu](#)¹⁶, [Pontus Mersch](#)¹⁷, [Jessica Rademacher](#)¹⁸, [Hayoung Choi](#)¹⁹, [Natalie Lorent](#)^{20 21}, [Francesco Blasi](#)^{22 23}, [Montserrat Vendrell](#)²⁴, [Pieter Goeminne](#)²⁵, [Felix Ringshausen](#)^{18 26}, [Anthony De Soyza](#)²⁷, [Stefano Aliberti](#)^{28 29}, [James D Chalmers](#)^{5 30}

Affiliations Expand

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- DOI: [10.1093/ajrccm/aamaq297](#)

Abstract

Rationale: The frequent exacerbator phenotype was previously defined using a threshold of ≥ 3 exacerbations per year in bronchiectasis. However, the contribution of each prior exacerbation to future risk as well as the influence of severe exacerbations and different etiologies and regions remain poorly understood.

Objectives: To quantify the risk associated with each prior exacerbation of bronchiectasis in predicting future exacerbations and severe exacerbations, and to determine whether this association varies across different etiologies and geographic regions.

Methods: We analyzed data from the European Bronchiectasis Registry (EMBARC), including 30 countries across Europe and Asia. The association between baseline exacerbation history and future exacerbations was tested using negative binomial regression over up to 5 years of follow-up. Severe exacerbations were defined as those requiring hospitalization.

Measurements and main results: A total of 19 324 patients with bronchiectasis were included. Each prior exacerbation was associated with an increased risk of exacerbations and severe exacerbations. Incidence rate ratio (IRR) for future exacerbations was 1.45 (95% CI 1.34-1.58, $P < .001$) for 1 exacerbation; 1.84 (95% CI 1.69-1.99, $P < .001$) for 2 exacerbations; 2.50 (95% CI 2.29-2.73, $P < .001$) for 3 exacerbations; and 3.56 (95% CI 3.32-3.82, $P < .001$) for patients with 4 or more prior exacerbations. Additionally, 1 prior severe exacerbation was associated with increased risk of exacerbation (IRR = 1.52, 95% CI 1.45-1.60, $P < .001$) and strongly associated with future severe exacerbations (IRR = 3.96, 95% CI 3.71-4.22, $P < .001$). The frequent exacerbator phenotype was consistent across different etiologies and geographic regions.

Conclusions: The frequent exacerbator phenotype is highly consistent across patient subgroups and regions. Each prior exacerbation is associated with a progressively higher risk, with no definitive threshold-defining high risk.

Keywords: etiology; exacerbation risk; region.

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Conflict of interest statement

O.S. reports consulting fees from Insmed and Boehringer Ingelheim. P.R.B. reports consulting fees from AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, Insmed, MSD, Pfizer, and Vertex; and support for attending meetings and/or travels from AstraZeneca, Chiesi and Zambon. E.P. reports grants or contracts from Grifols; consulting fees from Insmed, Pari, Electromed, Pari, Grifols and Chiesi; payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing or educational events from Insmed, Pari, Electromed, Pari, Grifols, Chiesi and GSK; support for attending meetings and/or travel from Insmed; and participation on a

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payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing, or educational events from AstraZeneca, Chiesi Farmaceutici, Insmed, and Boehringer Ingelheim. H.C. reports grants or contracts from Ministry of Education (grant 2021R11A3052416 and RS-2025-25423084); consulting fees from Gilead, Boehringer Ingelheim, Abbot, and AstraZeneca; and payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing or educational events from Kolong, Boryung, Abbott, Otsuka, and Handok. N.L. reports consulting fees from Insmed and Intelliphage; and payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing, or educational events from Insmed. F.B. reports grants or contracts from Astrazeneca, GSK, and Insmed; consulting fees from Menarini, OM Pharma, and Boehringer; and payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing, or educational events from Astrazeneca, Chiesi, GSK, Grifols, Insmed, Menarini, OM Pharma, Pfizer, Sanofi, Vertex, Viatris, and Zambon. M.V. reports payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing, or educational events from Insmed and Teva; support for attending meetings and/or travel from Pari, Chiesi, Zambon, Gebro, and Insmed; participation on a data safety monitoring board or advisory board from Insmed; and leadership or fiduciary role in other board, society, committee or advocacy group, paid or unpaid, as president of the Catalan Respiratory Society (SOCAP): Chiesi, Astra, Bial, Sanofi, Vivisol, Pfizer, Pari, Resmed, Boehringer, Faes, and Menarini. P.G. reports payment or honoraria for a lecture on bronchiectasis from Insmed, RMEI, AstraZeneca, and GSK; support for attending meetings and/or travel from Astrazeneca and GSK; and participation on a data safety monitoring board or advisory board from Boehringer, MSD, and Pfizer. F.R. reports grants or contracts from the German Center for Lung Research (DZL), German Center for Infection Research (EU and European Federation of Pharmaceutical Industries and Association), IMI, and iABC Consortium (including Alaxia, Basilea, Novartis, and Polyphor), Mukoviszidose Institute, Novartis, Insmed Germany to the institution; consulting fees from Parion, Boehringer, Insmed, and Chiesi; payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing, or educational events from !! DE Werbeagentur GmbH, Insmed, Grifols, Universitätsklinikum Frankfurt am Main, University Hospital Hamburg, AstraZeneca, and Sanofi; participation on a data safety monitoring board or advisory board for Insmed, Boehringer Ingelheim, Parion Sciences, and Chiesi; leadership or fiduciary role in other board, society, committee, or advocacy groups as a former coordinator of the ERN-LUNG Bronchiectasis Core Network, cochair of the German bronchiectasis registry PROGNOSIS, member of the steering committee of the European Bronchiectasis Registry EMBARC, and principal investigator of the German Center for Lung Research; and fees for clinical trial participation paid to the institution from AstraZeneca, Boehringer Ingelheim, Insmed, Novartis, Parion, Recode, Ruhr University-Bochum, University of Dundee, and Vertex. S.A. reports grants or contracts from GlaxoSmithKline SpA; consulting fees from Insmed Incorporated, GSK, and Insmed Netherlands BX; payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing, or educational events from Insmed Netherlands BV, Insmed Germany GmbH, Physioassist SAS, Boehringer Ingelheim Italia Spa, Boehringer Ingelheim International GmbH, Thermo Fisher Scientific, Zambon Italia srl, Sanofi srl, Providens doo, Pfizer srl, Limare llc, Glaxosmithkline spa, Chiesi Farmaceutici spa, Vertex Pharmaceuticals (Europe) Limited; and participation on a data safety monitoring board or advisory board from Glaxosmithkline spa, Boehringer Ingelheim Italia spa, Moderna Italy srl, Zambon spa, Chiesi Farmaceutici spa, Insmed Inc., Insmed Netherlands BV, AN2

Therapeutics Inc, Modernatx, and Boehringer Ingelheim International GmbH. J.C. reports grants or contracts from AstraZeneca, Genentech, Insmed, Novartis, Gilead Sciences, Glaxosmithkline, Grifols, and Boehringer Ingelheim; consulting fees from Antabio, AstraZeneca, Boehringer Ingelheim, Chiesi, Glaxosmithkline, Grifols, Insmed, Janssen, Novartis, Pfizer, and Zambon; payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing, or educational events from Insmed; and leadership or fiduciary roles as involvement in European Respiratory Society Clinical Research Collaborations (EMBARC, BEATPCD; unpaid). L.P., R.H., M.B.L., J.P., J.S., H.L., R.D., J.F.X., P.M., and A.S. have no potential conflict of interest to disclose.

Comment in

- [The kindling effect: bronchiectasis exacerbations fuel the fire.](#)

Dawkins P, Wong C. *Am J Respir Crit Care Med*. 2026 Sep 1;212(9):1890-1893. doi: 10.1093/ajrccm/aamag356.PMID: 42438155 No abstract available.

- [To the airway and beyond: introduction to an AJRCCM special section on airway disease.](#)

Bush A, Chotirmall SH, Han MK, Harhay M. *Am J Respir Crit Care Med*. 2026 Sep 1;212(9):1879-1881. doi: 10.1093/ajrccm/aamag368.PMID: 42518197 No abstract available.

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Multicenter Study

Respir Med

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. 2026 Sep:261:108979.

doi: 10.1016/j.rmed.2026.108979. Epub 2026 Jun 20.

Exploring cough hypersensitivity patterns across respiratory diseases

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Affiliations Expand

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Free article

Abstract

Background: Cough hypersensitivity is increasingly recognized as a key mechanism underlying chronic cough across diverse etiologies. The Cough Hypersensitivity Questionnaire (CHQ) was developed to systematically assess characteristic triggers and abnormal sensory perceptions; however, its structural and clinical relevance across respiratory diseases remains unclear.

Methods: We prospectively enrolled 300 adults with chronic cough from multiple respiratory centers. Participants completed four cough-related questionnaires: the Numeric Rating Scale (NRS), Leicester Cough Questionnaire (LCQ), Cough Assessment Test (COAT), and CHQ. Spearman correlation and network analyses were used to evaluate associations between CHQ items and other cough-related measures, including subgroup analyses by disease etiology.

Results: The CHQ demonstrated variable associations with conventional instruments and differing patterns across respiratory diseases. Triggers such as perfume and smoke correlated with LCQ hypersensitivity items, while the sensation item "urge to cough" exhibited broad correlations across physical, psychological, and social domains. Socially mediated triggers (e.g., talking) aligned with LCQ social interference items. In contrast, items such as hot air, dampness, laughter, and eating/drinking had minimal external associations. Internal CHQ correlations were sparse, and no significant associations were observed between CHQ and NRS, indicating a dissociation between hypersensitivity features and perceived severity. Disease-specific analyses suggested differing patterns, with broader associations observed in asthma and bronchiectasis compared with chronic obstructive pulmonary disease and idiopathic pulmonary fibrosis.

Conclusion: The CHQ captures distinct and heterogeneous dimensions of cough hypersensitivity that are not adequately reflected by conventional cough measures, suggesting its potential utility for characterizing clinically relevant multidimensional aspects of chronic cough.

Keywords: Chronic cough; Cough hypersensitivity; Cough hypersensitivity questionnaire; Network analysis; Structural lung disease; Symptom patterns.

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Conflict of interest statement

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

Supplementary info

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Laryngoscope

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doi: 10.1002/lary.70598. Epub 2026 Apr 28.

[Diagnosis and Treatment of Refractory Chronic Cough: An American Broncho-Esophagological Association Expert Consensus Statement](#)

[Ronit E Malka](#)¹, [Anirudh Saraswathula](#)¹, [Gabriela Lilly](#)², [Marisa A Ryan](#)³, [Andrew Bowen](#)⁴, [Kenneth W Altman](#)⁵, [Milan Amin](#)⁶, [Laura Matrka](#)⁷, [Ashli K O'Rourke](#)⁸, [C Blake Simpson](#)⁹, [Jonathan Bock](#)¹⁰, [Paul C Bryson](#)¹¹, [Thomas L Carroll](#)¹², [Lee M Akst](#)¹

Affiliations Expand

- PMID: 42049642
- PMCID: [PMC13460546](#)
- DOI: [10.1002/lary.70598](#)

Abstract

Objective: To develop an expert consensus statement (ECS) on the diagnosis and treatment of refractory chronic cough (RCC) in adults. RCC was defined as cough

lasting longer than 8 weeks and refractory to standard management of pulmonary, gastrointestinal, sinonasal, and medication-induced etiologies.

Methods: An expert panel of otolaryngologists used published consensus statement methodology to develop statements guiding the diagnosis and management of RCC from an otolaryngologic perspective. A modified Delphi method was used to iteratively select, eliminate, and refine statements based upon accepted methodology until consensus was achieved.

Results: Three iterative Delphi surveys were performed with discussion rounds between each of the voting sessions. Twenty-seven statements met consensus while six statements did not. The clinical statements were grouped into 9 categories: operational definition, pathophysiology, assessment of prior work-up, phenomenology and symptomatology, four treatment categories (neuromodulators, superior laryngeal nerve blocks, behavioral cough suppression, and emerging treatments), and overall treatment approaches.

Conclusion: The panel reached consensus for 27 statements related to the diagnosis and treatment of adults with RCC from an otolaryngologic perspective. These statements may be used to standardize evaluation and improve quality of care, while also identifying areas for future investigation in the management of RCC.

Keywords: SLN block; chronic cough; chronic cough treatment; cough hypersensitivity; idiopathic cough; irritable larynx; laryngeal hypersensitivity; laryngopharyngeal reflux; multi-disciplinary cough management; neurogenic cough.

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Conflict of interest statement

The view(s) expressed herein are those of the author(s) and do not reflect the official policy or position of Brooke Army Medical Center, the U.S. Army Medical Department, the U.S. Army Office of the Surgeon General, the Department of the Army, the Department of the Air Force and Department of Defense or the U.S. Government.

Milan Amin—Ampliovox, ownership stake; Merck, advisory board (former). Laura Matrk—Amgen, consultant; Inovio, consultant; Precigen, consultant. Lee M. Akst—GlaxoSmithKline Inc., clinical advisory board for chronic cough. Thomas L. Carroll—GlaxoSmithKline Inc., consultant; N-Zyme Biomedical, scientific advisory board and stock options; Sofregen Medical, stock options and scientific advisory board.

- [141 references](#)

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Heart Lung

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. 2026 Sep-Oct:79:102801.

doi: 10.1016/j.hrtlng.2026.102801. Epub 2026 Apr 21.

[Defining and validating the minimal clinically important difference for the cough severity visual analogue scale in adults with subacute cough](#)

[Wang-Sheng Yu¹](#), [Bing Mao¹](#), [Hong-Li Jiang¹](#), [Wei Liu²](#)

Affiliations Expand

- PMID: 42019442
- DOI: [10.1016/j.hrtlng.2026.102801](#)

Abstract

Background: Subacute cough imposes a significant burden, yet determining meaningful symptom relief remains challenging. While the cough severity visual analogue scale (VAS) is widely used, its minimal clinically important difference (MCID) is undefined for this population, limiting its utility in symptom management and clinical decision-making.

Objectives: To establish the VAS MCID in adults with subacute cough, confirm its psychometric validity, and validate its utility in predicting clinical outcomes.

Methods: Individual patient data were analyzed from two randomized trials (N = 335) involving adults with subacute, specifically post-infectious cough (PIC). Improvement was assessed using distribution-based and anchor-based methods (anchors: cough symptom score [CSS], cough quality of life questionnaire [CQLQ], and Traditional Chinese Medicine [TCM] symptom score [TCMSS]). The derived threshold was validated against the risk of progression to chronic cough to ensure clinical relevance.

Results: The VAS demonstrated high convergent validity (baseline Spearman's $\rho=0.70-0.84$; change score $\rho=0.55-0.63$) and responsiveness (Standardized Response Means >1.00). ROC analyses converged on a primary MCID of ≥ 40 mm reduction. Not achieving this threshold was associated with a significantly increased risk of progression to chronic cough (RR=2.78, 95% CI 1.75-4.41; $P < 0.001$). Subgroup analyses indicated that MCID estimates varied by baseline severity.

Conclusions: A ≥ 40 mm reduction serves as a clinically meaningful benchmark for symptom relief in adults with subacute cough (particularly PIC). This threshold is validated by its ability to predict a lower risk of chronicity, supporting its use in evaluating therapeutic efficacy and improving patient outcomes.

Keywords: Anchor-based methods; Minimal clinically important difference; Patient-reported outcomes; Subacute cough; Visual analogue scale.

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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

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

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PLoS One

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. 2026 Sep 2;21(9):e0356560.

doi: 10.1371/journal.pone.0356560. eCollection 2026.

[Physical activity, sex differences, and functional exercise capacity in bronchiectasis: Insights from a South Asian cohort](#)

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Affiliations Expand

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- DOI: [10.1371/journal.pone.0356560](https://doi.org/10.1371/journal.pone.0356560)

Abstract

Bronchiectasis causes breathlessness and fatigue, reducing quality of life. Many affected individuals are less active than healthy peers, increasing their risk of exacerbations and hospitalizations. Correlates of physical activity (PA) and functional exercise capacity remain inconsistent, and most evidence comes from Western populations. Sex-specific differences in disease presentation and functional outcomes are recognised yet remain underexplored in South Asian cohorts. The aim of the study was to examine the relationship between PA and demographic, clinical, and functional variables; to compare these characteristics between sexes; and to identify predictors of functional exercise capacity in individuals with bronchiectasis. Fifty-five adults with stable bronchiectasis were assessed using the International Physical Activity Questionnaire for PA, the modified Medical Research Council scale (mMRC) for dyspnoea, the six-minute walk distance (6MWD) for functional exercise capacity and the bronchiectasis health questionnaire (BHQ) for health status. Bronchiectasis-related clinical characteristics, including disease severity, exacerbation frequency, microbiological status, radiological severity, and disease duration were also recorded. Associations and predictors were examined using correlation analyses and multivariate regression. Lower PA was associated with greater dyspnoea severity ($r_s = -0.344$) and shorter disease duration ($r_s = 0.275$). Females had shorter absolute walking distance (≈ 57 metres shorter 6MWD) but no significant difference in % predicted 6MWD compared with males. Females also reported higher PA (+1350 MET-minutes/week) than males. Reduced 6MWD correlated with older age, lower BHQ score, female sex, increased exacerbation frequency, greater dyspnoea severity and higher radiological severity. Dyspnoea severity and radiological severity independently predicted functional exercise capacity. Lower PA was weakly associated with greater dyspnoea severity and shorter disease duration. Females reported higher self-reported PA levels despite shorter absolute walking distances than males. Dyspnoea severity emerged as the strongest predictor of functional exercise capacity, while radiological severity was also associated with reduced 6MWD.

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Conflict of interest statement

The authors have declared that no competing interests exist.

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. 2026 Sep 1;12(5):00490-2026.

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[The clinical impact of bronchoscopy: balancing microbiology and inflammatory endotyping](#)

[Alessandro De Angelis](#)^{1 2}, [Edoardo Simonetta](#)², [Paola Scarano](#)², [Angela Tramontano](#)², [Mattia Nigro](#)^{1 2}, [Martina Lo Casto](#)³, [Manuel Mancuso](#)⁴, [Veronica Polelli](#)^{1 2}, [Salvatore Battaglia](#)³, [Claudia Crimi](#)⁴, [Oriol Sibila](#)⁵, [James D Chalmers](#)⁶, [Francesco Blasi](#)^{7 8}, [Stefano Aliberti](#)^{1 2}

Affiliations Expand

- PMID: 42683233
- PMCID: [PMC13531294](#)
- DOI: [10.1183/23120541.00490-2026](#)

Abstract

Think bronchoscopy is just for samples? Think again. It impacts clinical management in >50% of bronchiectasis cases with a high safety profile: moving from expert opinion to data-driven care. <https://bit.ly/3NYVAM3>.

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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; received payment or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events (payments made to the author) from GlaxoSmithKline Spa, Fondazione Internazionale Menarini, Insmmed Italy, Insmmed Ireland Ltd, Boehringer Ingelheim, Zambon, and Vertex Pharmaceuticals; participated on a data safety monitoring or advisory board (payments made to the author) for Insmmed Incorporated, Insmmed Italy, AstraZeneca UK Limited, MSD Italia S.r.l and Verona pharma plc. All other authors declare no competing interests.

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. 2026 Sep 1;12(5):00288-2026.

doi: 10.1183/23120541.00288-2026. eCollection 2026 Sep.

[Bronchoscopy in bronchiectasis: value of lavage beyond microbiology](#)

[Lam Nguyen-Ho](#)^{1,2}, [Quoc-Khanh Tran-Le](#)^{1,2}

Affiliations Expand

- PMID: 42683075
- PMCID: [PMC13531306](#)
- DOI: [10.1183/23120541.00288-2026](#)

Abstract

Beyond detecting obstruction and pathogens, bronchial lavage aids inflammatory phenotyping and risk stratification, especially in nonsputum, early-stage and TB-endemic cases where excluding active TB is crucial <https://bit.ly/47AdhYS>.

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Conflict of interest statement

Conflict of interest: The authors have nothing to disclose.

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Lung India

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. 2026 Sep 1;43(5):496-506.

doi: 10.4103/lungindia.lungindia_812_25. Epub 2026 Aug 29.

[SWORD survey: Seasonal trends in hospitalisation and mortality among patients with respiratory illnesses in India](#)

[Sheetu Singh¹](#), [Bharat B Sharma²](#), [Arvind K Sharma³](#), [Nishtha Singh⁴](#), [Krishna K Sharma⁵](#), [Tejraj Singh⁶](#), [Nirmal K Jain⁷](#), [Parvaiz A Koul⁸](#), [Sundeep Salvi⁹](#), [Virendra Singh¹⁵](#); [SWORD Study Group](#)

Affiliations Expand

- PMID: 42671408
- DOI: [10.4103/lungindia.lungindia_812_25](#)

Free article

Abstract

Objective: The SWORD study examined seasonal variations in respiratory disease related hospitalisations and mortality across India. It also assessed risk factors and comorbidities influencing these outcomes.

Methods: This multicentre, questionnaire-based, point prevalence study was conducted across four seasonal weeks in 2017-2018. Data on respiratory admissions on the first day and deaths over the following week were collected.

Results: At 245 centres, 2,886 patients were hospitalised, and 394 deaths occurred. COPD was the leading cause of both hospitalisations and deaths, followed by tuberculosis (TB), respiratory tract infections (RTI), asthma, pleural effusion, lung cancer, bronchiectasis, and interstitial lung disease (ILD). Respiratory admissions and deaths peaked in winter (28.7% and 32.7%) and were lowest in summer (21.1% and 18.0%). COPD hospitalisations were significantly higher in winter than summer (OR: 1.39; 95% CI: 1.1-1.8), with mortality showing a similar pattern. Key risk factors for hospitalisation and death varied by disease.

Conclusion: Respiratory hospitalisations and deaths in India follow a clear seasonal trend, with winter posing the highest risk and summer the lowest. COPD, TB, RTI, asthma, pleural effusion, lung cancer, bronchiectasis, and ILD were the most frequent causes. These findings underscore the need for targeted, season-specific strategies to manage respiratory diseases effectively.

Keywords: Asthma; bronchiectasis; chronic obstructive pulmonary disease; respiratory tract infection; seasonal trends; tuberculosis.

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5

Editorial

Am J Respir Crit Care Med

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. 2026 Sep 1;212(9):1890-1893.

doi: 10.1093/ajrccm/aamag356.

[The kindling effect: bronchiectasis exacerbations fuel the fire](#)

[Paul Dawkins](#)^{1,2}, [Conroy Wong](#)^{1,2}

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- PMID: 42438155
- DOI: [10.1093/ajrccm/aamaq356](https://doi.org/10.1093/ajrccm/aamaq356)

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- [The frequent exacerbator phenotype in bronchiectasis revisited: data from EMBARC registry.](#)

Sibila O, Perea L, Burgel PR, Polverino E, Hull RC, Long MB, Chotirmall SH, Shteinberg M, Pollock J, Stobo J, Lind H, Haworth C, Dimakou K, Bossios A, Loebinger MR, Dhar R, Xu JF, Mersch P, Rademacher J, Choi H, Lorent N, Blasi F, Vendrell M, Goeminne P, Ringshausen F, De Soyza A, Aliberti S, Chalmers JD. *Am J Respir Crit Care Med*. 2026 Sep 1;212(9):1999-2010. doi: 10.1093/ajrccm/aamaq297. PMID: 42348458 Free PMC article.

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Review

Respir Med

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. 2026 Sep;261:109006.

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Targeting the neutrophil-DPP-1-protease axis in airway disease: current evidence and future indications

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Abstract

Neutrophils contribute to chronic airway diseases with variable pathogenic relevance across conditions. In bronchiectasis, persistent airway neutrophilia and sustained activity of neutrophil serine proteases (NSPs) - neutrophil elastase (NE), proteinase 3 (PR3), and cathepsin G (CatG) - directly drive structural damage and exacerbations. In Chronic Obstructive Pulmonary Disease (COPD), neutrophils participate in parenchymal destruction and systemic inflammation within a broader network of oxidative and immune dysregulation. In T2-low asthma, neutrophilic inflammation is heterogeneous and context-dependent, suggesting a less uniform contribution of NSP-mediated injury. Therapeutic strategies targeting neutrophils downstream have yielded limited clinical success: selective NE inhibitors and C-X-C motif chemokine receptor 2 (CXCR2) antagonists reduced protease activity or neutrophil recruitment but failed to produce consistent improvements in lung function or exacerbation rates. These evidences reflect redundancy among NSPs, compensatory inflammatory pathways, and the presence of pre-activated circulating neutrophils whose proteolytic potential is already established before tissue recruitment. This has shifted attention upstream to the neutrophil-DPP-1-protease axis. Dipeptidyl peptidase-1 (DPP-1) activates NSPs during neutrophil maturation in the bone marrow; its inhibition reduces the protease load of circulating neutrophils without broadly suppressing innate immunity. In bronchiectasis, DPP-1 inhibitors have demonstrated clinically meaningful reductions in exacerbations and airway NSP activity, providing proof of concept for disease modification. In COPD, this strategy is biologically compelling, particularly in neutrophil-predominant phenotypes, but requires dedicated clinical validation. In asthma, any therapeutic role is likely restricted to highly selected T2-low, neutrophil-driven subsets. Future progress will depend on biomarker-guided stratification to define where modulation of the neutrophil-NSP axis can meaningfully alter disease trajectory.

Keywords: Bronchiectasis; Chronic obstructive airway diseases; DPP1-Inhibitors; Neutrophils.

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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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Am J Respir Crit Care Med

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[The frequent exacerbator phenotype in bronchiectasis revisited: data from EMBARC registry](#)

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Abstract

Rationale: The frequent exacerbator phenotype was previously defined using a threshold of ≥ 3 exacerbations per year in bronchiectasis. However, the contribution of each prior exacerbation to future risk as well as the influence of severe exacerbations and different etiologies and regions remain poorly understood.

Objectives: To quantify the risk associated with each prior exacerbation of bronchiectasis in predicting future exacerbations and severe exacerbations, and to

determine whether this association varies across different etiologies and geographic regions.

Methods: We analyzed data from the European Bronchiectasis Registry (EMBARC), including 30 countries across Europe and Asia. The association between baseline exacerbation history and future exacerbations was tested using negative binomial regression over up to 5 years of follow-up. Severe exacerbations were defined as those requiring hospitalization.

Measurements and main results: A total of 19 324 patients with bronchiectasis were included. Each prior exacerbation was associated with an increased risk of exacerbations and severe exacerbations. Incidence rate ratio (IRR) for future exacerbations was 1.45 (95% CI 1.34-1.58, $P < .001$) for 1 exacerbation; 1.84 (95% CI 1.69-1.99, $P < .001$) for 2 exacerbations; 2.50 (95% CI 2.29-2.73, $P < .001$) for 3 exacerbations; and 3.56 (95% CI 3.32-3.82, $P < .001$) for patients with 4 or more prior exacerbations. Additionally, 1 prior severe exacerbation was associated with increased risk of exacerbation (IRR = 1.52, 95% CI 1.45-1.60, $P < .001$) and strongly associated with future severe exacerbations (IRR = 3.96, 95% CI 3.71-4.22, $P < .001$). The frequent exacerbator phenotype was consistent across different etiologies and geographic regions.

Conclusions: The frequent exacerbator phenotype is highly consistent across patient subgroups and regions. Each prior exacerbation is associated with a progressively higher risk, with no definitive threshold-defining high risk.

Keywords: etiology; exacerbation risk; region.

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Conflict of interest statement

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Comment in

- [The kindling effect: bronchiectasis exacerbations fuel the fire.](#)

Dawkins P, Wong C. Am J Respir Crit Care Med. 2026 Sep 1;212(9):1890-1893. doi: 10.1093/ajrccm/aamag356. PMID: 42438155 No abstract available.

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Bush A, Chotirmall SH, Han MK, Harhay M. Am J Respir Crit Care Med. 2026 Sep 1;212(9):1879-1881. doi: 10.1093/ajrccm/aamag368. PMID: 42518197 No abstract available.

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Review

Nat Rev Rheumatol

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. 2026 Sep;22(9):558-570.

doi: 10.1038/s41584-026-01394-2. Epub 2026 Jun 18.

[Lung disease in rheumatoid arthritis](#)

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- DOI: [10.1038/s41584-026-01394-2](#)

Abstract

Rheumatoid arthritis (RA) is a prevalent chronic systemic autoimmune inflammatory disease that primarily targets synovial joints and periarticular tissues. In RA, systemic inflammation has been associated with extra-articular manifestations, including pulmonary involvement, which are leading causes of reduced survival. Tobacco smoking is a well-established risk factor for anti-citrullinated protein antibody (ACPA)-positive RA and is also associated with chronic obstructive pulmonary disease, interstitial lung disease (ILD) and lung cancer, the prevalence of which is elevated in people with RA. Pulmonary manifestations such as airway obstructive disease, ILD and bronchiolitis affect a substantial proportion of people with RA. Screening for pulmonary disease, particularly ILD, is gaining emphasis, with high-resolution CT recommended based on risk factors including age, sex, antibody status and smoking. Despite advances in therapies to effectively manage joint inflammation, evidence-based treatments for RA-associated ILD remain limited. Chronic obstructive pulmonary disease and bronchiectasis in RA warrant more recognition owing to their effect on morbidity and mortality, and should be managed in accordance with current international treatment guidelines for these conditions. This Review summarizes the pathophysiology of lung involvement in RA, diagnostic challenges and evolving management strategies aimed at optimizing patient outcomes.

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Conflict of interest statement

Competing interests: The authors declare no competing interests.

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Review

Jpn J Radiol

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. 2026 Sep;44(9):1543-1561.

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Chest CT imaging toward personalized management of chronic obstructive pulmonary disease, asthma, and bronchiectasis: pulmonologist perspectives

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Affiliations Expand

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- DOI: [10.1007/s11604-026-02017-2](https://doi.org/10.1007/s11604-026-02017-2)

Abstract

Chronic airway diseases, including chronic obstructive pulmonary disease (COPD), asthma, and bronchiectasis, impose substantial morbidity and mortality worldwide. Precise phenotyping of their complex pathophysiological manifestations is essential for effective management. Chest computed tomography (CT) allows qualitative and quantitative assessments of emphysema, airway structure, mucus plugs, vascular abnormalities, bronchiectasis, and comorbid interstitial lung abnormality, making it central to characterizing these conditions. From perspectives of pulmonologists who use chest CT with guidance from radiologists, this review describes the advances in CT image analysis and their implications for patients with chronic airway disease. On inspiratory CT, low-attenuation regions reflect emphysema and are associated with clinical outcomes in smokers. Airway lumen, wall size, branch count, and fractal dimension correlate with disease severity and lung function impairment in COPD and asthma. Airway mucus plugs reflect inflammatory patterns and are associated with reduced lung function and exacerbations; however, mucus plugs are increasingly recognized as a treatable trait in the era of biologics treatment. Pulmonary vascular abnormalities are quantified using pulmonary artery-to-aorta diameter ratio and small vessel volume proportions. Along with chronic symptoms, bronchiectasis is diagnosed radiologically by an increased broncho-arterial ratio, absent bronchial tapering, and peripheral airway visibility. Although limited spatial resolution precludes direct evaluation of small airway disease, air-trapping on expiratory CT or registered Inspiratory-expiratory CT allows indirect estimation of small airway disease. Despite these advances, many research findings remain unapplied to routine clinical image analysis. Radiation exposure is an inherent limitation. Nonetheless, chest CT provides greater diagnostic information than chest radiography and is more accessible than magnetic resonance imaging and nuclear imaging. Further studies are needed to maximize the potential of chest CT for early detection, risk stratification, and treatment monitoring in airway disease management.

Keywords: Asthma; Bronchiectasis; COPD; Computed tomography; Imaging; Mucus plug.

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Review

Expert Rev Respir Med

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. 2026 Sep;20(9):1083-1095.

doi: 10.1080/17476348.2026.2675617. Epub 2026 May 25.

[Impact of climate, air pollution, and urbanization on chronic respiratory infections](#)

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Affiliations Expand

- PMID: 42150190
- DOI: [10.1080/17476348.2026.2675617](#)

Abstract

Introduction: chronic respiratory infections represent a significant source of global morbidity and mortality, especially among individuals with structural lung diseases or compromised defenses. Emerging evidence highlights the role of environmental factors, such as climate change, air pollution, and urbanization, in the epidemiology and progression of these infections.

Areas covered: This review synthesizes current research on the interactions between climate conditions, pollution, and urbanization in bronchiectasis, cystic fibrosis, nontuberculous mycobacterial (NTM) pulmonary disease, and chronic pulmonary aspergillosis. A search of relevant medical literature in the English language was conducted in Medline/PubMed, EMBASE and Scopus up to January 2026. Increases in temperature, fluctuations in humidity, extreme weather events (e.g. heatwaves, floods, and cold spells), and elevated concentrations of particulate matter contribute to both pathogen proliferation and increased host susceptibility, which impact the severity and incidence of chronic respiratory infections, particularly those caused by environmental pathogens such as non-tuberculous mycobacteria and *Aspergillus* spp. respiratory infections. Higher urban density and changes in microbial ecosystems further enhance transmission and chronicity.

Expert opinion: Understanding the complex interactions between environmental stressors and respiratory health and incorporating environmental risk assessment into clinical practice and public health policy is crucial for reducing disease burden in the context of accelerating climate change.

Keywords: Bronchiectasis; aspergillosis; climate; cystic fibrosis; non-tuberculous mycobacteria; pollution; urbanization; weather.

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Review

Arch Bronconeumol

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. 2026 Sep;62(9):644-652.

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[The Worldwide Puzzle of Bronchiectasis Etiology in Adults](#)

[Article in English, Spanish]

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Abstract

Bronchiectasis represents in frequency the third chronic inflammatory airway disease after chronic obstructive pulmonary disease (COPD) and asthma. It is produced by more than one hundred causes, both pulmonary and extrapulmonary. Despite advances in recent years in the understanding of this condition and the publication of several national and international guidelines on its management, in most cases the etiology remains unknown. Among the identified etiological forms, post-infectious and post-tuberculous are the most frequent. It is also striking how bronchiectasis associated with COPD and severe asthma has been progressively increasing over the years, probably due to greater awareness among healthcare professionals of the importance of such associations and the wider use of chest computed tomography (the diagnostic method of choice for bronchiectasis from a radiological perspective). However, it is remarkable, according to data obtained from national and international bronchiectasis registries, the considerable geographic heterogeneity in their etiology. Thus, in socially disadvantaged regions or in those with poorer healthcare access, post-infectious and particularly post-tuberculous forms clearly predominate. It is always necessary to perform the appropriate complementary tests, as highlighted in all bronchiectasis guidelines, to exclude at least the treatable etiologies (treatable trait), since this is undoubtedly associated with a better patient prognosis.

Keywords: Asthma; Bronchiectasis; COPD; Etiology; Infection; Registry.

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