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

1

Review

J Clin Med

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. 2026 Mar 23;15(6):2445.

doi: 10.3390/jcm15062445.

Artificial Intelligence in Asthma and COPD: Current Status and Future Potential

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Affiliations Expand

- **PMID: 41899367**

- **DOI: 10.3390/jcm15062445**

Abstract

Interest in artificial intelligence (AI) is rapidly growing. In healthcare, especially through machine learning and deep learning, AI is emerging as a promising tool to support the diagnosis, management, and prevention of lung diseases and to advance personalized care, although it requires large, well-structured datasets. Clinicians must learn how to integrate AI into routine practice for conditions such

as asthma and chronic obstructive pulmonary disease (COPD), while ensuring patient safety and building trust in these tools. Chronic respiratory diseases are major global causes of morbidity and mortality and place a substantial burden on healthcare systems; among them, asthma and COPD are chronic disorders characterized by airway obstruction and inflammation. This review highlights the rapid advancement of AI, and it aims to explore the literature's evidence of its applicability in controlling chronic respiratory disorders, particularly in asthma and COPD. We conducted a narrative literature review by searching ScienceDirect, PubMed, and Google Scholar for English-language studies on artificial intelligence applications in asthma and COPD and by screening the references of relevant articles. The reviewed literature suggests that AI-based approaches are being applied across the asthma-COPD spectrum to support diagnosis and phenotyping, improve risk stratification and prediction of clinically relevant outcomes, and enable more continuous monitoring using heterogeneous data sources (e.g., clinical records, imaging, and digital health data). AI-based tools are poised to support clinicians in asthma and COPD across diagnosis, phenotyping, and monitoring; however, their safe implementation in routine care will require robust validation, transparency, and governance to ensure reliability and patient safety.

Keywords: COPD; artificial intelligence; asthma; deep learning; machine learning.

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NPJ Prim Care Respir Med

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. 2026 Mar 28.

doi: 10.1038/s41533-026-00486-6. Online ahead of print.

A cough sound-based deep learning algorithm for accessible prompt detection of chronic obstructive pulmonary disease with smartphones

Jun Zhou [#1,2], Jingwen Huang [#1,2,3], Qian Wang [#4], Junhai Yan [#5], Huifang Cao [#6], Lin Huang [1,2], Si Chen [7], Xiaolu Ruan [7], Wenyu Zhu [7], Jiaxuan Mao [7], Yang Liu [7], Zhaoyang Bu [7], Mo Yang [7], Qian Wang [7], Yi Zhou [8], Ethan Fan [8], Leanne Tong [8], Xianwen Sun [1,2,3], Dongxing Zhao [9,10], Ping Wang [11,12], Min Zhou [13,14,15], Jieming Qu [16,17,18]

Affiliations Expand

- **PMID: 41896558**

- **DOI: 10.1038/s41533-026-00486-6**

Abstract

Early COPD diagnosis is vital for effective management, yet conventional tools such as professional spirometers are often inaccessible in resource-limited settings. We present Cough Search, a smartphone-based deep learning algorithm that uses voluntary cough sounds to detect COPD, offering a cost-efficient and accessible diagnostic approach. The presented COPD detection algorithm (Cough Search) employs a transformer-based neural network model. It was trained on a training cohort (406 COPD and 1631 non-COPD) with hyperparameters tuned on the balanced internal validation cohort (151 COPD and 225 non-COPD participants). The algorithm was finally validated on the external validation cohort (105 COPD and 617 non-COPD participants from four hospitals). Participants were classified as COPD or non-COPD based on spirometry and clinical diagnoses. Cough Search achieved an area under the receiver operating characteristic curve (AUC) of 0.92 and 0.94 in the internal and external validation cohorts, respectively. In the external validation cohort study, the model demonstrated high sensitivity (92%) and specificity (86%) in distinguishing COPD from non-COPD cases. Performance remained robust across all COPD stages, with a sensitivity exceeding 93% for severe stages (GOLD 3-4) and above 91% for moderate stages (GOLD 1-2). The algorithm maintained its accuracy across non-COPD respiratory conditions and smartphone models. Cough Search shows promise as a scalable, accessible tool for COPD detection, particularly in underserved areas, potentially transforming early COPD diagnosis and management. Trial registration: ClinicalTrials.gov Identifier: NCT06082791.

Conflict of interest statement

Competing interests: The authors declare no competing interests.

- **31 references**

Supplementary info

Associated data, Grants and fundingExpand

Full text links

Cite

3

Thorax

. 2026 Mar 27:thorax-2025-224120.

doi: 10.1136/thorax-2025-224120. Online ahead of print.

No association between troponin and COPD without cardiovascular influence: findings from a population-based cohort (SCAPIS)

Jonas Eriksson Ström [# 1], Ida Pesonen [# 2 3], Per Liv [4], Anders Andersson [5 6], Apostolos Bossios [3 7 8], Arne Egesten [9 10], Magnus Ekström [9], Jan Engvall [11 12], Elin Good [13], Ola Hammarsten [14], Jonas Holm [15 16], Christer Janson [17], Åse Johnsson [18 19], Lars Lind [20], Eva Lindberg [17], Anders Lindén [3 7], Andrei Malinovschi [21], Anna Moberg [22], Ulf Nilsson [4], Emma Palmqvist [18 19], Magnus Skold [2 3], Josefin Sundh [23], Hanan A Tanash [24], Suneela Zaigham [21 24 25], Anders Blomberg [4]

Affiliations Expand

- PMID: 41895854

- DOI: 10.1136/thorax-2025-224120

Abstract

Elevated troponin I (TnI) has been reported in patients with chronic obstructive pulmonary disease (COPD) without cardiovascular disease (CVD), suggesting non-ischaemic mechanisms. We assessed this association in a population-based cohort of 22 526 individuals without known CVD or significant coronary artery calcification. TnI showed no association with COPD (adjusted OR 0.87, 95% CI 0.60 to 1.26; highest category vs below limit of detection) or with forced expiratory volume in 1 s/forced vital capacity (adjusted difference 0.002, 95% CI -0.001 to 0.004). Median TnI was 2.2 ng/L in both obstructive and non-obstructive groups. These findings do not support a pulmonary source of TnI elevation in mild to moderate, stable COPD and suggest that TnI elevations should prompt cardiovascular evaluation rather than being attributed to pulmonary disease alone.

Keywords: COPD Pathology; COPD epidemiology.

Conflict of interest statement

Competing interests: AA reports personal fees from AstraZeneca and Chiesi for lectures and the production of educational materials in pulmonary medicine, outside the submitted work. ABo reports institutional grants and honoraria from AstraZeneca, GSK and Chiesi, and participation on an advisory board for AstraZeneca, all outside the submitted work. OH reports speaker and consultancy honoraria from Siemens Healthineers and Roche Diagnostics, and holds stock

options in Aligned Bio, all outside the submitted work. JH serves as an external consultant to Intertek Medical Notified Body, with no competing interests related to this work. AL reports research funding from the Swedish Heart-Lung Foundation, the Swedish Research Council and Region Stockholm, and an unrestricted research grant from Chiesi. He has also received consulting fees from Chiesi, AstraZeneca and Roche, and honoraria from Chiesi for lectures and meeting-related activities, all outside the submitted work. JS reports institutional research grants from AstraZeneca and NextCell, and honoraria from AstraZeneca and Chiesi for educational activities. Her institution has received high-flow oxygen equipment from ResMed within an ongoing randomised controlled trial, all outside the submitted work.

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Thorax

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Inhaled corticosteroid withdrawal and mortality rate in trials of triple therapy inhalers for COPD

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Affiliations Expand

- **PMID: 41895853**
- **DOI: 10.1136/thorax-2025-224636**

Abstract

The Efficacy and Safety of Triple Therapy in Obstructive Lung Disease (ETHOS) and Informing the Pathway of Chronic Obstructive Pulmonary Disease (COPD) Treatment (IMPACT) trials have been interpreted as showing a mortality benefit from introducing triple therapy inhalers in patients with COPD. However, reanalysis of the trial data instead reveals an excess mortality arising from the withdrawal of maintenance inhaled corticosteroids from patients with COPD randomised to the dual therapy long-acting muscarinic antagonist-long-acting beta-agonist inhaler

used as the comparator, as dictated by the trial protocols. The findings from this reanalysis are of direct relevance to guidelines and management of COPD.

Keywords: COPD Exacerbations; Glucocorticoids; Inhaler devices.

Conflict of interest statement

Competing interests: None declared.

Full text links

Cite

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Meta-Analysis

Medicine (Baltimore)

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. 2026 Mar 27;105(13):e48112.

doi: 10.1097/MD.0000000000048112.

Prevalence and risk of chronic obstructive pulmonary disease in rheumatoid arthritis: Systematic review and meta-analysis

Sawai Singh Rathore [1], K T Mohammed Rizwan [2], Ogechukwu Samuel Obi [3], Shravya Krishna Kokkula [4], Dawn Adams [5], Gredeline Nhomme Jeudy [5], Laura Cicani [6], Ifeanyi Ononuju [7], Tahera Ahmadi [8], Bijay Mukesh Jeswani [9]

Affiliations Expand

- PMID: 41894283

- DOI: 10.1097/MD.0000000000048112

Abstract

Background: Rheumatoid arthritis (RA) is a chronic autoimmune disease known for its systemic inflammatory effects and associated comorbidities. Chronic obstructive pulmonary disease (COPD) has been increasingly recognized as a significant

comorbidity in RA patients. This meta-analysis aims to quantify the prevalence and relative risk of COPD in patients with RA compared to the general population.

Methods: A systematic search of PubMed, Embase, and Google Scholar was conducted until April 30th, 2024. Studies were selected based on predefined inclusion criteria, focusing on those reporting data on COPD in RA patients. Random-effects models were used to estimate pooled prevalence rate and risk ratios, along with 95% confidence intervals (CIs), to report the overall effect size. Statistical significance was set at P < .05. Statistical analyses were conducted using Review Manager and MedCalc software, with results pooled using the Mantel-Haenszel random-effects model. Heterogeneity was assessed using I2 statistics, and publication bias was evaluated using funnel plots, Egger regression, and Begg rank correlation tests.

Results: Twenty-four studies with a combined population of 1,710,600 individuals were included. The pooled prevalence of COPD in RA patients was 7.06% (95% CI 4.56-10.13). Subgroup analysis showed a prevalence of 6.36% in Asia and 7.1% in the studies from the rest of the world. RA patients had a significantly higher risk of developing COPD compared to the general population, with an risk ratios of 1.58 (95% CI 1.37-1.82, P < .0001). The relative risk in Asian populations was 1.61 (95% CI, 1.19-2.18, P < .0001) compared to 1.56 (95% CI, 1.24-1.97, P < .0001) in studies from the rest of the world. According to Newcastle-Ottawa Scale, most studies were of high or moderate quality. According to Egger regression and Begg rank correlation tests, all analyses were free of publication bias.

Conclusion: This meta-analysis offers strong evidence that individuals with RA are at a significantly higher risk of developing COPD. These findings emphasize the need for regular screening for COPD in RA patients and the implementation of proactive management strategies to reduce this risk. Further research is required to fully understand this relationship.

Keywords: chronic obstructive pulmonary disease; prevalence; pulmonary function; rheumatoid arthritis; risk.

Conflict of interest statement

The authors have no funding and conflicts of interest to disclose.

- 33 references

Supplementary info

Publication types, MeSH termsExpand

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Meta-Analysis

J Glob Health

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. 2026 Mar 27:16:04072.

doi: 10.7189/jogh.16.04072.

Prevalence of preserved ratio impaired spirometry and restrictive spirometry pattern in the general population: a systematic review and multi-level meta-analysis of studies from multiple countries

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Affiliations Expand

- PMID: 41891755

- DOI: 10.7189/jogh.16.04072

Abstract

Background: Both preserved ratio impaired spirometry (PRISm) (defined as a forced expiratory volume in one second (FEV1) <80% of predicted, while the ratio of FEV1 to forced vital capacity (FVC) is ≥0.7) and restrictive spirometry pattern (RSP) (defined as FVC<80% of predicted, while the FEV1/FVC ratio ≥0.7) are associated with an increased risk of mortality. The global prevalence of PRISm and RSP in the general population remains unclear. Therefore, we aimed to estimate the prevalence and identify risk factors of PRISm and RSP in the general population, and to examine variations across subgroups defined by gender, smoking status, WHO regions, and World Bank income levels.

Methods: We searched three databases for studies that reported the prevalence of PRISm and RSP, and their associated risk factors in the general population. We conducted a multi-level meta-analysis, along with standard random-effects modelling, to estimate the pooled prevalence and identify key risk factors, and performed meta-regression and sensitivity analyses to assess the robustness of the results.

Results: We identified a total of 57 studies reporting population-based data from 31 countries. We included 48 studies for meta-analysis using the Global Initiative for Chronic Obstructive Lung Disease (GOLD) definition, resulting in a pooled sample of 1 129 807 participants. The pooled prevalence of GOLD-PRISm was 10.60% (19 studies; 95% confidence interval (CI) = 8.12, 13.73), while the prevalence of GOLD-RSP was 12.09% (23 studies; 95% CI = 7.90, 18.04). The simultaneous combined prevalence of GOLD-PRISm and RSP was 11.79% (38 studies; 95% CI = 9.11, 15.12).

Subgroup analysis showed that current smokers (13.37% vs. 10.18% in ex-smokers and 10.87% in non-smokers), and Western Pacific Region populations (11.26%) had higher prevalence rates of GOLD-PRISm. Significant risk factors for GOLD-PRISm include older adults, current and former smoking, extreme body mass index, and a history of comorbidities, such as asthma, diabetes, hypertension, and stroke.

Conclusions: We provide a pooled estimate of PRISm and RSP prevalence based on studies from multiple regions, highlighting significant regional and demographic variations. Key risk factors, particularly smoking and comorbidities, should be considered when developing early management strategies.

Conflict of interest statement

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

Supplementary info

Publication types, MeSH termsExpand

Full text links

Cite

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Comparative Study

BMJ Open Respir Res

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. 2026 Mar 26;13(1):e002871.

doi: 10.1136/bmjresp-2024-002871.

Predictive ability of the COPD-specific comorbidity test (COTE) score versus the Charlson comorbidity index (CCI) in patients with COPD

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Affiliations Expand

- **PMID: 41887721**

- **DOI: 10.1136/bmjresp-2024-002871**

Free article

Abstract

Introduction: The chronic obstructive pulmonary disease (COPD)-specific comorbidity test (COTE) aims to predict long-term mortality in patients with COPD, whereas the Charlson comorbidity index (CCI) score is used as a validated tool for predicting long-term mortality across medical conditions. Comparison of the two comorbidity scores' ability to predict mortality has only been studied scarcely.

Aims and objectives: This study aimed to compare the predictive ability of the COTE and CCI scores including the updated CCI score with updated weights (CCI (Quan)) in patients with COPD following acute exacerbation of chronic obstructive pulmonary disease (AECOPD).

Methods: Using nationwide registry data, all Danish patients at first admission due to AECOPD during 2005-2018 were included in this retrospective cohort study. 1-year mortality was explored including age, sex and CCI or COTE comorbidity scores. Logistic regression was performed with fivefold cross-validation comparing area under the curve (AUC) and optimal threshold using Youden index. The logistic regression models were furthermore examined using 10 000 bootstrap analyses and comparing the distribution of accuracy using a T-test. Cox regression analysis was used to compare Brier scores over time for models including combinations of age, sex, COTE, CCI and CCI (Quan).

Results: A total of 87 271 individuals were identified with a first-time AECOPD during the study period. The median age was 74 IQR (66, 81) and 48.4% were males.The logistic regression revealed an AUC of the CCI and CCI (Quan) models of 0.714 and for the COTE model 0.707 ($p<0.001$).Comparison using T-test on 10 000 bootstrap samples revealed small differences with an accuracy of 0.7281 (95% CI 0.7241 to 0.7320) for the COTE model and 0.7275 (95% CI 0.7235 to 7314) for the CCI model ($p<0.001$).Brier scores were 0.1793 for CCI, 0.1789 for CCI (Quan) and 0.1802 for COTE, only slightly favouring the CCI model.

Conclusions: In a cohort of patients with first-time AECOPD, we found similar predictive abilities of 1-year mortality comparing the CCI, CCI (Quan) and COTE score.

Keywords: COPD Exacerbations; COPD epidemiology.

Conflict of interest statement

Competing interests: None declared.

Supplementary info

Publication types, MeSH termsExpand

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Eur Respir J

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. 2026 Mar 26:2600306.

doi: 10.1183/13993003.00306-2026. Online ahead of print.

Clinically Relevant Change in Airway Wall Thickness to Identify Disease Activity in COPD and Smokers At-Risk

Mustafa Abdo [1 2], Martin Reck [3], Susanne Stiebeler [3 4], Benjamin-Alexander Bollmann [5 6], Sabine Bohnet [7], Katharina May [8], Sabine Dettmer [6 9], Henrik Watz [3 7], Jens Vogel-Claussen [6 9 10]; HANSE Trial Group

Affiliations Expand

- **PMID: 41887670**

- **DOI: 10.1183/13993003.00306-2026**

No abstract available

Supplementary info

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Review

Expert Rev Respir Med

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. 2026 Mar 26.

doi: 10.1080/17476348.2026.2651412. Online ahead of print.

Daytime sleepiness in patients with obstructive sleep apnea and associated comorbidities

Claudia Di Chiara [1], Giulia Sartori [1], Nadia Castaldo [2], Alberto Fantin [1 2], Marcello Ferrari [1], Ernesto Crisafulli [1]

Affiliations Expand

- **PMID: 41883309**

- **DOI: 10.1080/17476348.2026.2651412**

Abstract

Introduction: Obstructive sleep apnea (OSA) is characterized by recurrent upper-airway collapse during sleep, leading to ineffective respiratory efforts, intermittent hypoxia, and sleep fragmentation. Patients with OSA often have comorbid conditions. Excessive daytime sleepiness (EDS), defined as an inability to remain awake during the day, is common among patients with OSA; however, its perception may vary with comorbidities that affect autonomic and neuroendocrine regulation.

Areas covered: We reviewed studies examining the prevalence and clinical impact of EDS in patients with OSA and its main comorbidities, published between January 2000 and September 2025, and identified through Medline.

Expert opinion: EDS is highly prevalent in patients with OSA and arterial hypertension, cardiac arrhythmias, cerebrovascular comorbidities (particularly in those with thalamic or pontine lesions), diabetes mellitus, metabolic syndrome, asthma, chronic kidney disease, and cancer. By contrast, EDS appears less prevalent in patients with heart failure, treated cerebrovascular and neurodegenerative disease (particularly in those receiving levodopa, selective serotonin reuptake inhibitors, or bromocriptine), and chronic obstructive pulmonary disease (COPD). In conclusion, in patients with OSA, EDS is perceived differently depending on comorbidity. Consequently, EDS assessment should follow a personalized, multidimensional approach that recognizes its clinical relevance while accounting for variability across comorbid conditions.

Keywords: Obstructive sleep apnea; cardiovascular disease; chronic obstructive pulmonary disease; comorbidities; diabetes; excessive daytime sleepiness.

Supplementary info

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Ann Am Thorac Soc

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. 2026 Mar 25:aaoag073.

doi: 10.1093/annalsats/aaoag073. Online ahead of print.

Performance of cardiovascular disease risk prediction tools in chronic obstructive pulmonary disease

Samaneh Salimian [1], Nathaniel M Hawkins [1], Joseph Emil Amegadzie [2 3], Mohsen Sadatsafavi [3 4], Ricky D Turgeon [3]

Affiliations Expand

- PMID: 41883123

- DOI: 10.1093/annalsats/aaoag073

Abstract

Rationale: Emerging evidence suggests that a widely-used risk scoring tool, QRISK3, substantially underestimates cardiovascular disease risk in patients with chronic obstructive pulmonary disease (COPD), raising concerns about the validity of comparable risk assessment tools used in North America.

Objectives: We examined the performance of three risk equations- simplified Predicting Risk of Cardiovascular Disease EVENTs (PREVENT), Pooled Cohort Equations, and the 2008 global Framingham Risk Score to estimate 10-year total cardiovascular disease risk in individuals with COPD.

Methods: Individuals ≥ 40 years of age with COPD were identified from five longitudinal, community-based epidemiologic North American cohort studies. The risk was derived from each model using model-specific definitions with no major differences in the setting, time horizon, outcome, or predictors with those used in the original model development studies, except for the COPD eligibility criteria.

Discrimination (using time-dependent area under the receiver operating characteristic curve), calibration (using observed to the average estimated risk ratio (O/E) and calibration plot), and clinical utility (using decision curve) were assessed.

Results: PREVENT demonstrated the highest discrimination: 0.76 (95% CI, 0.74, 0.77) followed by Pooled 0.66 (0.64, 0.69) and Framingham 0.57 (0.54, 0.59). The PREVENT underestimated risk (O/E: 1.25 (95% CI, 1.2, 1.3)), whereas the Pooled and Framingham overestimated risk, by approximately 30% (0.73 (0.67, 0.80) and 0.67 (0.62, 0.72)). These discrepancies varied by age and sex, with a more pronounced underestimation in younger adults with PREVENT and overestimation in older adults with Pooled. All three models demonstrated clinical utility across a range of risk thresholds.

Conclusions: The models exhibit variable levels of miscalibration but retain clinical utility. With further calibration, their accuracy and predictive power may be improved.

Keywords: COPD; Clinical Utility; Framingham Risk Score; Pooled Cohort Equations; Predicting Risk of Cardiovascular Disease EVENTs.

Full text links

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Drugs

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. 2026 Mar 26.

doi: 10.1007/s40265-026-02306-0. Online ahead of print.

Depemokimab: First Approval

Arnold Lee [1]

Affiliations Expand

- **PMID: 41882474**
- **DOI: 10.1007/s40265-026-02306-0**

Abstract

Depemokimab (depemokimab-ulaa; EXDENSUR) is an anti-IL-5 antibody being developed by GSK for the treatment of asthma, chronic rhinosinusitis with nasal polyps (CRSwNP), chronic obstructive pulmonary disease, eosinophilic granulomatosis with polyangiitis and hypereosinophilic syndrome. Add-on treatment with depemokimab reduced asthma-related exacerbations in patients with severe asthma with an eosinophilic phenotype, in addition to reducing the severity of nasal polyps and nasal obstruction in patients with CRSwNP. This article summarizes the milestones in the development of depemokimab leading to this first approval in the UK as an add-on maintenance treatment of asthma in adult and adolescent patients aged ≥ 12 years with type 2 inflammation characterised by an eosinophilic phenotype who are inadequately controlled on maximum moderate-dose or high-dose inhaled corticosteroids plus another asthma controller; and as add-on therapy with intranasal corticosteroids for the treatment of adults with severe CRSwNP for whom therapy with systemic corticosteroids and/or surgery do not provide adequate control.

Conflict of interest statement

Declarations. Authorship and conflict of interest: During the peer review process the manufacturer of the agent under review was offered an opportunity to comment on the article. Changes resulting from any comments received were made by the authors on the basis of scientific completeness and accuracy. Arnold Lee is a contracted employee of Adis International Ltd/Springer Nature, and declares no relevant conflicts of interest. All authors contributed to this article and are responsible for its content. Ethics approval, consent to participate, consent to publish, availability of data and material, code availability: Not applicable.

- **20 references**

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Chronic Obstr Pulm Dis

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. 2026 Mar 25;13(2):136-146.

doi: 10.15326/jcopdf.2025.0724.

Prevalence of Exercise-Induced Desaturation Among COPD Patients Enrolled in Early Inpatient Pulmonary Rehabilitation

Mara Paneroni [1], Laura Spinello [1 2], Beatrice Salvi [1], Carla Simonelli [1], Aldo Diasparra [3], Massimo Venturelli [2 4], Michele Vitacca [1]

Affiliations Expand

- PMID: 41880599

- DOI: 10.15326/jcopdf.2025.0724

Free article

Abstract

Background: Acute exacerbations of COPD (AECOPDs) may cause exercise-induced desaturation (EID), affecting recovery and rehabilitation outcomes. The prevalence and clinical implications of EID during early postexacerbation pulmonary rehabilitation are unclear. This study aimed to determine the prevalence of EID in COPD patients recovering from AECOPDs, with and without long-term oxygen therapy (LTOT) at rest, and to compare clinical, functional, and physiological characteristics.

Methods: This retrospective, multicenter study included 262 COPD patients admitted for inpatient pulmonary rehabilitation after AECOPDs. Participants were stratified by resting oxygen therapy status. EID was defined as a ≥4% fall in peripheral oxygen saturation from baseline with nadir <90% during the 6-minute walking test. Clinical, functional, and physiological parameters were compared across subgroups.

Results: Overall, 132 patients (50.4%) exhibited EID. Prevalence was higher in patients on oxygen at rest (61.5%) than in those breathing room air (33.9%, p <0.0001). Patients on oxygen therapy had greater lung function impairment, reduced exercise capacity, and higher dyspnea-related disability. EID was associated with greater heart rate response in patients on supplemental oxygen but not consistently with perceived dyspnea or fatigue, highlighting the importance of objective oximetry during exercise testing. Regardless of EID, individuals on oxygen walked shorter distances than those on room air.

Conclusions: EID is common in COPD patients recovering from AECOPD, especially those receiving LTOT, and is linked to more severe functional impairment. Systematic EID assessment using objective oximetry during early pulmonary rehabilitation may support individualized oxygen titration and exercise prescriptions. Prospective studies are needed to clarify its prognostic implications.

Keywords: 6-minute walk test; COPD; exercise-induced desaturation; oxygen therapy; pulmonary rehabilitation.

Supplementary info

Grants and fundingExpand

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Curr Opin Support Palliat Care

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. 2026 Mar 25.

doi: 10.1097/SPC.0000000000000799. Online ahead of print.

The prevalence of persisting breathlessness despite treatment in chronic conditions

Hayley Lewthwaite [1 2 3], Naomi Takemura [4]

Affiliations Expand

- PMID: 41879122

- DOI: 10.1097/SPC.0000000000000799

Abstract

Purpose of review: Breathlessness impairs all aspects of daily life and places substantial burden on healthcare systems. This review explores the prevalence of breathlessness that persists despite optimal treatment in chronic conditions. Defining its scale is essential to ensure recognition and provision of evidence-based, breathlessness-specific interventions alongside disease management. Despite advances in breathlessness management research over the past decade, persistent breathlessness remains unacceptably common, reflecting implementation gaps and limited access to effective therapies.

Recent findings: Recent systematic reviews report breathlessness in 35-87% of people with cancer, with episodic breathlessness affecting up to 80% of those with persistent symptoms. Across primary studies in COPD, asthma, pulmonary fibrosis, pulmonary vascular and neurological conditions, and cancer, prevalence ranges from 9% to 91%. Even among people receiving guideline-based disease treatment, 38-53% report clinically relevant breathlessness. The mMRC dyspnea scale may underestimate prevalence compared with exercise testing and multidimensional questionnaires.

Summary: Persistent breathlessness remains common across major chronic diseases, often despite optimal disease therapy. Clinicians across all sectors of healthcare should routinely ask people about their breathlessness, and evidence-based strategies should be offered as part of routine, integrated symptom management to help reduce the high burden of persistent breathlessness in clinical populations.

Keywords: cancer; chronic respiratory disease; dyspnea; symptom assessment.

- **67 references**

Full text links

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Cite

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ERJ Open Res

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. 2026 Mar 23;12(2):00388-2025.

doi: 10.1183/23120541.00388-2025. eCollection 2026 Mar.

Airflow for reducing breathlessness in people with serious respiratory illness: a systematic review

Claudia Bausewein [1], Anne E Holland [2 3 4 5], Lorena Romero [6], Amy Pascoe [4], Natasha Smallwood [3 4], Magnus Ekström [7], Charles C Reilly [8 9]

Affiliations Expand

- **PMID: 41878280**

- **PMCID: PMC13006908**

- **DOI: 10.1183/23120541.00388-2025**

Abstract

Background: Increased airflow is reported as helpful in reducing the sensation of breathlessness. This systematic review aimed to assess the effectiveness of airflow

on breathlessness (primary outcome, measured using a validated tool at rest or during exercise) and health-related quality of life (secondary outcome) in people with serious respiratory illness.

Methods: We searched Ovid MEDLINE, Embase, Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials in August 2022 updated in May 2025.

Results: 10 studies (11 reports) were identified involving 413 participants with COPD, interstitial lung disease, bronchiectasis and asthma. A (handheld) fan, a pedestal fan and the PneumoCool device were tested. Settings included laboratory (one study), hospital (two studies), during exercise tests (three studies) or daily life settings (four studies). The primary outcomes were measured between 5 min after fan use and on day 60 after 2 months of fan use in everyday life. Risk of bias was high in all studies. Due to heterogeneity and small sample sizes, meta-analyses were not feasible. Overall, the evidence was mixed with an overall beneficial effect of fan use in studies assessing the acute effects compared to assessment of long-term effects of fan use after 14-60 days. Health-related quality of life was only reported in one study, with no improvement.

Conclusion: The results suggest a beneficial effect of a (handheld) fan for the relief of breathlessness in people with serious respiratory illness. A fan could be an additional treatment option in the self-management of breathlessness.

Conflict of interest statement

Conflicts of interest: C. Bausewein declares no conflicts of interest. A.E. Holland reports non-financial support from BOC Australia and Air Liquide Australia for oxygen therapy clinical trials, outside the submitted work. L. Romero declares no conflicts of interest. A. Pascoe declares no conflicts of interest. N. Smallwood is a member of the editorial board of ERJ Open Research. M. Ekström declares no conflicts of interest. C. Reilly declares no conflicts of interest.

- 33 references
- 1 figure

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Allergic Rhinitis and Its Impact on Asthma (ARIA)-EAACI Guidelines-2024-2025 Revision: Part II-Guidelines on Oral and Ocular Treatments

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Affiliations Expand

- **PMID: 41877472**

- **DOI: 10.1111/all.70305**

Abstract

Background: Oral and ocular medications are frequently used in the treatment of allergic rhinitis (AR). As part of the update of the Allergic Rhinitis and its Impact on Asthma (ARIA)-EAACI guidelines, this manuscript presents the ARIA-EAACI 2024-2025 recommendations for oral and ocular treatments.

Methods: The ARIA-EAACI 2024-2025 guideline panel issued recommendations following the Grading of Recommendations, Assessment, Development and Evaluation (GRADE) evidence-to-decision framework. Several sources of evidence were used to inform panel judgements and recommendations, including systematic reviews, mHealth and pharmacovigilance data as well as a survey on costs.

Results: Eight guideline questions concerning oral treatments for AR and three questions concerning ocular treatments were addressed. These questions led to the recommendations. Overall, these questions concern the choice between different classes of medication. They also discuss the role of oral antihistamines (OAH), leukotriene receptor antagonists (LTRA), ocular antihistamines (OcAH) and ocular mast cell stabilisers. Four questions had not been previously evaluated in ARIA guidelines, while, for the other four, there was a change in the strength or directionality of the recommendations. Overall, these guidelines recommend using intranasal corticosteroids over OAH and using OAH over LTRA. Moreover, they

suggest using OAH over OcAH and suggest being against adding LTRA to OAH. Finally, considerations for choosing between different individual OAHs are presented.

Conclusion: This ARIA-EAACI 2024-2025 article supports patients, their caregivers and healthcare professionals in choosing oral and ocular treatments for AR. Decisions on treatment should consider the clinical variability of the disease, patients' values and the affordability of medications.

Keywords: allergic rhinitis; guidelines; leukotriene receptor antagonists; ocular antihistamines; oral antihistamines.

- **34 references**

Supplementary info

Grants and fundingExpand

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16

Editorial

Adv Ther

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Summary of Research: Ensifentrine, a Novel Phosphodiesterase 3 and 4 Inhibitor for the Treatment of Chronic Obstructive Pulmonary Disease: Randomized, Double-Blind, Placebo-Controlled, Multicenter Phase III Trials (the ENHANCE Trials)

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Affiliations Expand

- **PMID: 41874851**

- DOI: 10.1007/s12325-026-03514-6

Abstract

Chronic obstructive pulmonary disease (COPD) is a lung disease that makes it hard to breathe and gets worse over time. People with COPD have damaged airways with swelling and increased mucus production. Ensifentrine is a novel agent that inhibits phosphodiesterase (PDE) 3 and PDE4, two enzymes that affect airway muscles, inflammation, and mucus removal from the lungs. This summary of research provides an overview of a previously published article on the results from the phase 3 ENHANCE trials, which studied the effect of ensifentrine in people with moderate to severe COPD who may have already been taking standard maintenance medications. Ensifentrine improved breathing, symptoms, and quality of life. It also reduced the rate and risk of flare-ups (called exacerbations) and was well tolerated. These results support the use of ensifentrine as an effective and well-tolerated treatment for people with COPD.

Keywords: COPD; Dual PDE3; Ensifentrine; Nebulized Therapy; PDE4 Inhibitor.

Conflict of interest statement

Declarations. Conflict of Interest: Not applicable. Consent to participate, Consent to publish, Availability of data and material: Not applicable.

- 1 reference

Supplementary info

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17

Ann Med

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. 2026 Dec;58(1):2643041.

doi: 10.1080/07853890.2026.2643041. Epub 2026 Mar 24.

Regarding: clinical impact of disease stability on exacerbation and mortality in COPD: a retrospective cohort study

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- PMCID: PMC13015057
- DOI: 10.1080/07853890.2026.2643041

No abstract available

Conflict of interest statement

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- 5 references

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18

Allergy

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Prevalence of Type 2 Inflammation in Chronic Obstructive Pulmonary Disease Patients With Frequent Exacerbations

Mireille C Melles [1 2 3], Johannes C C M In 't Veen [1 4], Dirk-Jan Slebos [2 3], Frits M E Franssen [5 6], Marlies van Dijk [2 3], Pieter-Paul W Hekking [1 7]

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- DOI: 10.1111/all.70300

No abstract available

Keywords: COPD; biologics; biomarkers; eosinophils; inflammation.

Supplementary info

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19

Semin Respir Crit Care Med

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doi: 10.1055/a-2837-8778. Online ahead of print.

Role of vaccination in the prevention of ECOPD

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- PMID: 41871621

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Abstract

Exacerbations of chronic obstructive pulmonary disease (ECOPD) represent key events in the natural history of COPD and are associated with several adverse outcomes. Respiratory infections are major and potentially modifiable triggers of ECOPD, with viral pathogens such as the influenza virus, respiratory syncytial virus (RSV), and SARS-CoV-2, as well as bacterial infections caused by Streptococcus pneumoniae, playing a central role. This narrative review examines the current evidence supporting vaccination as a preventive strategy for ECOPD and discusses

its translation into clinical practice. The biological rationale for vaccination in COPD is reviewed, including disease-related immune dysregulation, impaired mucociliary clearance, and increased susceptibility to respiratory pathogens. Evidence from randomized clinical trials, observational studies, meta-analyses, and real-world data is summarized for pneumococcal, influenza, SARS-CoV-2, and RSV vaccines. Pneumococcal vaccination has been shown to reduce the burden of community-acquired pneumonia and invasive pneumococcal disease, with conjugate and higher-valent vaccines providing enhanced immunogenicity in older and high-risk adults. Influenza vaccination consistently reduces severe exacerbations, hospitalizations, and mortality, with additional cardioprotective effects of relevance in COPD. SARS-CoV-2 vaccination markedly lowers the risk of severe COVID-19 and related respiratory deterioration in COPD, while recently licensed RSV vaccines offer a novel opportunity to prevent RSV-associated lower respiratory tract disease and potentially reduce exacerbation risk. Patient populations most likely to benefit from vaccination include frequent exacerbators, older adults, individuals with severe airflow limitation, multimorbidity, immune dysfunction, infection-prone phenotypes, and socially vulnerable groups. Future perspectives include precision vaccination strategies, novel vaccine platforms, coadministration approaches, and interventions to improve vaccine uptake. Vaccination emerges as a cornerstone of ECOPD prevention, with substantial potential to reduce exacerbation burden and improve long-term outcomes in COPD.

Conflict of interest statement

The authors declare that they have no conflict of interest.

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Chronic Obstr Pulm Dis

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. 2026 Mar 25;13(2):111-124.

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Exacerbations and Decreased Lung Function Predict Nebulizer Use and Uptake in COPD and Tobacco Exposed Persons With Preserved Spirometry

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- PMID: 41771268

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Free article

Abstract

Rationale: Nebulizers are an alternative to handheld devices for inhaled therapies in chronic obstructive pulmonary disease (COPD). Understanding nebulizer utilization patterns is essential to developing therapy guidelines.

Objectives: We aimed to describe characteristics of nebulizer users versus nonusers and factors associated with baseline nebulizer use and longitudinal uptake.

Methods: We analyzed the Subpopulations and Intermediate Outcome Measures in COPD Study, a prospective cohort of 2973 participants with or without tobacco use and/or COPD. We used cross-sectional multivariable logistic regression and interval-censored proportional hazard models to analyze factors associated with nebulizer use and uptake among tobacco-exposed participants with preserved spirometry (TEPS) and COPD from enrollment (Visit 1) through 4–7 years of follow-up (Visit 5).

Results: Nebulizer utilization was highest in advanced COPD, 49% of Global initiative for chronic Obstructive Lung Disease (GOLD) Group D participants at baseline. Nebulizer treatments were primarily as-needed short-acting bronchodilators. Baseline nebulizer use was associated with respiratory exacerbations in the prior year (1, odds ratio [OR] 1.81, 95% confidence interval [CI] [1.24, 2.64]; 2, OR 1.86, 95% CI [1.07, 3.22]; 3 or more, OR 1.87, 95% CI [1.07, 3.28]), lower forced expiratory volume in 1 second (FEV1) (OR 2.81 per liter decrease, 95% CI [2.09, 3.77]), COPD Assessment Test (CAT) score >10 (OR 1.89, 95% CI [1.17, 3.03]), 6-minute walk distance (6MWD) (OR 1.03 per 10 meter lower 6MWD, 95% CI [1.02, 1.05]), and a history of asthma (OR 2.41, 95% CI [1.76, 3.30]). Longitudinal uptake was similarly associated with exacerbations, lower FEV1, CAT score >10, and asthma. Patterns were consistent between TEPS and COPD.

Conclusion: Nebulizers were predominantly used by participants with frequent exacerbations, high symptom burden, and advanced COPD, and long-acting nebulized medications were underutilized. Randomized controlled trials are needed to compare nebulizers with hand-held devices.

Keywords: COPD; medication delivery systems; nebulizer; outcomes; pulmonary physiology.

Supplementary info

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Chronic Obstr Pulm Dis

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. 2026 Mar 25;13(2):93-103.

doi: 10.15326/jcopdf.2025.0648.

Comparison of Bleeding Risks and All-Cause Death Between Warfarin and Direct Oral Anticoagulants in Patients With Atrial Fibrillation and Chronic Obstructive Pulmonary Disease: A Multicenter Retrospective Cohort Study

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Free article

Abstract

Background: Chronic obstructive pulmonary disease (COPD) may influence bleeding in atrial fibrillation (AF). We evaluated bleeding and all-cause death risks under warfarin versus direct oral anticoagulants (DOACs).

Methods: Based on a retrospective cohort from 12 centers of patients with AF on oral anticoagulation, we evaluated the associations of COPD and anticoagulant class with clinical outcomes using overlap-weighted logistic regression. Prespecified sensitivity and subgroup analyses were performed.

Results: COPD was associated with higher bleeding risk only among patients treated with warfarin (total bleeding: odds ratio [OR] 2.53, 95% confidence interval [CI] 1.00–6.45; risk difference [RD] 9.05%, 95% CI 0.15%–22.50%; minor bleeding: OR 3.00, 95% CI 1.09–8.24; RD 8.53%, 95% CI 0.56%–21.53%). Among patients with AF and COPD, DOACs were associated with reduced risks of total bleeding (OR 0.08, 95% CI 0.01–0.50; RD –8.4%, 95% CI -22.0% to -5.3%) and minor bleeding (OR 0.01; RD -9.5%, 95% CI -23.1% to -4.5%) compared with warfarin. Subgroup analyses suggested that DOACs were associated with increased mortality at estimated glomerular filtration rate (eGFR) ≥60mL/min/1.73m² (OR 3.07, 95% CI 0.78–12.03; RD 9.9%) but lower mortality at eGFR <60mL/min/1.73m² (OR 0.20, 95% CI 0.05–0.78; RD -24.1%). Factor Xa inhibitors were associated with a higher major bleeding risk compared with dabigatran (OR 4.56, 95% CI 1.70–12.26; RD 10.2%, 95% CI 0.2%–20.1%; with a number needed to harm of 10).

Conclusion: In AF with comorbid COPD, DOACs minimize bleeding versus warfarin and may confer survival benefit in renal impairment. Differential bleeding risk should be considered when choosing among DOACs.

Keywords: atrial fibrillation; bleeding; chronic obstructive pulmonary disease; direct oral anticoagulants; warfarin.

Supplementary info

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Semin Respir Crit Care Med

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. 2026 Mar 25.

doi: 10.1055/a-2818-1471. Online ahead of print.

Nonpharmacological Treatment of Acute Exacerbations of Chronic Obstructive Pulmonary Disease

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Affiliations Expand

- **PMID: 41734791**

- **DOI: 10.1055/a-2818-1471**

Abstract

Acute exacerbations of chronic obstructive pulmonary disease (AECOPDs) are acute events characterized by rapid worsening of dyspnea, cough, and sputum production, often leading to gas exchange impairment, ventilatory failure, and hospitalization. While pharmacological therapy remains central for managing the acute phase, nonpharmacological interventions play a crucial role in stabilizing patients, reducing complications, and promoting functional recovery. Respiratory strategies-including conventional oxygen therapy, high-flow nasal cannula, noninvasive ventilation, and invasive mechanical ventilation-are tailored to disease severity and underlying pathophysiology, aiming to unload respiratory muscles, improve ventilation, and optimize gas exchange. Pulmonary rehabilitation (PR) is essential to counteract skeletal and respiratory muscle dysfunction, sarcopenia, and exercise intolerance, thereby enhancing quality of life (QoL) and physical performance. Nutritional management addresses malnutrition, negative energy balance, and micronutrient deficiencies, supporting muscle preservation, immune function, and overall recovery. Home-based care models, including hospital-at-home programs and telerehabilitation, reduce hospital stays, facilitate early discharge, and improve access to structured PR programs. Structured self-management strategies and individualized exacerbation action plans empower patients, enhance symptom control, and reduce hospital readmissions, although their effectiveness may vary according to patient health literacy. Integrating these interventions into a comprehensive, multidisciplinary care pathway addresses both acute physiological derangements and long-term functional decline. Emerging digital health solutions-including telemonitoring, wearable sensors, and artificial intelligence-based predictive models-offer opportunities for early detection, personalized interventions, and enhanced patient engagement. This review synthesizes current evidence on nonpharmacological management of AECOPD, highlighting practical strategies to optimize respiratory support, rehabilitation, nutritional interventions, and self-management, ultimately aiming to accelerate recovery, prevent relapse, and improve QoL in this high-risk patient population.

Conflict of interest statement

L.P. has received lectures fees and travel expense coverage to attend scientific meetings from Fisher and Paykel, Resmed and MediCair. L.P. has also received consultant fees from VitalAir SpA. 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 manuscript apart from those disclosed.

Full text links

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Chronic Obstr Pulm Dis

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. 2026 Mar 25;13(2):167-176.

doi: 10.15326/jcopdf.2025.0657.

The Effects of Aerobic Exercise on Prognosis, Quality of Life, and Psychological Outcomes of Patients With Chronic Obstructive Pulmonary Disease: A Systematic Review and Meta-Analysis

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Affiliations Expand

- PMID: 41212727

- DOI: 10.15326/jcopdf.2025.0657

Free article

Abstract

Objectives: This meta-analysis assessed the effects of aerobic exercise on the function, prognosis, quality of life, and psychological outcomes of patients with chronic obstructive pulmonary disease (COPD).

Methods: The Cochrane Library, Scopus, PubMed, and Web of Science were searched from the inception to June 20, 2025 to identify eligible studies. A random-effects model was employed for meta-analysis.

Results: Twenty randomized controlled trials with 1003 participants were included. The risk of bias was high in most studies, particularly because blinding was not feasible. For most outcomes, we observed high heterogeneity among studies. The meta-analysis indicated that compared to the control group, patients with COPD undergoing exercise training had a significantly increased 6-minute walk test (weighted mean difference [WMD] 42.44m), forced expiratory volume in 1 second (FEV_1) (WMD 0.08L), FEV_1 to forced vital capacity (FVC) (WMD 5.42%), and peripheral capillary oxygen saturation (WMD 1.56%), which suggests that aerobic exercise can improve the functional capacity and respiratory reserve of patients with COPD. On the other hand, the results revealed that compared to the control group, aerobic exercise markedly decreased the St George's Respiratory Questionnaire (SGRQ) symptom score (standard mean difference [SMD] -1.13), the

SGRQ total score (SMD -1.44), the modified Medical Research Council score for dyspnea (SMD -0.81), and the Hospital Anxiety and Depression Scale (HADS)-anxiety score (SMD -1.17), but its effect on the HADS-depression score (SMD -0.25) did not meet the threshold of statistical significance. Subgroup analysis unveiled that aerobic exercise can offer greater benefits in the long term, and those with FEV_1 and FEV_1/FVC of more than 50% can benefit more from aerobic exercise.

Conclusion: Aerobic exercise may improve the functional capacity, symptoms, respiratory reserve, quality of life, and psychological outcomes of patients with COPD.

Keywords: Aerobic exercise; COPD; FEV1; Meta-analysis; Quality of life; Symptom.

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

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Review

Eur J Intern Med

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Alcohol use: less is better. An umbrella systematic review of clinical interventions, policies, and dose-response health risks in adults

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Affiliations Expand

- **PMID: 41887989**

- **DOI: 10.1016/j.ejim.2026.106837**

Abstract

Background: Alcohol is a major modifiable cause of morbidity, premature mortality and health inequalities, yet evidence informing "low-risk" thresholds and prevention strategies is fragmented.

Methods: Umbrella systematic review conducted according to PRISMA 2020 (protocol on OSF). PubMed/MEDLINE and Scopus were searched (Jan 2015-Mar 2026). An overlap-management approach selected an anchor synthesis per research question (Q1-Q37); supporting records were retained for triangulation. Quality appraisal used design-appropriate tools. Synthesis was narrative.

Results: Of 14,991 records, 49 were included (46 systematic reviews/meta-analyses, 2 WHO documents, 1 cross-sectional study) covering 37 pre-specified questions. Across most outcomes, higher intake and riskier patterns were associated with higher risk, with harms evident at levels often labelled 'moderate'. Any drinking increased injury odds (OR 2.80). Dose-response evidence showed steep gradients for cirrhosis (RR 9.35 in women and 2.82 in men at 40 g/day) and small but measurable increases in selected cancers at light drinking (e.g., breast cancer RR 1.05). In primary care, brief interventions reduced consumption at 12 months by -20 g/week. Pricing measures and some availability restrictions were directionally associated with lower consumption and harms, whereas evidence for other policy levers was more heterogeneous.

Conclusions: Overall evidence favoured lower alcohol intake and avoidance of heavy episodic drinking, although confidence varied by endpoint and was limited for several questions by the quality of the available syntheses. Apparent low-dose benefits were not robust to bias-aware analyses. These findings support a pragmatic counselling and policy message of "less is better" rather than a universal safe threshold.

Keywords: Alcohol drinking; Health Policy; Heavy episodic drinking; Internal medicine; Multimorbidity; Risk Assessment.

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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Ann Fam Med

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Person-Centered Multimorbidity Care in UK Primary Care: Identifying Changes to Practice

Molly Megson [1], Andrea Hilton [2], Aidin Aryankhesal [3], Jessica Blake [3], Anne Killett [3], Jayden van Horik [4], Chris Fox [4], Joanne Reeve [5]

Affiliations Expand

- PMID: 41876114
- PMCID: PMC13008808
- DOI: 10.1370/afm.250414

Abstract

Purpose: Growing numbers of people live with multimorbidity, defined as 2 or more long-term health conditions. Health care delivery must adapt to manage the growing workload and complexity associated with multimorbidity. Research, practice, and policy have called for a shift to whole-person tailored primary care management of multimorbidity but have yet to adequately describe how this should be implemented. Here, we systematically identify the enablers and barriers to delivery of tailored care for people living with multimorbidity to develop a new model for implementation.

Methods: We collected data across 5 UK general practitioner (GP) sites through 2 methods: ethnography and focus group discussions. Ethnographers observed 25 consultation sessions, 5 per site. Focus groups were held among primary care staff (n = 16, across 4 sessions) and patients and carers (n = 8, across 2 sessions). We analyzed integrated data using inductive thematic analysis to describe enablers/barriers to delivery of tailored care.

Results: We identified 3 elements needed to enable tailored management: (1) resources for tailored assessment of, and practical support for, tailored management of multimorbidities, (2) engagement of patients/carers with professional collaboration to cocreate tailored management plans, and (3) evaluation and development of the professional skills required to confidently work beyond traditional condition-focused models.

Conclusions: Whole-person tailored care needs inclusion of more services in routine primary care and change of culture toward shared decision making among multidisciplinary health care teams, patients, and carers. Such approach needs

flexible consultation models and data sources enforced through monitoring and continual learning.

Keywords: co-morbidities; generalist medicine; multimorbidity; primary care; tailored care.

- **33 references**
- **1 figure**

Supplementary info

MeSH termsExpand

Full text links

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3

Semin Respir Crit Care Med

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. 2026 Mar 23.

doi: 10.1055/a-2837-8778. Online ahead of print.

Role of vaccination in the prevention of ECOPD

Filippo Sartori [1], Ernesto Crisafulli [1], Marcial Cariqueo [2], Claudia Di Chiara [1], Giulia Sartori [1], Alberto Fantin [3], Antoni Torres [4]

Affiliations Expand

- **PMID: 41871621**
- **DOI: 10.1055/a-2837-8778**

Abstract

Exacerbations of chronic obstructive pulmonary disease (ECOPD) represent key events in the natural history of COPD and are associated with several adverse outcomes. Respiratory infections are major and potentially modifiable triggers of ECOPD, with viral pathogens such as the influenza virus, respiratory syncytial virus (RSV), and SARS-CoV-2, as well as bacterial infections caused by Streptococcus

pneumoniae, playing a central role. This narrative review examines the current evidence supporting vaccination as a preventive strategy for ECOPD and discusses its translation into clinical practice. The biological rationale for vaccination in COPD is reviewed, including disease-related immune dysregulation, impaired mucociliary clearance, and increased susceptibility to respiratory pathogens. Evidence from randomized clinical trials, observational studies, meta-analyses, and real-world data is summarized for pneumococcal, influenza, SARS-CoV-2, and RSV vaccines. Pneumococcal vaccination has been shown to reduce the burden of community-acquired pneumonia and invasive pneumococcal disease, with conjugate and higher-valent vaccines providing enhanced immunogenicity in older and high-risk adults. Influenza vaccination consistently reduces severe exacerbations, hospitalizations, and mortality, with additional cardioprotective effects of relevance in COPD. SARS-CoV-2 vaccination markedly lowers the risk of severe COVID-19 and related respiratory deterioration in COPD, while recently licensed RSV vaccines offer a novel opportunity to prevent RSV-associated lower respiratory tract disease and potentially reduce exacerbation risk. Patient populations most likely to benefit from vaccination include frequent exacerbators, older adults, individuals with severe airflow limitation, multimorbidity, immune dysfunction, infection-prone phenotypes, and socially vulnerable groups. Future perspectives include precision vaccination strategies, novel vaccine platforms, coadministration approaches, and interventions to improve vaccine uptake. Vaccination emerges as a cornerstone of ECOPD prevention, with substantial potential to reduce exacerbation burden and improve long-term outcomes in COPD.

Conflict of interest statement

The authors declare that they have no conflict of interest.

Full text links

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Cite

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Review

Pol Arch Intern Med

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. 2026 Mar 24;136(3):17243.

doi: 10.20452/pamw.17243. Epub 2026 Feb 27.

Artificial intelligence-assisted statistical analysis and statistical review: evidence (2023-2025) and implications for internal medicine

Michal Ordak

- PMID: 41757837

- DOI: 10.20452/pamw.17243

Free article

Abstract

Clinical research published in internal medicine journals relies heavily on statistical analysis and quantitative inference, making the quality of statistical reporting and statistical peer review central to the credibility of this literature. Despite long-standing methodological recommendations, the quality of statistical analyses and reporting in medical journals remains suboptimal, and the proportion of manuscripts undergoing formal statistical review has not improved over recent decades. At the same time, generative artificial intelligence (AI) tools have been increasingly adopted in biomedical research, raising expectations that they may support statistical analysis and elements of the peer review process. This narrative review synthesizes evidence published between 2023 and 2025 on the use of AI-assisted tools in statistical analysis and statistical review within medical research. The reviewed studies show that large language models can support selected tasks, including generation of analytical code, reproduction of simple statistical procedures, preliminary selection of statistical tests, and detection of certain formal statistical errors. However, AI performance is highly variable and frequently limited by incomplete consideration of statistical assumptions and reduced reliability in complex analytical scenarios. Current generative AI tools should not be regarded as fully autonomous instruments for statistical analysis or statistical peer review. Their effective use depends on statistical expertise, independent validation, and contextual judgment by human users. The review discusses implications for statistical practice and statistical review in internal medicine, a research setting characterized by heterogeneous observational data, multimorbidity, and frequent use of nonrandomized study designs, including pragmatic clinical trials.

Supplementary info

Publication types, MeSH termsExpand

Full text links

Multicenter Study

Heart

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. 2026 Mar 25;112(8):431-436.

doi: 10.1136/heartjnl-2025-325740.

Identifying clinical phenotype clusters in patients with coronary artery disease

Joris Holtrop [1], Carl-Emil Lim [2], Alicia Uijl [3 4], Peter Ueda [2], Tomas Jernberg [5], Manon G van der Meer [6], Pim van der Harst [6], Adriaan O Kraaijeveld [6], Jan-Willem Balder [6], Steven H J Hageman [1], Frank L J Visseren [1], Jannick A N Dorresteijn [7]; UCC-SMART study group; UCC-SMART studygroup

Collaborators, Affiliations Expand

- **PMID: 40451277**

- **DOI: 10.1136/heartjnl-2025-325740**

Abstract

Background: Guideline recommendations for the prevention of cardiovascular (CV) events in patients with coronary artery disease (CAD) are predominantly one-size-fits-all. Clinically identifiable phenotypes needing specific considerations might exist. The purpose of this study is to identify such clinical phenotypic clusters in patients with CAD and assess their relationship with the risk of recurrent CV events.

Methods: Unsupervised machine learning through latent class analysis was performed in patients with CAD from the Swedish Web-System for Enhancement and Development of Evidence-Based Care in Heart Disease Evaluated According to Recommended Therapies (SWEDEHEART) registry (n=88 894) and Utrecht Cardiovascular Cohort-Second Manifestations of Arterial Disease (UCC-SMART) cohort (n=5506). Characteristics for clustering were based on availability, missingness and clinical relevance. Clustering was performed in SWEDEHEART and validated in UCC-SMART. Association between clusters and the composite of myocardial infarction, stroke or CV death was assessed using Cox proportional hazard models.

Results: Four phenotypes could be distinguished: cluster 1 (38%, n=33 777) of predominantly younger males with increased body mass index, blood pressure and C-reactive protein, cluster 2 (21%, n=18 775) of smokers with few traditional risk factors, cluster 3 (30%, n=26 501) of older patients with few comorbidities and cluster 4 (11%, n=9841) of patients with multimorbidity. Compared with cluster 1, cluster 4 was at the highest risk (HR 4.38 95% CI (4.01 to 4.78)), followed by cluster 3 (HR 1.78 (1.70 to 1.85)), and cluster 2 (HR 0.97 (0.88 to 1.07)). Validation in UCC-SMART yielded similar results.

Conclusion: Four distinct and reproducible phenotypes, with differences in the risk of recurrent CV events, were identified among patients with CAD. These may be relevant in practice and warrant research into specific pathophysiology and differences in treatment effects.

Keywords: Atherosclerosis; Cardiovascular Diseases; Coronary Artery Disease; Epidemiology; Risk Factors.

Conflict of interest statement

Competing interests: None declared.

Supplementary info

Publication types, MeSH terms

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

1

Review

J Clin Med

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. 2026 Mar 23;15(6):2445.

doi: 10.3390/jcm15062445.

Artificial Intelligence in Asthma and COPD: Current Status and Future Potential

Federica Marrelli [1], Chiara Lupia [1], Saverio Nucera [1], Daniela Pastore [1], Paolo Zaffino [2], Carolina Muscoli [1], Girolamo Pelaia [1], Corrado Pelaia [3]

Affiliations Expand

- **PMID: 41899367**

- **DOI: 10.3390/jcm15062445**

Abstract

Interest in artificial intelligence (AI) is rapidly growing. In healthcare, especially through machine learning and deep learning, AI is emerging as a promising tool to support the diagnosis, management, and prevention of lung diseases and to advance personalized care, although it requires large, well-structured datasets. Clinicians must learn how to integrate AI into routine practice for conditions such as asthma and chronic obstructive pulmonary disease (COPD), while ensuring patient safety and building trust in these tools. Chronic respiratory diseases are major global causes of morbidity and mortality and place a substantial burden on healthcare systems; among them, asthma and COPD are chronic disorders characterized by airway obstruction and inflammation. This review highlights the rapid advancement of AI, and it aims to explore the literature's evidence of its applicability in controlling chronic respiratory disorders, particularly in asthma and COPD. We conducted a narrative literature review by searching ScienceDirect, PubMed, and Google Scholar for English-language studies on artificial intelligence applications in asthma and COPD and by screening the references of relevant articles. The reviewed literature suggests that AI-based approaches are being applied across the asthma-COPD spectrum to support diagnosis and phenotyping, improve risk stratification and prediction of clinically relevant outcomes, and enable more continuous monitoring using heterogeneous data sources (e.g., clinical records, imaging, and digital health data). AI-based tools are poised to support clinicians in asthma and COPD across diagnosis, phenotyping, and monitoring; however, their safe implementation in routine care will require robust validation, transparency, and governance to ensure reliability and patient safety.

Keywords: COPD; artificial intelligence; asthma; deep learning; machine learning.

2

J Allergy Clin Immunol

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. 2026 Mar 25:S0091-6749(26)00214-9.

doi: 10.1016/j.jaci.2026.03.010. Online ahead of print.

Incidence of Autoimmune Diseases in Children with Atopy Treated with Dupilumab

Stanislaw J Gabryszewski [1], Kathryn Hirabayashi [2], Morgan Botdorf [2], Mitchell Maltenfort [2], Christopher B Forrest [2], Theresa W Guilbert [3], Madeline Schutt [4], Hiroki Morizono [5], Gerardo Vazquez Garcia [6], Anna Cristina Garza-Mayers [7], Joseph Demetrius Hernandez [8], Sara Anvari [9], Suchitra Rao [10], Jonathan M Spergel [11]

Affiliations Expand

- PMID: 41895450

- DOI: 10.1016/j.jaci.2026.03.010

Abstract

Background: The type 2 inflammation-blocking agent dupilumab has gained traction as an effective treatment of multiple atopic diseases. New-onset autoimmune manifestations have been infrequently reported in dupilumab-treated atopic patients, primarily among adults. Autoimmune outcomes in atopic children on dupilumab are less clear.

Objective: We aimed to determine if dupilumab treatment of atopic children is associated with increased autoimmune or autoinflammatory disease diagnosis risk.

Methods: Using a multi-institutional electronic health record database comprised of 10 PEDSnet academic health systems, we performed a retrospective cohort study of children aged 6-17 with atopy (i.e., moderate-to-severe atopic dermatitis and/or persistent asthma, as defined by diagnosis codes and prescriptions) with or without (n=4,189 and n=4,195 in inverse-probability-of-treatment-weighted cohorts, respectively) dupilumab prescription between October 1, 2018 and November 29, 2023. Poisson regression estimated autoimmune disease incidence rates and rate differences, and Cox proportional hazards models estimated relative associations between dupilumab exposure and disease diagnosis.

Results: Among atopic children, the adjusted incidence rate difference (dupilumab-treated minus untreated) for any autoimmune disease was 2.47 (95% CI 0.82, 4.30) per 1,000 person-years, driven primarily by cutaneous autoimmune diseases (rate difference 2.20 [95% CI 0.77, 3.70] per 1,000 person-years). The rates of any or cutaneous autoimmune disease within 4 years of dupilumab treatment were 1.45-fold and 1.57-fold higher, respectively, in treated as compared with untreated atopic children.

Conclusion: We detected a modest association between dupilumab and cutaneous autoimmune disease diagnosis in atopic children. These findings help address knowledge gaps about clinical outcomes in atopic children treated with this biologic.

Keywords: PEDSnet; asthma; atopic dermatitis; atopy; autoimmunity; dupilumab.

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Cite

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JAMA

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. 2026 Mar 27.

doi: 10.1001/jama.2026.1024. Online ahead of print.

FDA Approves New Generic Inhaler for Asthma Treatment

Samantha Anderer

- PMID: 41893734

- DOI: 10.1001/jama.2026.1024

No abstract available

Full text links

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Cite

4

Rhinology

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. 2026 Mar 27.

doi: 10.4193/Rhin25.359. Online ahead of print.

Reconsidering biologic treatment recommendations for CRSwNP without asthma in EUFOREA guidelines

J Oppenheimer [1], G W Canonica [2 3], P Chanez [4], J Maza-Solano [5 6], C Tacon [7], K Kallinikou [8], P Howarth [7], M Bonini [9 10], I Eguiluz-Gracia [11], A Bourdin [12]

Affiliations Expand

- PMID: 41891950

- DOI: 10.4193/Rhin25.359

Abstract

The recently published EUFOREA pocket guide "Biologics in Upper and Lower Airway Diseases" summarises recommendati-ons on the use of biologics in chronic rhinosinusitis with nasal polyps (CRSwNP) and asthma (1) and offers advice on biologic choice for practicing clinicians. The creation of this pocket guide, in the absence of any head-to-head studies at that time, drew on expert opinions and published indirect treatment compari-son (ITC) approaches (2,3). It makes a single recommendation for a preferred biologic, in patients affected by CRSwNP, without concomitant asthma (apart from specific cases such as pregnan-cy), whilst offering different options in asthma endotypes and phenotypes. We wish to draw the attention of the readership to some additional considerations relating to biologic choice for these diseases and how they are classified.

5

Meta-Analysis

J Glob Health

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. 2026 Mar 27:16:04072.

doi: 10.7189/jogh.16.04072.

Prevalence of preserved ratio impaired spirometry and restrictive spirometry pattern in the general population: a systematic review and multi-level meta-analysis of studies from multiple countries

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Affiliations Expand

- PMID: 41891755

- PMCID: PMC13023682

- DOI: 10.7189/jogh.16.04072

Abstract

Background: Both preserved ratio impaired spirometry (PRISm) (defined as a forced expiratory volume in one second (FEV1) <80% of predicted, while the ratio of FEV1 to forced vital capacity (FVC) is ≥0.7) and restrictive spirometry pattern (RSP) (defined as FVC<80% of predicted, while the FEV1/FVC ratio ≥0.7) are associated with an increased risk of mortality. The global prevalence of PRISm and RSP in the general population remains unclear. Therefore, we aimed to estimate the prevalence and identify risk factors of PRISm and RSP in the general population, and to examine variations across subgroups defined by gender, smoking status, WHO regions, and World Bank income levels.

Methods: We searched three databases for studies that reported the prevalence of PRISm and RSP, and their associated risk factors in the general population. We conducted a multi-level meta-analysis, along with standard random-effects modelling, to estimate the pooled prevalence and identify key risk factors, and performed meta-regression and sensitivity analyses to assess the robustness of the results.

Results: We identified a total of 57 studies reporting population-based data from 31 countries. We included 48 studies for meta-analysis using the Global Initiative for Chronic Obstructive Lung Disease (GOLD) definition, resulting in a pooled sample of 1 129 807 participants. The pooled prevalence of GOLD-PRISm was 10.60% (19 studies; 95% confidence interval (CI) = 8.12, 13.73), while the prevalence of GOLD-RSP was 12.09% (23 studies; 95% CI = 7.90, 18.04). The simultaneous combined prevalence of GOLD-PRISm and RSP was 11.79% (38 studies; 95% CI = 9.11, 15.12). Subgroup analysis showed that current smokers (13.37% vs. 10.18% in ex-smokers and 10.87% in non-smokers), and Western Pacific Region populations (11.26%) had higher prevalence rates of GOLD-PRISm. Significant risk factors for GOLD-PRISm include older adults, current and former smoking, extreme body mass index, and a history of comorbidities, such as asthma, diabetes, hypertension, and stroke.

Conclusions: We provide a pooled estimate of PRISm and RSP prevalence based on studies from multiple regions, highlighting significant regional and demographic variations. Key risk factors, particularly smoking and comorbidities, should be considered when developing early management strategies.

Conflict of interest statement

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

- 42 references

- 3 figures

Supplementary info

Publication types, MeSH termsExpand

Full text links

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Eur Respir J

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. 2026 Mar 26;67(3):26E6703.

doi: 10.1183/13993003.E6703-2026. Print 2026 Mar.

***ERJ* Podcast March 2026: Mortality in severe asthma**

No authors listed

- **PMID: 41887655**

- **DOI: 10.1183/13993003.E6703-2026**

No abstract available

Full text links

Full text at publications.ersnet.org UNIMORE

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Cite

7

Respir Med

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. 2026 Mar 24:256:108790.

doi: 10.1016/j.rmed.2026.108790. Online ahead of print.

Oscillometry defined small airways dysfunction in patients with severe uncontrolled asthma and preserved spirometry

Robert Greig [1], Philipp Suter [1], Rory Chan [1], Brian Lipworth [2]

Affiliations Expand

- PMID: 41887372

- DOI: 10.1016/j.rmed.2026.108790

Abstract

Small airways dysfunction (SAD) is an important treatable trait in asthma that is often under-recognised. It can be assessed through spirometry as forced expiratory flow between 25% and 75% of vital capacity however this is limited due to being both effort and volume dependent. Forced oscillometry technique is effort independent and showing to be more sensitive for SAD. We reviewed patients with severe uncontrolled asthma prior to commencing biologic therapy to identify the incidence of abnormal SAD defining values. SAD was identified in 63% of patients. Of the 31 patients with preserved spirometry (normal FEV1 and FEV1/FVC), only 6% had an impaired FEF25-75 while 29% had impaired oscillometry. This result highlights SAD is a common finding in severe uncontrolled asthma and that oscillometry is more sensitive than spirometry at identifying SAD, particularly when spirometry is preserved.

Keywords: Oscillometry; Severe asthma; Small airways dysfunction; Spirometry.

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:Robert Greig reports a relationship with AstraZeneca UK Limited that includes: speaking and lecture fees and travel reimbursement. Philipp Suter reports a relationship with AstraZeneca UK Limited that includes: speaking and lecture fees. Philipp Suter reports a relationship with GSK that includes: speaking and lecture fees. Philipp Suter reports a relationship with Lung League Fribourg that includes: funding grants. Philipp Suter reports a relationship with Swiss Lung Foundation that includes: funding grants. Rory Chan reports a relationship with Asthma and Lung UK that includes: funding grants. Rory Chan reports a relationship with Chiesi Pharmaceutical that includes: funding grants, speaking and lecture fees, and travel reimbursement. Rory Chan reports a relationship with AstraZeneca UK Limited that includes: board membership, consulting or advisory, funding grants, speaking and lecture fees, and travel reimbursement. Rory Chan reports a relationship with GSK that includes: funding grants. Rory Chan reports a relationship with Vitalograph UK Ltd that includes: board membership, speaking and lecture fees, and travel reimbursement. Rory Chan reports a relationship with

Thorasys that includes: speaking and lecture fees. Rory Chan reports a relationship with Sanofi that includes: travel reimbursement. Rory Chan reports a relationship with NIOX Group Plc that includes: travel reimbursement. Brian J Lipworth reports a relationship with AstraZeneca UK Limited that includes: board membership, funding grants, and speaking and lecture fees. Brian J Lipworth reports a relationship with Sanofi that includes: board membership, speaking and lecture fees, and travel reimbursement. Brian J Lipworth reports a relationship with Chiesi Pharmaceutical that includes: consulting or advisory, funding grants, speaking and lecture fees, and travel reimbursement. Brian J Lipworth reports a relationship with Lupin Pharmaceuticals Inc that includes: consulting or advisory. Brian J Lipworth reports a relationship with Glenmark Pharmaceuticals Limited that includes: consulting or advisory and speaking and lecture fees. Brian J Lipworth reports a relationship with Sandoz Inc that includes: consulting or advisory. Brian J Lipworth reports a relationship with Vitalograph Ltd that includes: funding grants. Brian J Lipworth reports a relationship with Thorasys that includes: funding grants. The son of Dr Brian J Lipworth is presently an employee of AstraZeneca. 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.

8

J Asthma

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. 2026 Mar 26:1-13.

doi: 10.1080/02770903.2026.2652315. Online ahead of print.

Clinical Utility of Pentraxin-3 and Eosinophil-Derived Neurotoxin as Biomarkers of Disease Activity in Pediatric Bronchial Asthma

Eman Ahmed Abd-Elmawgood [1], Ahmed Alamir Mahmoud Abdallah [2 3], Mohammed H Hassan [4], Marwa Nasr Abo El-Hasan [1], Hanan M Fayed [5], Nagwan I Rashwan [1]

Affiliations Expand

- **PMID: 41886267**

- **DOI: 10.1080/02770903.2026.2652315**

Abstract

Background: Bronchial asthma is a chronic inflammatory airway disorder driven predominantly by Th2-mediated immune responses and eosinophilic activation. Eosinophil-derived neurotoxin (EDN) and pentraxin-3 (PTX3) have been implicated in airway inflammation and remodeling, yet their clinical relevance in children is not fully established.

Objectives: To assess serum EDN and PTX3 levels in children with bronchial asthma compared with healthy controls, and to evaluate their diagnostic performance and association with asthma severity and control.

Methods: This case-control study included 105 Egyptian children aged 2-18 years (55 asthmatics and 50 healthy controls). Asthma diagnosis, severity, and control were classified according to Global Initiative for Asthma (GINA) guidelines. All participants underwent detailed clinical evaluation, chest radiography, spirometry, and laboratory investigations, including serum EDN, and PTX3 measured by ELISA.

Results: Serum EDN and PTX3 levels were significantly elevated in asthmatic children compared with controls ($p < 0.0001$). EDN showed significant correlations with eosinophil count, IgE, exacerbation frequency, and pulmonary function indices, whereas PTX3 demonstrated weaker clinical associations. ROC analysis showed good discriminatory ability for EDN (AUC = 0.82) and high discrimination for PTX3 (AUC = 0.91) between asthmatic and non-asthmatic subjects, but limited ability of PTX3 to stratify asthma control.

Conclusion: EDN and PTX3 are associated with pediatric asthma, reflecting different components of airway inflammation. EDN demonstrated closer relationships with markers of disease activity suggesting its potential role as an adjunct biomarker for monitoring inflammation, while PTX3 primarily differentiated asthmatic from healthy children. These biomarkers should be considered complementary research tools rather than stand-alone diagnostic tests.

Keywords: Bronchial Asthma; Children; Eosinophil-Derived Neurotoxin (EDN); Pentraxin-3 (PTX3).

9

J Investig Allergol Clin Immunol

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. 2026 Mar 26:0.

doi: 10.18176/jiaci.1168. Online ahead of print.

Development of a Panel of Molecular Biomarkers of Asthma: Analysis of Differential Expression and Stability Over Time

Lucía Cremades-Jimeno [1], María López-Ramos [1], Selen Baos [1], Rubén Fernández-Santamaría [1], María A de Pedro [1], Ignacio Mahíllo-Fernández [2], Cristina Rosales-Ariza [1], José M Olaguibel [3 4], Victoria Del Pozo [1 4], María L Caballero [4 5], Juan A Luna-Porta [4 5], Santiago Quirce [4 5], Blanca Barroso [4 6], Diana Betancor [4 6], Marcela Valverde-Monge [4 6], Joaquín Sastre [4 6], Blanca Cárdaba [1 4]

Affiliations Expand

- PMID: 41885088

- DOI: 10.18176/jiaci.1168

Abstract

Background: Asthma is a chronic inflammatory respiratory disease characterized by significant heterogeneity, which complicates accurate patient classification and management. With the aim of defining new, reliable biomarkers, we previously evaluated the potential of 94 genes to differentiate allergic asthma (AA) from nonallergic asthma (NA) based on their expression in peripheral blood mononuclear cells (PBMCs). Here, the most promising biomarkers were further analyzed in a 2-year longitudinal cohort of 24 healthy controls (HCs), 18 NA patients, and 51 AA patients.

Methods: PBMC samples were collected at the beginning of the study (T0) and 2 years later (T2). The expression of 26 genes was analyzed using RT-qPCR. Genes showing stable expression over time (ie, with a high correlation between T0 and T2) were selected for further analysis. Differential expression and receiver operating characteristic (ROC) curve analysis were used to identify the best biomarkers for discrimination between phenotypes.

Results: Longitudinal stability was good for 13 genes. Of these, 11 showed statistically significant differential expression between asthma patients and HCs. ROC curve analyses were used to rank these genes by their discriminatory power. Specifically, CPA3 expression was able to discriminate asthma patients from HCs, while LGALS3 and TGFß1 made it possible to differentiate between NA and AA. Additionally, asthma severity was assessed based on the expression levels of RNASE3, IL4R, CHI3L1, PI3, and IL1R2.

Conclusions: We propose a diagnostic algorithm based on the expression profiles of 8 genes in PBMCs that could guide clinicians in the diagnosis and phenotypic classification of asthma.

Keywords: Allergic asthma; Diagnostic algorithm; Gene expression; Molecular biomarkers; Nonallergic asthma; PBMC.

Full text links

10

Drugs

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. 2026 Mar 26.

doi: 10.1007/s40265-026-02306-0. Online ahead of print.

Depemokimab: First Approval

Arnold Lee [1]

Affiliations Expand

- PMID: 41882474

- DOI: 10.1007/s40265-026-02306-0

Abstract

Depemokimab (depemokimab-ulaa; EXDENSUR) is an anti-IL-5 antibody being developed by GSK for the treatment of asthma, chronic rhinosinusitis with nasal polyps (CRSwNP), chronic obstructive pulmonary disease, eosinophilic granulomatosis with polyangiitis and hypereosinophilic syndrome. Add-on treatment with depemokimab reduced asthma-related exacerbations in patients with severe asthma with an eosinophilic phenotype, in addition to reducing the severity of nasal polyps and nasal obstruction in patients with CRSwNP. This article summarizes the milestones in the development of depemokimab leading to this first approval in the UK as an add-on maintenance treatment of asthma in adult and adolescent patients aged ≥ 12 years with type 2 inflammation characterised by an eosinophilic phenotype who are inadequately controlled on maximum moderate-dose or high-dose inhaled corticosteroids plus another asthma controller; and as add-on therapy with intranasal corticosteroids for the treatment of adults with severe CRSwNP for whom therapy with systemic corticosteroids and/or surgery do not provide adequate control.

Conflict of interest statement

Declarations. Authorship and conflict of interest: During the peer review process the manufacturer of the agent under review was offered an opportunity to comment

on the article. Changes resulting from any comments received were made by the authors on the basis of scientific completeness and accuracy. Arnold Lee is a contracted employee of Adis International Ltd/Springer Nature, and declares no relevant conflicts of interest. All authors contributed to this article and are responsible for its content. Ethics approval, consent to participate, consent to publish, availability of data and material, code availability: Not applicable.

- 20 references

Full text links

Proceed to details

Cite

11

Review

Rev Mal Respir

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. 2026 Mar 24:S0761-8425(26)00006-9.

doi: 10.1016/j.rmr.2025.12.061. Online ahead of print.

[Indications and modalities of non-standard inhaled treatments for respiratory pathologies: A narrative review]

[Article in French]

L Frisson [1], G Reychler [2]

Affiliations Expand

- PMID: 41881764

- DOI: 10.1016/j.rmr.2025.12.061

Abstract

Inhaled treatments represent a pillar in pneumology management, especially insofar as they allow for optimal local delivery of therapeutic agents. In addition to bronchodilators and corticosteroids, numerous inhalation-based treatments exist. Some of them are little known by clinicians, such as mucolytic drugs, antibiotics, saline solutions, morphine derivatives, prophylactic agents such as pentamidine,

etc. Each of these treatments has specific indications and requires specific means of administration according to the nature of the medicine, the type of nebulizer being used, and a given patient's clinical characteristics. The present narrative review of the literature describes and synthesizes the indications and modalities of these different treatments, to the exclusion of asthma, COPD, cystic fibrosis, and ventilated intensive care patients.

Keywords: Maladie respiratoire; Nebulization; Nébulisation; Respiratory disease; Utilisation; Utilization.

Conflict of interest statement

Déclaration de liens d’intérêts Les auteurs déclarent ne pas avoir de liens d’intérêts.

Supplementary info

Publication typesExpand

Full text links

Cite

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Curr Opin Support Palliat Care

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. 2026 Mar 25.

doi: 10.1097/SPC.0000000000000799. Online ahead of print.

The prevalence of persisting breathlessness despite treatment in chronic conditions

Hayley Lewthwaite [1 2 3], Naomi Takemura [4]

Affiliations Expand

- PMID: 41879122

- DOI: 10.1097/SPC.0000000000000799

Abstract

Purpose of review: Breathlessness impairs all aspects of daily life and places substantial burden on healthcare systems. This review explores the prevalence of

breathlessness that persists despite optimal treatment in chronic conditions. Defining its scale is essential to ensure recognition and provision of evidence-based, breathlessness-specific interventions alongside disease management. Despite advances in breathlessness management research over the past decade, persistent breathlessness remains unacceptably common, reflecting implementation gaps and limited access to effective therapies.

Recent findings: Recent systematic reviews report breathlessness in 35-87% of people with cancer, with episodic breathlessness affecting up to 80% of those with persistent symptoms. Across primary studies in COPD, asthma, pulmonary fibrosis, pulmonary vascular and neurological conditions, and cancer, prevalence ranges from 9% to 91%. Even among people receiving guideline-based disease treatment, 38-53% report clinically relevant breathlessness. The mMRC dyspnea scale may underestimate prevalence compared with exercise testing and multidimensional questionnaires.

Summary: Persistent breathlessness remains common across major chronic diseases, often despite optimal disease therapy. Clinicians across all sectors of healthcare should routinely ask people about their breathlessness, and evidence-based strategies should be offered as part of routine, integrated symptom management to help reduce the high burden of persistent breathlessness in clinical populations.

Keywords: cancer; chronic respiratory disease; dyspnea; symptom assessment.

- **67 references**

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ERJ Open Res

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Airflow for reducing breathlessness in people with serious respiratory illness: a systematic review

Claudia Bausewein [1], Anne E Holland [2 3 4 5], Lorena Romero [6], Amy Pascoe [4], Natasha Smallwood [3 4], Magnus Ekström [7], Charles C Reilly [8 9]

Affiliations Expand

- **PMID: 41878280**

- **PMCID: PMC13006908**

- **DOI: 10.1183/23120541.00388-2025**

Abstract

Background: Increased airflow is reported as helpful in reducing the sensation of breathlessness. This systematic review aimed to assess the effectiveness of airflow on breathlessness (primary outcome, measured using a validated tool at rest or during exercise) and health-related quality of life (secondary outcome) in people with serious respiratory illness.

Methods: We searched Ovid MEDLINE, Embase, Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials in August 2022 updated in May 2025.

Results: 10 studies (11 reports) were identified involving 413 participants with COPD, interstitial lung disease, bronchiectasis and asthma. A (handheld) fan, a pedestal fan and the PneumoCool device were tested. Settings included laboratory (one study), hospital (two studies), during exercise tests (three studies) or daily life settings (four studies). The primary outcomes were measured between 5 min after fan use and on day 60 after 2 months of fan use in everyday life. Risk of bias was high in all studies. Due to heterogeneity and small sample sizes, meta-analyses were not feasible. Overall, the evidence was mixed with an overall beneficial effect of fan use in studies assessing the acute effects compared to assessment of long-term effects of fan use after 14-60 days. Health-related quality of life was only reported in one study, with no improvement.

Conclusion: The results suggest a beneficial effect of a (handheld) fan for the relief of breathlessness in people with serious respiratory illness. A fan could be an additional treatment option in the self-management of breathlessness.

Conflict of interest statement

Conflicts of interest: C. Bausewein declares no conflicts of interest. A.E. Holland reports non-financial support from BOC Australia and Air Liquide Australia for oxygen therapy clinical trials, outside the submitted work. L. Romero declares no conflicts of interest. A. Pascoe declares no conflicts of interest. N. Smallwood is a member of the editorial board of ERJ Open Research. M. Ekström declares no conflicts of interest. C. Reilly declares no conflicts of interest.

- **33 references**
- **1 figure**

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Allergy

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. 2026 Mar 24.

doi: 10.1111/all.70305. Online ahead of print.

Allergic Rhinitis and Its Impact on Asthma (ARIA)-EAACI Guidelines-2024-2025 Revision: Part II-Guidelines on Oral and Ocular Treatments

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Roberts [136 137 138], Karla Robles-Velasco [71 72 139], Menachem Rottem [140 141], Marianella Salapatas [142], Joaquin Sastre [143], Nicola Scichilone [144], Juan-Carlos Sisul [145], Dirceu Solé [146], Manuel E Soto-Martinez [147], Milan Sova [148], Pongsakorn Tantilipikorn [149], Ana Todo-Bom [150], Vladyslav Tsaryk [106], Ioanna Tsiligianni [151 152], Marilyn Urrutia-Pereira [153], Erkka Valovirta [154], Tuula Vasankari [155 156], Dana Wallace [157], De Yun Wang [158], Margitta Worm [159], Osman M Yusuf [160], Sara Gil-Mata [1 2], Manuel Marques-Cruz [1 2], Bassam Mahboub [161 162], Antonino Romano [163 164], Werner Aberer [165], Maria Cristina Artesani [89], Elena Azzolini [7 166], Bruno Barreto [167], Joan Bartra [168 169], Sven Becker [170], Bianca Beghe [171], Attilio Boner [172], Ewa Borowiack [173 174], Jacques Bouchard [175], Luisa Brussino [176 177], Roland Buhl [178], Francesco Catamerò [40 41], Denis Charpin [179], Niels H Chavannes [180 181], Marta Chełmińska [121], Lei Cheng [182], Ekaterine Chkhartishvili [183], Seong H Cho [184], Herberto Jose Chong-Neto [185], Derek K Chu [6 186], Cemal Cingi [187], Enrico Compalati [188], Raquel Albuquerque Costa [1], Biljana Cvetkovski [189], Victoria Cardona [190], Gennaro D'Amato [191], Janet M Davies [192 193], Danilo Di Bona [194], Sandra N Gonzalez Diaz [195], Maria V Dimou [25], Maria Doulaptsi [196], Renato Ferreira-da-Silva [1 2], Radoslaw Gawlik [197], Mario Calvo-Gil [198], Maximiliano R Gómez [199], Maia Gotua [200], Christos Grigoreas [201], Maria Antonieta Guzman [202], Rachel House [203 204], Michael Hyland [205], Despo Ierodiakonou [206], Aspasia Karavelia [207], Paul Keith [208], Marta Kisiel [209], Tanja Soklic Kosak [210], Mitja Kosnik [211 212], Ilgim Vardaloglu Koyuncu [213], Vicky Kritikos [214 215], Justyna Litynska [173 174], Carlo Lombardi [216], Gilles Louis [217 218], Xin Luo [219], Matteo Martini [220 221], Cem Meço [222 223 224], Eris Mesonjesi [225], Florin Mihaltan [226], Marcin Moniuszko [227], Robert N Naclerio [228], Sophia Neisinger [3 4], Markus Ollert [229 230], Michal Ordak [231], Giovanni Paoletti [7 17], Elena Parmelli [166], Edgar Arturo Perdomo-Flores [232], Henrique Pereira [1], José Miguel Fuentes Pérez [233], Nhan Pham-Thi [234 235 236 237], Emmanuel Prokopakis [196], Inês Ribeiro-Vaz [1 2], Giovanni Rolla [176], Jan Romantowski [121], Philippe Rombaux [238], Philip W Rouadi [239 240], Dermot Ryan [241], Ewelina Sadowska [173 174], Daiju Sakurai [242], Laila Salameh [243], Elie Serrano [244], Jane Da Silva [245 246], Michael B Soyka [247], Krzysztof Specjalski [121], Vesna Tomic-Spiric [248 249], Katarina Stevanovic [3 4], Abirami Subramaniam [250], Tuuli Thomander [1 251], Wu Tong [69], Martina Vachova [128 252], Marianne van Hage [253 254 255], Martin Wagenmann [256], Fanny Wai San Ko [257], Pascal Werminghaus [258], Paraskevi Vicky Xepapadaki [25], Yi-Kui Xiang [3 4 259], Qintai Yang [219], He Zhang [69], Jaron Zuberbier [126], João A Fonseca [1 2 26]

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- **PMID: 41877472**

- **DOI: 10.1111/all.70305**

Abstract

Background: Oral and ocular medications are frequently used in the treatment of allergic rhinitis (AR). As part of the update of the Allergic Rhinitis and its Impact on Asthma (ARIA)-EAACI guidelines, this manuscript presents the ARIA-EAACI 2024-2025 recommendations for oral and ocular treatments.

Methods: The ARIA-EAACI 2024-2025 guideline panel issued recommendations following the Grading of Recommendations, Assessment, Development and Evaluation (GRADE) evidence-to-decision framework. Several sources of evidence

were used to inform panel judgements and recommendations, including systematic reviews, mHealth and pharmacovigilance data as well as a survey on costs.

Results: Eight guideline questions concerning oral treatments for AR and three questions concerning ocular treatments were addressed. These questions led to the recommendations. Overall, these questions concern the choice between different classes of medication. They also discuss the role of oral antihistamines (OAH), leukotriene receptor antagonists (LTRA), ocular antihistamines (OcAH) and ocular mast cell stabilisers. Four questions had not been previously evaluated in ARIA guidelines, while, for the other four, there was a change in the strength or directionality of the recommendations. Overall, these guidelines recommend using intranasal corticosteroids over OAH and using OAH over LTRA. Moreover, they suggest using OAH over OcAH and suggest being against adding LTRA to OAH. Finally, considerations for choosing between different individual OAHs are presented.

Conclusion: This ARIA-EAACI 2024-2025 article supports patients, their caregivers and healthcare professionals in choosing oral and ocular treatments for AR. Decisions on treatment should consider the clinical variability of the disease, patients' values and the affordability of medications.

Keywords: allergic rhinitis; guidelines; leukotriene receptor antagonists; ocular antihistamines; oral antihistamines.

- 34 references

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Review

Perfusion

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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]

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- 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.

. 2026 Mar 24.

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Efficacy and Safety of a Three-Step Aspirin Challenge Protocol for Diagnosis of Aspirin-Exacerbated Respiratory Disease in a Monitored Clinic Setting

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- DOI: 10.1002/alr.70137

No abstract available

Keywords: NSAID-exacerbated respiratory disease; Samter's triad; aspirin allergy; aspirin challenge; aspirin-exacerbated respiratory disease; aspirin-induced asthma.

- 10 references

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Review

Expert Opin Biol Ther

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. 2026 Mar 26:1-8.

doi: 10.1080/14712598.2026.2651314. Online ahead of print.

Dual clinical remission in severe asthma and chronic rhinosinusitis with nasal polyps: a comparative review of biologic therapies

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- PMID: 41873839

- DOI: 10.1080/14712598.2026.2651314

Abstract

Introduction: Severe asthma and chronic rhinosinusitis with nasal polyps (CRSwNP) are frequent comorbidities driven by common Type 2 inflammatory pathways. While biologics target both conditions, a standardized definition for 'dual clinical remission' is lacking. This review evaluates the comparative efficacy of current biologics to propose a unified treatment strategy.

Areas covered: We reviewed pivotal phase 3 and 4 trials (including SINUS-52, SYNAPSE, OSTRO, WAYPOINT, and the head-to-head EVEREST trial) evaluating dupilumab, mepolizumab, benralizumab, omalizumab, and tezepelumab. We analyzed outcomes regarding asthma control, nasal polyp reduction, and olfactory recovery. A new composite definition for dual remission - combining zero exacerbations/oral corticosteroids use with clinically meaningful sinonasal improvement - is proposed.

Expert opinion: Achieving dual remission requires a biomarker-guided hierarchy. Dupilumab demonstrates superior efficacy in the 'sinonasal-dominant' phenotype, particularly for olfactory restoration, while anti-IL-5 agents are preferable for the 'exacerbation-dominant' eosinophilic phenotype. Emerging data from the WAYPOINT trial suggests tezepelumab (anti-TSLP) as a potent option for broad epithelial blockade. We advocate moving beyond isolated disease control toward a stratified 'United Airway' remission target guided by fractional exhaled nitric oxide, blood eosinophils, and immunoglobulin E levels.

Keywords: Severe asthma; benralizumab; biologics; chronic rhinosinusitis with nasal polyps (CRSwNP); dual clinical remission; dupilumab; mepolizumab; omalizumab; tezepelumab.

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Environ Sci Pollut Res Int

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Cleaning products and classes associated with poor respiratory health

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- PMID: 41870713

- DOI: 10.1007/s11356-026-37616-z

Abstract

Exposure to cleaning products may harm the lungs, mainly through inhalation of irritants and sensitising chemicals, which can induce airway inflammation and bronchial hyperresponsiveness. Given increased use of multiple cleaning products at work and home, understanding the impacts of their interplay, rather than individual exposures, is critical but has not been investigated to date. We aim to investigate the cross-sectional association between exposure to cleaning products at home and/or in the workplace and respiratory health. We conducted a cross-sectional analysis of 318 adults from the Melbourne arm of the European Community Respiratory Health Survey (ECRHS) III. Cleaning product exposure was assessed through questionnaires, categorising participant exposure into seven product groups. Latent class analysis was used to identify exposure classes. Adjusted multivariable regression modelled associations between cleaning product classes and respiratory outcomes. We identified four classes of exposure to cleaning products: "minimal users", "light users", "moderate users", "heavy users". The most exposed "heavy user group" characterised people using many different cleaning products on a weekly basis (especially bleach, sprays, polish, solvents, acids). This class was associated with increased risks of current asthma (OR, 3.24; 95% CI 1.19-8.77), and lower post-bronchodilator FEV_1 (z-score, -0.47) and FVC (-0.46) compared with "minimal users". This work used a data-driven latent class approach to capture real-world cleaning product use patterns and relate them to respiratory health. We found that frequent use of multiple cleaning products was linked to more asthma and lower lung function, suggesting potential combined effects. These findings highlight the need for cleaning product standards and asthma care guidelines to mitigate risks associated with cleaning products.

Keywords: Poor respiratory health; Asthma; COPD; Cleaning products; Cross-sectional study; Lung function; Questionnaires.

Conflict of interest statement

Declarations. Ethics approval: This study involves human participants. Ethic approval for this study was obtained from Monash University Human Research Ethics Committee (Project number: CF11/1818–2011001012) on 27th September, 2011. Consent to participate: Participants gave written consens before taking part. Consent for publication: Participants were informed that the results of this research

would be published using the data collected from them. Participants were assured that no identifying or personal information would be disclosed in any publication. Competing interests: SCD and CJL are supported by the Australian National Health and Medical Research Council (NHMRC) investigator grant. SCD also has received investigator initiated grants and partnership grants from GlaxoSmithKline (GSK), AstraZeneca (AZ) and Sonofi for unrelated research. CJL has received investigator initiated grants and partnership grants from GSK and AZ for unrelated research. MJA holds investigator initiated grants from Pfizer, Boehringer-Ingelheim, Sonofi and GSK for unrelated research, he has undertaken an unrelated consultancy for Sanofi and received a speaker's fee from GSK. Other authors do not report conflicts of interest.

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J Asthma

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. 2026 Mar 26:1-4.

doi: 10.1080/02770903.2026.2647916. Online ahead of print.

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

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.

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J Asthma

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Lower airway dysfunction in patients with chronic rhinosinusitis with nasal polyps (CRSwNP): associations with asthma, ACQ5, and inflammatory markers

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- **PMID: 41841264**

- **DOI: 10.1080/02770903.2026.2645700**

Abstract

Objective: CRSwNP is typically a type 2 inflammatory condition of the upper airways often associated with asthma. However, emerging evidence suggests that lower airway dysfunction may also occur in CRSwNP patients without a formal asthma diagnosis. This study aimed to explore the associations between lower airway symptoms (ACQ5), lung function, airway hyperresponsiveness (AHR), and inflammatory markers in patients with CRSwNP.

Methods: In this cross-sectional study, 72 patients with CRSwNP were systematically evaluated using spirometry, impulse oscillometry (IOS), methacholine and mannitol challenge tests, fractional exhaled nitric oxide (FeNO), blood and polyp eosinophil counts, and symptom scores (SNOT-22, ACQ5). Associations between ACQ5 scores and lower airway parameters were assessed

using correlation and multivariable regression analyses, adjusting for asthma diagnosis and markers of type 2 inflammation.

Results: Patients with higher ACQ5 scores (>1.5) demonstrated significantly lower FEV_1% predicted, FEV_1/FVC, and $MFEF_{75-25}$, and higher small airway resistance and AHR ($p < 0.01$ for all). These associations remained significant after adjustment for asthma status, FeNO, blood eosinophils, and polyp eosinophils. Inflammatory markers showed weak or no significant associations with lung function, suggesting that ACQ5 captures aspects of lower airway dysfunction in patients with CRSwNP not explained solely by type 2 inflammation.

Conclusions: Higher ACQ5 scores in CRSwNP patients, even in the absence of asthma, are independently associated with impaired lung function, small airway dysfunction, and increased AHR. These findings support the global airway concept and highlight the potential value of ACQ5 in identifying subclinical lower airway involvement in CRSwNP.

Keywords: Chronic rhinosinusitis with nasal polyps; global airway hypothesis; type 2 Inflammation.

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Chronic Obstr Pulm Dis

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. 2026 Mar 25;13(2):111-124.

doi: 10.15326/jcopdf.2025.0714.

Exacerbations and Decreased Lung Function Predict Nebulizer Use and Uptake in COPD and Tobacco Exposed Persons With Preserved Spirometry

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Affiliations Expand

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Free article

Abstract

Rationale: Nebulizers are an alternative to handheld devices for inhaled therapies in chronic obstructive pulmonary disease (COPD). Understanding nebulizer utilization patterns is essential to developing therapy guidelines.

Objectives: We aimed to describe characteristics of nebulizer users versus nonusers and factors associated with baseline nebulizer use and longitudinal uptake.

Methods: We analyzed the Subpopulations and Intermediate Outcome Measures in COPD Study, a prospective cohort of 2973 participants with or without tobacco use and/or COPD. We used cross-sectional multivariable logistic regression and interval-censored proportional hazard models to analyze factors associated with nebulizer use and uptake among tobacco-exposed participants with preserved spirometry (TEPS) and COPD from enrollment (Visit 1) through 4–7 years of follow-up (Visit 5).

Results: Nebulizer utilization was highest in advanced COPD, 49% of Global initiative for chronic Obstructive Lung Disease (GOLD) Group D participants at baseline. Nebulizer treatments were primarily as-needed short-acting bronchodilators. Baseline nebulizer use was associated with respiratory exacerbations in the prior year (1, odds ratio [OR] 1.81, 95% confidence interval [CI] [1.24, 2.64]; 2, OR 1.86, 95% CI [1.07, 3.22]; 3 or more, OR 1.87, 95% CI [1.07, 3.28]), lower forced expiratory volume in 1 second (FEV1) (OR 2.81 per liter decrease, 95% CI [2.09, 3.77]), COPD Assessment Test (CAT) score >10 (OR 1.89, 95% CI [1.17, 3.03]), 6-minute walk distance (6MWD) (OR 1.03 per 10 meter lower 6MWD, 95% CI [1.02, 1.05]), and a history of asthma (OR 2.41, 95% CI [1.76, 3.30]). Longitudinal uptake was similarly associated with exacerbations, lower FEV1, CAT score >10, and asthma. Patterns were consistent between TEPS and COPD.

Conclusion: Nebulizers were predominantly used by participants with frequent exacerbations, high symptom burden, and advanced COPD, and long-acting nebulized medications were underutilized. Randomized controlled trials are needed to compare nebulizers with hand-held devices.

Keywords: COPD; medication delivery systems; nebulizer; outcomes; pulmonary physiology.

Supplementary info

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

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Ann Allergy Asthma Immunol

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A single-cell atlas of the human airways from patients with allergic rhinitis comorbid with asthma

Zhenhao Xiao [1], Haoshan Zhang [2], Yang Peng [3], Rui Zheng [1], Ziqing Zhou [3], Fan Ye [1], Huijun Qiu [1], Xinyue Wang [1], Shasha Li [4], Qintai Yang [5], Yana Zhang [6]

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- DOI: 10.1016/j.anai.2026.03.013

Abstract

Background: Single-cell RNA profiling has already been applied to normal airway samples, but no data set includes brushings collected from patients with allergic rhinitis combined with asthma (ARcoAS) at distinct and well-identified microanatomical regions in the airways.

Objective: We aimed to investigate cell population distributions and transcriptional changes along the upper and lower airways of patients with ARcoAS by using single-cell RNA profiling.

Methods: Nasal and bronchial brush cells from patients with ARcoAS and healthy volunteers were collected for single-cell RNA sequencing analysis. The cellular clusters, differential gene analysis, cellular pathway enrichment, mimetic temporal analysis, and cellular communication were analyzed between nasal and bronchial airways.

Results: A similar alteration in the cell profiles of the upper and lower airways was observed under chronic inflammatory conditions. A total of 3613 (57%) shared upregulated genes and 5410 (66%) shared downregulated genes were identified between upper and lower airways of ARcoAS. Impaired structure of ciliated cells and epithelial barrier were observed in diseased nasal and bronchial airways. The intercellular communication analysis demonstrated a decreased number and strength of intercellular interactions between epithelial cells and immune cells in ARcoAS group. We demonstrated that GZMA-PARD3 pathway disrupts the airway epithelial barrier in vitro.

Conclusion: Our findings suggest that compromised ciliated cells and aberrant proliferation of basal cells may drive eosinophilic inflammation in response to type 2 inflammation in patients with ARcoAS. Robust characterization of a single-cell cohort in allergic airways establishes a valuable resource for future investigations and provides potential targets for tailored treatment.

Keywords: allergic combined with asthma; bronchus; epithelium; nose; single-cell RNAseq.

Conflict of interest statement

Declaration of competing interest The authors declare that they have no conflict of interest.

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Int Forum Allergy Rhinol

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. 2026 Mar 26.

doi: 10.1002/alr.70152. Online ahead of print.

Artificial Intelligence and Nasal Cytology: Toward a Comprehensive Cytological Endotyping of Rhinitis

Matteo Gelardi [1]

Affiliations Expand

- **PMID: 41885883**
- **DOI: 10.1002/alr.70152**

No abstract available

- **5 references**

Supplementary info

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Allergy

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doi: 10.1111/all.70305. Online ahead of print.

Allergic Rhinitis and Its Impact on Asthma (ARIA)-EAACI Guidelines-2024-2025 Revision: Part II-Guidelines on Oral and Ocular Treatments

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Affiliations Expand

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Abstract

Background: Oral and ocular medications are frequently used in the treatment of allergic rhinitis (AR). As part of the update of the Allergic Rhinitis and its Impact on Asthma (ARIA)-EAACI guidelines, this manuscript presents the ARIA-EAACI 2024-2025 recommendations for oral and ocular treatments.

Methods: The ARIA-EAACI 2024-2025 guideline panel issued recommendations following the Grading of Recommendations, Assessment, Development and Evaluation (GRADE) evidence-to-decision framework. Several sources of evidence were used to inform panel judgements and recommendations, including systematic reviews, mHealth and pharmacovigilance data as well as a survey on costs.

Results: Eight guideline questions concerning oral treatments for AR and three questions concerning ocular treatments were addressed. These questions led to the recommendations. Overall, these questions concern the choice between different classes of medication. They also discuss the role of oral antihistamines (OAH), leukotriene receptor antagonists (LTRA), ocular antihistamines (OcAH) and ocular mast cell stabilisers. Four questions had not been previously evaluated in ARIA guidelines, while, for the other four, there was a change in the strength or directionality of the recommendations. Overall, these guidelines recommend using intranasal corticosteroids over OAH and using OAH over LTRA. Moreover, they suggest using OAH over OcAH and suggest being against adding LTRA to OAH. Finally, considerations for choosing between different individual OAHs are presented.

Conclusion: This ARIA-EAACI 2024-2025 article supports patients, their caregivers and healthcare professionals in choosing oral and ocular treatments for AR. Decisions on treatment should consider the clinical variability of the disease, patients' values and the affordability of medications.

Keywords: allergic rhinitis; guidelines; leukotriene receptor antagonists; ocular antihistamines; oral antihistamines.

- 34 references

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Review

Clin Rev Allergy Immunol

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. 2026 Mar 24;69(1):24.

doi: 10.1007/s12016-026-09155-5.

Unmasking the Impact of Air Pollution on Allergic Rhinitis

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Affiliations Expand

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No abstract available

Keywords: Allergic Rhinitis; Allergy; Environmental Tobacco Smoke; Epigenetics; IgE-Mediated; Inflammation; Microbiome; Particulate Matter; Pollution; Traffic.

Conflict of interest statement

Declarations. Ethics Approval and Consent to Participate: Not applicable. Consent for Publication: Not applicable. Competing Interests: The authors declare no competing interests.

- 159 references

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Allergy

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Chinese Position Paper on Biologic Therapy for Allergic Rhinitis

Yuan Zhang [1 2 3 4 5], Jingyun Li [2 3 4 5], Xian Li [1 2 3 4 5], Menglin Wang [2 3 4 5], Xiangli Yang [6], Li Shi [7 8 9], Zhiwei Cao [10], Yan Feng [11], Weiwei Liu [12], Zhendong Xu [13], Ruixia Ma [14], Xiaoping Gao [15], Wen Liu [16], Jinmei Xue [17], Xiaoyong Ren [18], Xuezhong Li [19], Xicheng Song [20 21], Yi Yang [22 23], Fang Quan [24 25], Lei Cheng [26 27], Weihong Jiang [28], Huabin Li [29], Jian Li [30], Huanhai Liu [31], Jianfeng Liu [32], Zheng Liu [33], Wei Lv [34], Qianhui Qiu [35], Xiangdong Wang [2], Yu Xu [36], Yuanteng Xu [37 38 39], Qintai Yang [40], Yucheng Yang [41], Jing Ye [42], Hongmeng Yu [43], Dongdong Zhu [44], Chengshuo Wang [2 3 4 5], Luo Zhang [1 2 3 4 5]

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Abstract

Allergic rhinitis (AR) is a common, persistent nasal disorder that poses significant public health challenges worldwide. Current treatment options frequently fail to achieve adequate symptom control in a substantial subset of patients. Over the past two decades, biologic therapies that target type 2 inflammatory pathways have been used to treat patients experiencing poorly controlled symptoms, despite standard-of-care (SoC) treatment. Although biological treatment options for AR remain limited worldwide, the recent approval of novel agents, such as stapokibart for seasonal allergic rhinitis (SAR), has accelerated clinical research and development in this field. Evidence for biologic therapy in the management of perennial allergic rhinitis (PAR) is currently sparse. To standardise the use of biologics in AR management and promote their evidence-based application, a multidisciplinary expert panel was convened. This position paper evaluates current evidence regarding the efficacy and safety of biologic agents for AR, incorporating data from both international and regional clinical studies. Here, we provide recommendations on appropriate indications for biologic therapy and emphasise its role in patients with uncontrolled SAR, supporting clinical decision-making and facilitating the integration of biologics into routine practice.

Keywords: China; allergic rhinitis; biologics; monoclonal antibody; treatment.

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Supplementary info

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chronic cough

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A cough sound-based deep learning algorithm for accessible prompt detection of chronic obstructive pulmonary disease with smartphones

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Affiliations Expand

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Abstract

Early COPD diagnosis is vital for effective management, yet conventional tools such as professional spirometers are often inaccessible in resource-limited settings. We present Cough Search, a smartphone-based deep learning algorithm that uses voluntary cough sounds to detect COPD, offering a cost-efficient and accessible diagnostic approach. The presented COPD detection algorithm (Cough Search) employs a transformer-based neural network model. It was trained on a training cohort (406 COPD and 1631 non-COPD) with hyperparameters tuned on the balanced internal validation cohort (151 COPD and 225 non-COPD participants). The algorithm was finally validated on the external validation cohort (105 COPD and 617 non-COPD participants from four hospitals). Participants were classified as COPD or non-COPD based on spirometry and clinical diagnoses. Cough Search achieved an area under the receiver operating characteristic curve (AUC) of 0.92 and 0.94 in the internal and external validation cohorts, respectively. In the external validation cohort study, the model demonstrated high sensitivity (92%) and specificity (86%) in distinguishing COPD from non-COPD cases. Performance remained robust across all COPD stages, with a sensitivity exceeding 93% for severe stages (GOLD 3-4) and above 91% for moderate stages (GOLD 1-2). The algorithm maintained its accuracy across non-COPD respiratory conditions and smartphone models. Cough Search shows promise as a scalable, accessible tool for COPD detection, particularly in underserved areas, potentially transforming early COPD diagnosis and management. Trial registration: ClinicalTrials.gov Identifier: NCT06082791.

Conflict of interest statement

Competing interests: The authors declare no competing interests.

- **31 references**

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Ann Am Thorac Soc

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Indoor Air Pollution and COPD Morbidity in Rural Appalachian Cohorts

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- **DOI: 10.1093/annalsats/aaoag074**

Abstract

Rationale: Rural regions of the United States now face a growing burden of Chronic Obstructive Pulmonary Disease (COPD). Early studies have suggested that this may in part be driven by unique environmental factors. The indoor environment remains an important and modifiable contributor to COPD morbidity, however few studies have analyzed the impacts of the indoor environment on underserved rural communities.

Objective: Determine if household air pollution is a significant contributor to COPD morbidity in two vulnerable areas of rural Appalachia.

Methods: Longitudinal environmental cohorts were launched at two rural Appalachian sites (East Tennessee and Western Maryland) among former smokers with COPD. Study follow-up was over 6-months, with up to three paired clinical and environmental assessments to analyze associations between indoor pollutant concentrations (fine particulate matter [PM2.5] and Nitrogen Dioxide [NO2]) and COPD health measures.

Results: Seventy-four participants contributed 184 health and environmental assessments. Mean indoor PM2.5 concentrations were 9.7 mg/m3 (SD 11.8), with only 14 (28%) homes having detectable NO2. Despite relatively low baseline concentrations, in adjusted analyses that accounted for demographics and lung function, every two-fold increase in PM2.5 was associated with increased COPD morbidity as measured by the St. George's Respiratory Questionnaire (1.79, 95% CI 0.74 to 2.79; P = .001) and increased odds of significant dyspnea based on the modified Medical Research Council dyspnea scale (Odds Ratio [OR] 1.34, 95% CI 1.02 to 1.77; P = .038). PM2.5 was additionally associated with an increase in measures of cough and sputum. No significant associations were observed between pollutants of interest and exacerbation risk in the study cohort.

Conclusions: Indoor pollutant exposure, particularly PM2.5, is a significant contributor to respiratory morbidity for individuals with COPD living in rural communities and has potential as a modifiable target to address COPD morbidity. Future studies and public health initiatives are warranted to evaluate interventions to reduce indoor air pollution in rural regions and improve COPD morbidity.

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Semin Respir Crit Care Med

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Nonpharmacological Treatment of Acute Exacerbations of Chronic Obstructive Pulmonary Disease

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- PMID: 41734791

- DOI: 10.1055/a-2818-1471

Abstract

Acute exacerbations of chronic obstructive pulmonary disease (AECOPDs) are acute events characterized by rapid worsening of dyspnea, cough, and sputum production, often leading to gas exchange impairment, ventilatory failure, and hospitalization. While pharmacological therapy remains central for managing the acute phase, nonpharmacological interventions play a crucial role in stabilizing patients, reducing complications, and promoting functional recovery. Respiratory strategies-including conventional oxygen therapy, high-flow nasal cannula, noninvasive ventilation, and invasive mechanical ventilation-are tailored to disease severity and underlying pathophysiology, aiming to unload respiratory muscles, improve ventilation, and optimize gas exchange. Pulmonary rehabilitation (PR) is essential to counteract skeletal and respiratory muscle dysfunction, sarcopenia, and exercise intolerance, thereby enhancing quality of life (QoL) and physical performance. Nutritional management addresses malnutrition, negative energy balance, and micronutrient deficiencies, supporting muscle preservation, immune function, and overall recovery. Home-based care models, including hospital-at-home programs and telerehabilitation, reduce hospital stays, facilitate early discharge, and improve access to structured PR programs. Structured self-management strategies and individualized exacerbation action plans empower patients, enhance symptom control, and reduce hospital readmissions, although their effectiveness may vary according to patient health literacy. Integrating these interventions into a comprehensive, multidisciplinary care pathway addresses both acute physiological derangements and long-term functional decline. Emerging digital health solutions-including telemonitoring, wearable sensors, and artificial intelligence-based predictive models-offer opportunities for early detection, personalized interventions, and enhanced patient engagement. This review synthesizes current evidence on nonpharmacological management of AECOPD, highlighting practical strategies to optimize respiratory support, rehabilitation, nutritional interventions, and self-management, ultimately aiming to accelerate recovery, prevent relapse, and improve QoL in this high-risk patient population.

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

Bone Marrow Transplant

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Bronchiectasis in patients with bronchiolitis obliterans syndrome: toward phenotyping BOS?

Louise Bondeelle [# 1 2], Ingrid Berger [# 3], Gabrielle Archer [4], Constance de Margerie-Mellon [5], Stéphane Cassonnet [6], Régis Peffault de Latour [6], David Michonneau [6], Sylvie Chevret [7 8], Anne Bergeron [9 10 11]

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- **DOI: 10.1038/s41409-026-02840-1**

No abstract available

Conflict of interest statement

Competing interests: AB was member of the lung group from the 2020 NIH Development project on criteria for clinical trials in chronic graft versus host disease and co-chair of the American Thoracic Society research statement on early bronchiolitis obliterans syndrome. LB and DM were members of the American Thoracic Society research statement on early bronchiolitis obliterans syndrome. The other authors have no competing interests in relation to the work described. Ethics approval and consent to participate: This study was approved by the Institutional Review Board of the French Learned Society for Respiratory Medicine (CEPRO 2020-008). All subjects signed informed consent for anonymous data collection and reporting before HSCT. All methods were performed in accordance with the relevant guidelines and regulations.

- **9 references**

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Respir Med

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. 2026 Mar 24:256:108789.

doi: 10.1016/j.rmed.2026.108789. Online ahead of print.

Mapping the clinical use of inhaled bacteriophages in respiratory infections caused by multidrug-resistant pathogens: a scoping review

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- PMID: 41887374

- DOI: 10.1016/j.rmed.2026.108789

Abstract

Objective: Inhaled bacteriophage therapy is an emerging adjunctive strategy for treating lower respiratory tract infections caused by multidrug-resistant (MDR) pathogens. However, the clinical evidence base remains fragmented. We conducted a scoping review to map the current landscape of human studies using nebulized, aerosolized, or dry-powder phage therapy for pulmonary infections.

Methods: We systematically searched PubMed, Scopus, Web of Science, and ClinicalTrials.gov for clinical studies published up to 1 June 2025. Eligible studies included clinical trials, cohort studies, and case reports/series reporting at least one dose of inhaled lytic phage for bacterial respiratory infections. Screening followed PRISMA-ScR guidelines. Key data were extracted on patient characteristics, pathogens, phage preparations, delivery methods, safety, and outcomes.

Results: Of 507 records identified, 31 studies met inclusion criteria: six clinical trials and 25 case reports or series. Target infections included ventilator-associated pneumonia, cystic fibrosis exacerbations, and chronic bronchiectasis, primarily due to Pseudomonas aeruginosa, Acinetobacter baumannii, or Klebsiella pneumoniae. Delivery methods varied widely, including nebulizers, dry-powder inhalers, and endotracheal instillation. Most studies reported clinical or microbiological improvement without major adverse events, though few used standardized outcome measures.

Conclusions: Inhaled phage therapy has shown promise in compassionate and investigational settings for MDR respiratory infections. Despite heterogeneity in delivery methods and outcome reporting, preliminary data suggests feasibility and safety. Standardized protocols and controlled trials are needed to define its role in pulmonary antimicrobial therapy.

Keywords: Bacteriophage therapy; Inhalation delivery; Multidrug-resistant pathogens; Pulmonary infections.

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 Investig

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Clinical features of patients with hemoptysis requiring invasive mechanical ventilation

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Affiliations Expand

- **PMID: 41881892**

- **DOI: 10.1016/j.resinv.2026.101407**

Abstract

Background: Hemoptysis severity is commonly classified by daily hemorrhagic volume; however, a uniform definition remains lacking. We examined clinical factors, including hemorrhagic volume at admission, associated with severe progression (defined as the need for invasive mechanical ventilation [IMV]) to identify patients with hemoptysis requiring prompt therapeutic intervention.

Methods: In this retrospective cohort study, we analyzed 122 patients (57 men, 65 women) urgently admitted to Shonan Kamakura General Hospital between April 2014 and June 2024. Logistic regression analysis was used to identify the background factors associated with severe progression.

Results: The median age was 77 years (range, 22-96). The major causes of hemoptysis included bronchiectasis (n = 42, 34%), cryptogenic hemoptysis (n = 27, 22%), malignant tumors (n = 15, 12%), and non-tuberculous mycobacterial disease (n = 14, 11%). Twenty-two patients (18%) required IMV. In the multivariate analysis, significant predictors of severe progression were male sex (odds ratio [OR], 3.28; 95% confidence interval [CI], 1.05-11.38), cryptogenic hemoptysis (OR, 3.23; 95% CI, 1.01-10.68), and oxygen administration upon hospital arrival (OR, 9.40; 95% CI, 2.60-42.06). Furthermore, the presence of bronchial secretions on admission computed tomography (CT; OR, 4.05; 95% CI, 0.89-29.56) was associated with a tendency to require IMV.

Conclusions: Male patients with cryptogenic hemoptysis, bronchial secretions on CT, or who require oxygen upon arrival at the hospital are at high risk of severe progression and should be considered for early therapeutic intervention.

Keywords: Bronchial secretion; Cryptogenic hemoptysis; Invasive mechanical ventilation; Massive hemoptysis; Oxygen administration.

Conflict of interest statement

Declaration of competing interest The authors have no conflicts of interest.

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BMJ Open

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Study protocol for testing a mobile app designed to improve health literacy and self-management in people with bronchiectasis: the ANIMA app

Jessica de Campos Medeiros [1], Adria Cristina da Silva [2], Antonio Casanova Junior da Silva Lima [2], Cristiano Torezzan [2], Ricardo Afonso Alves Dos Santos [2], Monica Corso Pereira [2]

Affiliations Expand

- PMID: 41881528

- DOI: 10.1136/bmjopen-2025-109580

Free article

Abstract

Introduction: Patients with bronchiectasis unrelated to cystic fibrosis (CF) present variability in daily symptoms. Recurrent episodes of worsening symptoms can have a negative impact on lung function and quality of life, as well as increasing costs and mortality. Daily symptom monitoring can improve patients' awareness of variations and support self-management. Mobile applications for tracking symptoms may encourage engagement, enabling problems to be identified early and potentially reducing exacerbations.

Methods and analysis: This manuscript describes the protocol for a randomised controlled trial designed to evaluate a digital symptom-monitoring tool (ANIMA) for patients with bronchiectasis unrelated to CF patients. Eligible participants will be randomised by sealed, opaque envelopes to intervention (GR-A) or control (GR-C). Both groups will complete the Bronchiectasis Health Questionnaire (BHQ), Health Literacy Questionnaire (HLQ-BR); socioeconomic status will be assessed using a validated instrument. All will receive an educational leaflet. GR-A will use the ANIMA application for daily symptom monitoring, and a GR-C, which will continue with their usual healthcare follow-up without using the application. All participants will be followed for a period of 6 months. At the end of the 6 month follow-up, the baseline questionnaires (BHQ and HLQ-BR) will be reapplied in both groups, and the Telehealth Usability Questionnaire - Brazilian version will be administered exclusively to participants in the GR-A. The planned sample size is 86 participants (43 per group), with a minimum feasible recruitment target of 60 participants due to the limited eligible population and the fixed recruitment window. Data will be analysed using SPSS Statistics version 25 (IBM Corp., Armonk, NY, USA). Descriptive statistics will summarise baseline characteristics. Between-group comparisons will be performed with appropriate parametric or non-parametric tests according to data distribution. Primary analysis will follow the intention-to-treat principle, with a complementary per-protocol analysis considering participants completing at least 50% of planned assessments. Statistical significance will be set at $p<0.05$. Recruitment began in April 2025 and will continue until October 2025, with follow-up completion in April 2026.

Ethics and dissemination: Approved by the Research Ethics Committee of the State University of Campinas (CAAE: 48830621.2.0000.5404). Results will be disseminated via peer-reviewed publications and conference presentations.

Trial registration number: Brazilian Clinical Trials Registry (ReBEC) - U1111-1313-6511. Registered prior to recruitment start.

Protocol version: V.1.0 - August 2025.

Keywords: Clinical Trial; Digital Technology; Health Literacy; Mobile Applications; Pulmonary Disease.

Conflict of interest statement

Competing interests: None declared.

Supplementary info

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. 2026 Mar 23;12(2):00388-2025.

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Airflow for reducing breathlessness in people with serious respiratory illness: a systematic review

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Affiliations Expand

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- **PMCID: PMC13006908**

- DOI: 10.1183/23120541.00388-2025

Abstract

Background: Increased airflow is reported as helpful in reducing the sensation of breathlessness. This systematic review aimed to assess the effectiveness of airflow on breathlessness (primary outcome, measured using a validated tool at rest or during exercise) and health-related quality of life (secondary outcome) in people with serious respiratory illness.

Methods: We searched Ovid MEDLINE, Embase, Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials in August 2022 updated in May 2025.

Results: 10 studies (11 reports) were identified involving 413 participants with COPD, interstitial lung disease, bronchiectasis and asthma. A (handheld) fan, a pedestal fan and the PneumoCool device were tested. Settings included laboratory (one study), hospital (two studies), during exercise tests (three studies) or daily life settings (four studies). The primary outcomes were measured between 5 min after fan use and on day 60 after 2 months of fan use in everyday life. Risk of bias was high in all studies. Due to heterogeneity and small sample sizes, meta-analyses were not feasible. Overall, the evidence was mixed with an overall beneficial effect of fan use in studies assessing the acute effects compared to assessment of long-term effects of fan use after 14-60 days. Health-related quality of life was only reported in one study, with no improvement.

Conclusion: The results suggest a beneficial effect of a (handheld) fan for the relief of breathlessness in people with serious respiratory illness. A fan could be an additional treatment option in the self-management of breathlessness.

Conflict of interest statement

Conflicts of interest: C. Bausewein declares no conflicts of interest. A.E. Holland reports non-financial support from BOC Australia and Air Liquide Australia for oxygen therapy clinical trials, outside the submitted work. L. Romero declares no conflicts of interest. A. Pascoe declares no conflicts of interest. N. Smallwood is a member of the editorial board of ERJ Open Research. M. Ekström declares no conflicts of interest. C. Reilly declares no conflicts of interest.

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ERJ Open Res

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Effect of transient *versus* persistent *Aspergillus* colonisation on clinical outcomes in bronchiectasis

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Affiliations Expand

- PMID: 41878279
- PMCID: PMC13006912
- DOI: 10.1183/23120541.00732-2025

Abstract

Our findings suggest persistent *Aspergillus* colonisation is associated with increased exacerbation frequency and accelerated decline in lung function in patients with bronchiectasis https://bit.ly/3WZLrzl.

Conflict of interest statement

Conflict of interest: All authors have confirmed that they have no conflicts of interest to declare.

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. 2026 Mar 23;12(2):01432-2025.

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Goodbye seems to be the hardest word: long-term macrolide withdrawal in bronchiectasis

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- PMID: 41878274

- PMCID: PMC13006906

- DOI: 10.1183/23120541.01432-2025

Abstract

Long-term macrolide withdrawal in bronchiectasis: insights from the AZIstop trial https://bit.ly/3X1hfnp.

Conflict of interest statement

Conflict of interest: H. Choi reports research grants from the Korean Ministry of Education, consulting and lecture fees from Kolong, Boryung, Abbott, Gilead, Otsuka, Boehringer Ingelheim and Handok, and is a member of the editorial board of ERJ Open Research. J.D. Chalmers reports grants and personal fees from Antabio, AstraZeneca, Boehringer Ingelheim, CSL Behring, Expedition, Genentech, Gilead Sciences, Glaxosmithkline, Grifols, Insmed, Pfizer, Trudell and Zambon, and is a member of the editorial board of ERJ Open Research.

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Chronic Obstr Pulm Dis

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doi: 10.15326/jcopdf.2025.0732.

Association of Chronic Rhinosinusitis and *Pseudomonas Aeruginosa* in Sputum of Patients With Non-Cystic Fibrosis Bronchiectasis

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Free article

Abstract

Background: *Pseudomonas aeruginosa* (*P aeruginosa*), *Haemophilus influenzae* (*H influenzae*), and *Staphylococcus aureus (S aureus)* may chronically infect bronchiectatic airways. Chronic rhinosinusitis (CRS) is common in people with bronchiectasis. Bacterial airway infection and CRS are associated with greater bronchiectasis disease severity. However, the relationship between these pathogens and CRS in people with bronchiectasis is unclear.

Research question: Is history of CRS associated with sputum positivity for *P aeruginosa, S aureus*, and/or *H influenzae* in people with bronchiectasis?

Study design and methods: People with bronchiectasis from the U.S. Bronchiectasis and NTM Research Registry with and without physician-reported CRS were compared with respect to demographic and clinical characteristics using cross-sectional study design. Multivariable logistic regression models were used to

assess the relationship between CRS and the presence of *P aeruginosa, S aureus,* and *H influenzae* in sputum.

Results: Of 1352 people with bronchiectasis and known CRS status, 222 (16%) had a history of CRS. Those with CRS were more likely to have a sputum culture positive for *P aeruginosa* (35% CRS versus 26% non-CRS group; *p*=0.007), but not *S aureus* (13% versus 10%; *p*=0.21) or *H influenzae* (6% versus 7%; *p*=0.55). After adjusting for patient demographics and clinical characteristics, CRS was associated with *P aeruginosa* (odds ratio: 1.5; 95% confidence interval: 1.07 to 2.08).

Interpretation: We report an association of history of CRS and sputum culture positivity for *P aeruginosa* (but not *S aureus* or *H influenzae*) in people with bronchiectasis.

Keywords: Haemophilus influenzae; Pseudomonas aeruginosa; Staphylococcus aureus; bronchiectasis; chronic rhinosinusitis.