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

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BMC Pulm Med

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. 2025 Apr 12;25(1):174.

doi: 10.1186/s12890-025-03630-z.

[Epidemiological trends and risk factors of chronic obstructive pulmonary disease in young individuals based on the 2021 global burden of disease data \(1990-2021\)](#)

[Yaolin Li](#)^{#1}, [Fangtao Yan](#)^{#1}, [Lixiang Jiang](#)², [Wang Zhen](#)¹, [Xiayahu Li](#)³, [Huiqin Wang](#)⁴

Affiliations Expand

- PMID: 40221711
- DOI: [10.1186/s12890-025-03630-z](https://doi.org/10.1186/s12890-025-03630-z)

Abstract

Objective: Recent studies have shown that chronic obstructive pulmonary disease (COPD) in young individuals cannot be ignored. This study aims to investigate the burden of COPD and its associated risk factors in individuals aged 15 to 49 years, with a particular focus on health inequities across different levels of socioeconomic development.

Methods: By analyzing data from the Global Burden of Disease (GBD) 2021, we utilized statistical methods such as Joinpoint regression, frontier analysis, and health inequality analysis to evaluate the changes in the age-standardized disability-adjusted life year (DALY) rates (ASDR) and incidence rates (ASIR) of COPD among the global population aged 15-49 years from 1990 to 2021. We specifically examined the disparities in health across countries and regions with varying levels of socioeconomic development. Key risk factors, including particulate matter pollution, smoking, and occupational exposure, were analyzed.

Results: The number of COPD cases among young people globally has significantly increased. While the global ASDR and ASIR of COPD in the 15-49 age group showed an overall declining trend, the burden of COPD remained high in low Sociodemographic Index (SDI) regions and there were significant health inequalities between countries. Particulate matter pollution (41.79%), smoking (19.81%), and occupational exposure (11.73%) were identified as the primary contributors to the burden of COPD in younger individuals. In low SDI regions, particulate matter pollution had a particularly significant impact, accounting for 58.65% of attributable proportion of DALYs, and remained at a persistently high level. Smoking continued to contribute significantly to the burden of COPD in high-income regions, notably in North America, where smoking accounted for 34.26% of DALYs in 2021.

Conclusion: Although there is a global downward trend in the burden of COPD among young people, significant health inequities persist in low SDI regions. The findings emphasize the need for more effective public health activities targeting younger populations and low SDI countries and regions, particularly in improving air quality, reducing smoking, and mitigating occupational exposures.

Clinical trial number: Not applicable.

Keywords: Burden of disease; Chronic obstructive pulmonary disease; Health inequities; Risk factors; Socio-demographic index; Younger populations.

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Conflict of interest statement

Declarations. Ethics approval and consent to participate: Our research involves a secondary assessment of publicly accessible GBD research datasets, with no primary data collection involved. And we followed the Guidelines for Accurate and Transparent Health Estimates Reporting (GATHER) recommendations. Therefore, ethical approval is not required. **Competing interests:** The authors declare no competing interests.

- [54 references](#)

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. 2025 Apr 12;15(1):12555.

doi: 10.1038/s41598-025-97326-3.

[Metabolic syndrome, small airway dysfunction and the mediating role of inflammation](#)

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Affiliations Expand

- PMID: 40221581
- DOI: [10.1038/s41598-025-97326-3](#)

Abstract

Our study examined how metabolic syndrome (MetS) affects the risk of small airway dysfunction (SAD) and its progression to chronic obstructive pulmonary disease (COPD). We also investigated the role of inflammation in mediating these effects. We included 13,948 non-COPD participants, aged 40 years and with a pulmonary function test, from multiple communities (Longquan, Mianzhu, and Pidu), and subsequently followed up the Longquan community after 3 years. Logistic models estimated the association between MetS and SAD risk, adjusted for confounders. Furthermore, a mediation analysis approach was employed to estimate the proportion of effect mediated by each marker of inflammation (e.g., the low-grade inflammation index) on the observed association. In West China Natural Population Cohort Study(WCNPCS), compared to the non-MetS group, individuals with MetS showed a significantly higher prevalence of SAD (odds ratio [OR] = 1.12, 1.02-1.22); however, this was not significant in women. For MetS components, high triacylglycerols(HTG), low high-density lipoprotein cholesterol (LHDL-C) and abdominal obesity (AO) were independent risk factors for SAD, which is consistent with men (OR = 1.09-1.33). In addition, the more metabolic disorder components, the higher the prevalence of SAD (P < 0.05). Further, when MetS as well as SAD outcomes were considered together, the incidence of COPD in individuals with both these irregularities was considerably higher (9-fold). Inflammation (the proportion of effect mediated: 14.3-28.6%) played a substantial mediating role in the observed association in Chinese participants. MetS is consistently linked to SAD and may

facilitate progression from SAD to COPD; its components, HTG, LHDL-C and AO, were associated with a significantly increased risk of COPD. The observed associations were partly mediated by inflammation. Treating MetS may be an effective strategy for the prevention of the development of COPD.

Keywords: Abdominal obesity; Chronic obstructive pulmonary disease; Low high-density lipoprotein cholesterol; Metabolic syndrome; Small airway dysfunction.

© 2025. The Author(s).

Conflict of interest statement

Declarations. Ethics approval and consent to participate: Ethical approval of this study was obtained from the Research Ethics Committee, West China Hospital, Sichuan University. Fully informed, written consent was obtained from the participants. **Competing interests:** The authors declare no competing interests.

- [45 references](#)

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Review

Diabetes Metab

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. 2025 Apr 10:101646.

doi: 10.1016/j.diabet.2025.101646. Online ahead of print.

[Impact of SGLT-2i on COPD Exacerbations in Patients with Type 2 Diabetes Mellitus: A Systematic Review and Meta-Analysis](#)

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Affiliations Expand

- PMID: 40220861
- DOI: [10.1016/j.diabet.2025.101646](https://doi.org/10.1016/j.diabet.2025.101646)

Abstract

Background: Chronic Obstructive Pulmonary Disease (COPD) and Type 2 Diabetes Mellitus (T2DM) often coexist, leading to compounded morbidity, mortality, and healthcare burden. COPD exacerbations significantly impact patients with T2DM, with increased frequency and severity. Sodium-glucose cotransporter-2 inhibitors (SGLT-2i) have demonstrated promising benefits in managing both glycemic control and respiratory health. This systematic review and meta-analysis aim to assess the impact of SGLT-2 inhibitors on COPD exacerbations in T2DM patients.

Methods: We conducted a systematic review and meta-analysis following PRISMA guidelines, evaluating studies published until March 2025. A broad search strategy across PubMed, Embase, and Web of Science identified relevant studies comparing SGLT-2 inhibitors with other antidiabetic agents. Studies meeting predefined eligibility criteria, including those providing quantitative data on COPD exacerbation frequency and hospitalization rates, were included in the analysis.

Results: Eight studies involving 4,64,542 participants were included. The pooled hazard ratio (HR) for the impact of SGLT-2 inhibitors on COPD exacerbations was 0.646 (95% CI: 0.470-0.889), demonstrating a 35% decrease in exacerbations compared to other antidiabetic agents. SGLT-2 inhibitors demonstrated superior efficacy over DPP-4 inhibitors (HR: 0.618, 95% CI: 0.462-0.827) and sulfonylureas (HR: 0.620, 95% CI: 0.526-0.731). However, the reduction in severe exacerbations was not statistically significant (HR: 0.715, 95% CI: 0.403-1.269). Subgroup analysis indicated that SGLT-2 inhibitors had a modest but significant advantage over GLP-1 receptor agonists (HR: 0.940, 95% CI: 0.890-0.993).

Conclusions: SGLT-2 inhibitors significantly reduce COPD exacerbations in T2DM patients, offering dual benefits in managing both glycemic control and respiratory health. These findings support the integration of SGLT-2 inhibitors into treatment regimens for T2DM-COPD overlap. Further randomized controlled trials and long-term studies are needed to confirm the lasting efficacy and explore the underlying mechanisms.

Keywords: COPD exacerbations; DPP-4 inhibitors; GLP-1 receptor agonists; SGLT-2 inhibitors; Sulfonylureas; Type 2 diabetes mellitus.

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Conflict of interest statement

Declaration of competing interest The authors declare that they have no conflicts of interest related to this manuscript. No funding was received for the conduct of this study, and the authors have no financial relationships with any organizations or entities that could be perceived as a potential conflict of interest. All authors have made substantial contributions to the conception and design, acquisition of data, or analysis and interpretation of data. The authors also declare that there are no personal or professional relationships that could influence the content of the manuscript.

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Clin Exp Med

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. 2025 Apr 12;25(1):116.

doi: 10.1007/s10238-025-01644-9.

[PM2.5 increases the risk of early-onset COPD mediated by smoking and shared genes: a large-scale genetic analysis](#)

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Affiliations Expand

- PMID: 40220177
- DOI: [10.1007/s10238-025-01644-9](#)

Abstract

Chronic obstructive pulmonary disease (COPD) is one of the leading causes of mortality worldwide. However, whether air pollutants can cause COPD remains

unknown. Summary data for the genome-wide association study of each phenotype were obtained from the publicly available datasets. Using single-nucleotide polymorphisms as instrumental variables, we performed Mendelian randomization (MR) to assess the relationship among PM2.5, smoking and early-onset COPD. A large-scale genetic analysis is performed to investigate the biological pathways. In MR, exposure to higher PM2.5 increased the risk of early-onset COPD (IVW, OR (95% CI) = 1.63 (1.15, 2.31), $p = 5.60E-03$) but had no association with later-onset COPD. In addition, cigarettes per day (IVW, OR (95% CI) = 1.71 (1.46, 1.99), $p = 1.60E-11$) was positively associated with the risk of early-onset COPD, while age of smoking initiation (IVW, OR (95% CI) = 0.39 (0.27, 0.57), $p = 1.21E-06$) had a negative effect. In addition, two smoking behaviors could be mediators between PM2.5 and early-onset COPD ($p < 0.05$). Furthermore, 136 significantly enriched biological pathways of PM2.5 potentially causing early-onset COPD were identified in a large-scale genetic analysis. This study provides strong evidence that exposure to higher PM2.5 was causally associated with smoking behavior and early-onset COPD. Smoking behavior acted as a mediator between PM2.5 and early-onset COPD. More attention should be given to people exposed to higher PM2.5 for the prevention of smoking and COPD.

Keywords: COPD; Environment; Genetic analysis; Mendelian randomization; PM2.5; Pollutants; Smoking.

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Conflict of interest statement

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

- [52 references](#)

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J Clin Med

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. 2025 Apr 3;14(7):2438.

doi: 10.3390/jcm14072438.

[The Impact of Intraoperative Respiratory Patterns on Morbidity and Mortality in Patients with COPD Undergoing Elective Surgery](#)

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Affiliations Expand

- PMID: 40217887
- DOI: [10.3390/jcm14072438](#)

Abstract

Background/Objectives: Surgical procedures in chronic obstructive pulmonary disease (COPD) patients carry a high risk of postoperative respiratory failure, often causing the need for mechanical ventilation and prolonged intensive care unit (ICU) stays. Accompanying COPD with heart failure further increases the risk of complications. This study aimed to identify predictors of mortality, prolonged ICU and hospital stays, the need for mechanical ventilation, and vasoactive drug usage in ICU patients with moderate to severe COPD undergoing elective non-cardiac surgery. **Methods:** This retrospective cohort study analyzed eICU-CRD data, including adult patients with moderate to severe COPD admitted to the ICU from the operating room following elective non-cardiac surgery. Spearman's correlation analysis was performed to assess associations between intraoperative ventilation parameters and ICU/hospital length of stay, postoperative laboratory parameters, and their perioperative dynamics. **Results:** This study included 680 patients (21% with severe COPD). Hospital and ICU mortality were 8.6% and 4.4%, respectively. Median ICU and hospital stays were 1.9 and 6.6 days, respectively. Intraoperative tidal volume, expired minute ventilation, positive end-expiratory pressure, mean airway pressure, peak inspiratory pressure, and compliance had no statistically significant association with mortality, postoperative mechanical ventilation, its duration, or the use of vasopressors/inotropes. Tidal volume correlated positively with changes in monocyte count ($R = 0.611$; $p = 0.016$), postoperative lymphocytes ($R = 0.327$; $p = 0.017$), and neutrophil count ($R = 0.332$; $p = 0.02$). Plateau pressure showed a strong positive association with the neutrophil-to-lymphocyte ratio ($R = 0.708$; $p = 0.001$). **Conclusions:** Intraoperative ventilation modes and parameters in COPD patients appear to have no significant impact on the outcomes or laboratory markers, except possibly for the neutrophil-to-lymphocyte ratio, although its elevation cause remains unclear.

Keywords: COPD; anesthesia; intraoperative care; length of stay; mortality; pulmonary ventilation.

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. 2025 Apr 11;15(1):12426.

doi: [10.1038/s41598-025-96629-9](https://doi.org/10.1038/s41598-025-96629-9).

[A prevalence study focusing on hospitalized COPD related pulmonary hypertension](#)

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Affiliations Expand

- PMID: 40216921
- DOI: [10.1038/s41598-025-96629-9](https://doi.org/10.1038/s41598-025-96629-9)

Abstract

Pulmonary hypertension (PH) associated with chronic obstructive pulmonary disease (COPD) contributes to mortality. Existing epidemiological research is limited in scale, leading to varied prevalence estimates. Hereby, we aim to evaluate the prevalence and impact of COPD-related PH in individuals with COPD. We used medical-claims data from the national health insurance database (NHIRD) of Taiwan (2009 to 2018). The index date was defined as the initial hospitalization for COPD. We identified patients above 40 year-old with a COPD diagnosis from inpatient claims data and stratified rates of COPD-related PH by gender, age, and COPD severity. We compared short- and long-term mortality between COPD patients with and without PH. To ensure the reliability of our findings, we performed a sensitivity analysis by excluding patients who had not undergone echocardiography. Among 215,292 patients hospitalized primarily for COPD, we found an average COPD-related PH prevalence of 39.9 per 1000 individuals. The annual trend significant declined in prevalence among men but was comparable among women. Furthermore, a higher frequency of COPD-related hospitalization or emergency department visits correlated with an elevated COPD-related PH prevalence, irrespective of age. In comparison to COPD patients without PH, those with this

condition exhibited notably higher one-year, three-year, and five-year mortality rates. Collectively, despite a declining trend in COPD-related PH prevalence among COPD patients, its development is closely linked to the severity of COPD. Given the significantly increased mortality rates in COPD patients with PH, early detection of this condition and the implementation of related interventions should be prioritized.

Keywords: Chronic obstructive pulmonary disease (COPD); Mortality; Pulmonary hypertension.

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Conflict of interest statement

Declarations. Competing interests: The authors declare no competing interests. **Ethics approval:** This study has been reviewed and approved by the Institutional Review Board (IRB: 11101-013) in Chi-Mei Medical Center, Tainan, Taiwan. Informed consent was waived given that NHIRD is a retrospective database with de-identification.

- [39 references](#)

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Cell Rep Methods

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. 2025 Apr 7:101022.

doi: 10.1016/j.crmeth.2025.101022. Online ahead of print.

[Efficient and scalable construction of clinical variable networks for complex diseases with RAMEN](#)

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Affiliations Expand

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- DOI: [10.1016/j.crmeth.2025.101022](https://doi.org/10.1016/j.crmeth.2025.101022)

Abstract

Understanding the interplay among clinical variables-such as demographics, symptoms, and laboratory results-and their relationships with disease outcomes is critical for advancing diagnostics and understanding mechanisms in complex diseases. Existing methods fail to capture indirect or directional relationships, while existing Bayesian network learning methods are computationally expensive and only infer general associations without focusing on disease outcomes. Here we introduce random walk- and genetic algorithm-based network inference (RAMEN), a method for Bayesian network inference that uses absorbing random walks to prioritize outcome-relevant variables and a genetic algorithm for efficient network refinement. Applied to COVID-19 (Biobanque québécoise de la COVID-19), intensive care unit (ICU) septicemia (MIMIC-III), and COPD (CanCOLD) datasets, RAMEN reconstructs networks linking clinical markers to disease outcomes, such as elevated lactate levels in ICU patients. RAMEN demonstrates advantages in computational efficiency and scalability compared to existing methods. By modeling outcome-specific relationships, RAMEN provides a robust tool for uncovering critical disease mechanisms, advancing diagnostics, and enabling personalized treatment strategies.

Keywords: Bayesian network inference; COVID-19; CP: Systems biology; absorbing random walk; chronic obstructive pulmonary disease; clinical variable networks; complex diseases; genetic algorithm; multi-omics; personalized medicine; septicemia.

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Conflict of interest statement

Declaration of interests The authors declare no competing interests.

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Patient Educ Couns

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. 2025 Apr 8:136:108781.

doi: 10.1016/j.pec.2025.108781. Online ahead of print.

[How can healthcare professionals promote pulmonary rehabilitation in people with COPD? A qualitative study](#)

[Kylie Hill](#)¹, [Vinicius Cavalheri](#)², [Daniel F Gucciardi](#)³, [Sarah Hug](#)⁴

Affiliations Expand

- PMID: 40215575
- DOI: [10.1016/j.pec.2025.108781](#)

Abstract

Objective: Despite the evidence for pulmonary rehabilitation programs (PRPs) in people with chronic obstructive pulmonary disease (COPD), uptake of this intervention is suboptimal. Our group recently noted novel barriers to the uptake of PRPs in people with COPD, such as feeling unworthy of healthcare. Little is known about factors that contribute to this feeling. We explored autobiographical experiences of the interaction between HCPs and people with COPD at the time a PRP was recommended as an appropriate intervention.

Methods: This qualitative study was guided by a critical realist perspective. Both HCPs and people with COPD were recruited from tertiary hospitals. Questions were based on the theoretical domains framework and explored the determinants of behaviour related to initiating a referral to a PRP and the person with COPD enrolling in a program. Interview transcripts were analysed using reflexive thematic analysis.

Results: Data were available on 15 participants with COPD and 38 HCPs. The first theme was that the HCP needed to care for the person and not just treat a disease. Subthemes pertained to language and behaviours of the HCP including, (i) actively listening, (ii) demonstrating genuine empathy, (iii) establishing trust and, (iv) empowering the person with COPD to engage in shared decision-making. The second theme was that the HCP needed to instil hope that pulmonary rehabilitation would benefit the person with COPD. Subthemes comprised; (i) enthusiasm of the referrer and sharing their vicarious experiences that PRPs have helped others, (ii) describing the intervention, allaying fears and personalising a positive outcome following program completion, (iii) having a physician endorse the PRP, (iv) using terms other than 'pulmonary rehabilitation'.

Conclusions: These data provide a blueprint for interactions in which HCPs can foster people with COPD to accept a referral to a PRP, in a manner that translates to enrolment in a program.

Keywords: Autobiographical experience; COPD; Empathy; Healthcare communication; Pulmonary rehabilitation; Qualitative.

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Conflict of interest statement

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

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Review

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. 2025 Apr 11;22(1):15.

doi: 10.1007/s11897-025-00702-3.

[**Person-Centred Care: State-of-the-Art and Future Perspectives**](#)

[Hanna Gyllensten](#)^{1,2}, [Matilda Cederberg](#)^{3,4,5}, [Sara Alsén](#)^{3,4}, [Elin Blanck](#)^{3,4,6}, [Lilas Ali](#)^{3,4,7}, [Andreas Fors](#)^{3,4,8}, [Håkan Hedman](#)^{4,9}, [Laura Pirhonen Nørmark](#)^{3,4,10,11}, [Karl Swedberg](#)^{4,12}, [Inger Ekman](#)^{3,4,13}

Affiliations Expand

- PMID: 40214949
- DOI: [10.1007/s11897-025-00702-3](#)

Abstract

Purpose of review: Many countries prioritise the implementation of person-centred care. This study examines the progression of research in person-centred care, specifically focusing on using complex interventions within intricate contexts. It aims to explore how previous experiences can inform and shape subsequent projects. The review was based on five studies from our research group, encompassing 1099 patients, resulting in 41 peer-reviewed scientific publications. Most studies focused on patients suffering from chronic heart failure, as well as patients with chronic obstructive pulmonary disease. Additionally, interventions for acute coronary syndrome and common mental disorders were also considered. Analyses included the development of a logical model for person-centred care, an overview of partnership operationalisation, and the establishment of evaluation criteria for the trials. The analyses involved creating a coherent model for person-centred care, examining partnership operationalisation, and establishing trial evaluation criteria.

Recent findings: Sequential trials build upon their predecessors and add new elements. The studies conducted by clinicians in usual care and in-house by research staff were complementary, providing a deeper understanding of the efficacy and effectiveness of person-centred care. Initiating, working, and safeguarding a partnership between patient and staff was possible, whether through in-person or remote communication. Evaluations followed modern research standards and incorporated past study insights for a more thorough approach. This study highlights how the cumulative experience from previous research in person-centred care informs the design and analyses of subsequent projects through an iterative learning process, particularly important for complex interventions in various health care contexts.

Keywords: Acute coronary syndrome; Chronic obstructive pulmonary disease; Common mental disorders; Heart failure; Person-centred care; Pulmonary disease.

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Conflict of interest statement

Declarations. Competing Interests: The authors declare no competing interests.
Disclosure of Potential Conflicts of Interest: The authors have no financial or non-financial conflicts of interest to declare.
Research Involving Human Participants: This point is irrelevant in this context, as this study relies solely on published literature. All the included studies had received ethical approvals and were further approved by relevant healthcare providers and register holder, as needed.

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Supplementary info

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Allergy

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. 2025 Apr 11.

doi: 10.1111/all.16557. Online ahead of print.

[Reply to Correspondence: The Bronchodilator and Anti-Inflammatory Effect of Long-Acting Muscarinic Antagonists in Asthma: An EAACI Position Paper](#)

[I Agache¹](#), [I M Adcock²](#), [C A Akdis³](#), [M Akdis³](#), [G Bentabol-Ramos⁴](#), [M van den Berge⁵](#), [C Boccabella⁶](#), [G W Canonica^{7,8}](#), [C Caruso⁹](#), [M Couto¹⁰](#), [I Davila¹¹](#), [D Drummond¹²](#), [J Fonseca¹³](#), [A Gherasim¹⁴](#), [S Del Giacco¹⁵](#), [D J Jackson^{16,17}](#), [M Jutel^{18,19}](#), [A Licari^{20,21}](#), [S Loukides²²](#), [A Moreira^{23,24,25}](#), [M Mukherjee²⁶](#), [I Ojanguren²⁷](#), [O Palomares²⁸](#), [A Papi²⁹](#), [L Perez de Llano^{30,31}](#), [O J Price^{32,33}](#), [M Rukhazde^{34,35}](#), [M H Shamji^{36,37}](#), [D Shaw³⁸](#), [S Sanchez-Garcia³⁹](#), [A Testera-Montes⁴⁰](#), [M J Torres⁴⁰](#), [Ibon Equiluz-Gracia⁴⁰](#)

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- PMID: 40214719
- DOI: [10.1111/all.16557](#)

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Review

J Magn Reson Imaging

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. 2025 Apr 11.

doi: 10.1002/jmri.29778. Online ahead of print.

[Functional Pulmonary Imaging](#)

[Agilo L Kern](#)^{1,2}, [Filip Klimeš](#)^{1,2}, [Andreas Voskrebenezv](#)^{1,2}, [Hoen-Oh Shin](#)^{1,2}, [Jens Vogel-Claussen](#)^{1,2}

Affiliations Expand

- PMID: 40213976
- DOI: [10.1002/jmri.29778](#)

Abstract

The aging of the world population gave rise to an increased prevalence of many lung diseases, with chronic obstructive pulmonary disease now ranking as the third-leading cause of death according to the World Health Organization. To diagnose lung disease, a thorough assessment of lung function is essential since it may reveal unique signatures in terms of disease pathophysiology. Yet, clinically established lung function tests are global measurements, which may compromise their sensitivity to early, regional changes in lung function compared to spatially resolved imaging tests. From a scientific perspective, the lung is a highly complex organ, and newly developed functional imaging methods may elucidate previously unknown aspects of its physiology. Functional pulmonary imaging is and will thus be of great value for both clinical and research applications. The goal of this review is to shed light on the field of functional pulmonary imaging in all its varieties, with a particular focus on the numerous tools MRI has to offer. This includes ¹H MRI methods with or without exogenous contrast agents like oxygen- or gadolinium-based contrast agents and MRI of hyperpolarized and inert gases like ¹²⁹Xe or perfluoropropane. However, thinking outside the box, a glance is also taken at what other modalities like single-photon emission computed tomography, computed tomography, or X-ray dark-field imaging have to offer. Following a physiological perspective, methods are described in terms of their ability to assess the key parameters of lung physiology in humans-ventilation, perfusion, and alveolar membrane function, as well as microstructure-and promising clinical and research applications are discussed. An outlook into possible future paths the field might take is given. Evidence Level: 5. Technical Efficacy: 2.

Keywords: alveolar membrane function; imaging; lung function; microstructure; perfusion; ventilation.

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- [148 references](#)

Supplementary info

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Chest

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. 2025 Apr 8:S0012-3692(25)00421-0.

doi: 10.1016/j.chest.2025.03.026. Online ahead of print.

[Association between airway mucus plugs and risk of moderate-to-severe exacerbations in COPD patients:results from a Chinese prospective cohort study](#)

[Xueping Li](#)¹, [Shengchuan Feng](#)¹, [Yuqiong Yang](#)¹, [Zhenyu Liang](#)¹, [Aiqi Song](#)², [Jiawei Chen](#)³, [Zijun Guo](#)³, [Zizheng Chen](#)¹, [Chengyu Miao](#)¹, [Huajing Yang](#)¹, [Wenqiang He](#)¹, [Zifei Zhou](#)¹, [M Brad Drummond](#)⁴, [Rongchang Chen](#)⁵, [Fengyan Wang](#)⁶

Affiliations Expand

- PMID: 40210091
- DOI: [10.1016/j.chest.2025.03.026](#)

Abstract

Background: Airway mucus plugs are frequently identified on computed tomography (CT) scans of patients with chronic obstructive pulmonary disease (COPD) and are associated with worse airflow obstruction and higher mortality.

However, the association between airway mucus plugs and the risk of acute exacerbation of COPD (AECOPD) has not been extensively studied.

Research question: Are airway mucus plugs associated with the risk of future moderate-to-severe AECOPD?

Study design and methods: In this prospective cohort study, we identified airway mucus plugs on CT scans of COPD patients. Mucus plugs were scored from 0 to 18 based on the number of pulmonary segments affected and categorized into three groups (0, 1-3, and ≥ 4). Patients were followed for two years. Negative binomial regression and Cox regression were used to model the association between airway mucus plugs and moderate-to-severe AECOPD, adjusting for potential confounders.

Results: Among the 194 COPD patients, 22%, 35%, and 43% had mucus plugs in 0, 1-3, and ≥ 4 pulmonary segments, respectively. During the following year, 30% of patients experienced at least one moderate-to-severe AECOPD, with the incidence 12%, 25%, and 44% for patients with 0, 1-3, and ≥ 4 pulmonary segments with mucus plugs, respectively. In negative binomial regression, each 1-point increase in airway mucus plug score was associated with an 8.3% higher risk of moderate-to-severe exacerbations (RR[95% CI], 1.08[1.01-1.16], $p=0.028$). In multivariate Cox regression, mucus plugs in ≥ 4 versus 0 and ≥ 4 versus 1-3 pulmonary segments were associated with hazard ratios of moderate-to-severe exacerbation of 5.02(95% CI, 1.84-13.75, $p=0.002$) and 2.32(95% CI, 1.25-4.33, $p=0.008$), respectively. Consistent results were observed in the subset of patients completing the two-year follow-up ($n=150$).

Interpretation: In COPD patients, airway mucus plugs are associated with increased future risk of subsequent moderate-to-severe AECOPD.

Trial registration: Registered with the International Clinical Trials Registry ([NCT03240315](https://www.clinicaltrials.gov/ct2/show/study/NCT03240315), 2017-07-3).

Keywords: Chronic obstructive pulmonary disease; Computed tomography(CT); Mucus plugs; moderate-to-severe acute exacerbation.

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Am J Respir Crit Care Med

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. 2025 Apr 10.

doi: 10.1164/rccm.202411-2177LE. Online ahead of print.

[Lower Immunoglobulin G Levels Increased Exacerbation Risk in COPD: New Insights for Clinical Practice](#)

[Yen-Fu Chen](#)¹, [Jung-Yien Chien](#)², [Hao-Chien Wang](#)³, [Chong-Jen Yu](#)⁴

Affiliations Expand

- PMID: 40209231
- DOI: [10.1164/rccm.202411-2177LE](#)

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Am J Respir Crit Care Med

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. 2025 Apr 10.

doi: 10.1164/rccm.202411-2341LE. Online ahead of print.

[The Impact of Comorbidities on Serum IgG Levels and Exacerbation Risk in Chronic Obstructive Pulmonary Disease](#)

[Hajime Fujimoto](#)¹, [Taro Yasuma](#)², [Corina N D'Alessandro-Gabazza](#)², [Esteban C Gabazza](#)³, [Osamu Hataji](#)⁴, [Tetsu Kobayashi](#)⁵

Affiliations Expand

- PMID: 40209230

- DOI: [10.1164/rccm.202411-2341LE](https://doi.org/10.1164/rccm.202411-2341LE)

No abstract available

Keywords: COPD; Exacerbations; Serum IgG.

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Ann Am Thorac Soc

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. 2025 Apr 10.

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[Sleep-disordered Breathing in Patients with COPD: Prevalence and Outcomes](#)

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Affiliations Expand

- PMID: 40208311
- DOI: [10.1513/AnnalsATS.202501-030OC](https://doi.org/10.1513/AnnalsATS.202501-030OC)

Abstract

Rationale: The prevalence of obstructive sleep apnea (OSA) or nocturnal hypoxemia without OSA (isolated nocturnal hypoxemia -iNH-) and its impact on the natural history of COPD are unclear.

Objective: We determined the prevalence of OSA and iNH in patients with COPD, and their contribution to all-cause mortality and COPD exacerbations.

Methods: We performed home sleep apnea testing in the COPD History Assessment in Spain (CHAIN) study cohort at baseline. Prevalent OSA was defined by an apnea-hypopnea index -(AHI- $\geq 15/h$) and iNH was defined by a SpO₂ < 90% for >30% of the nocturnal recording time. We evaluated the association of comorbid OSA or iNH with all-cause mortality using multivariate multivariable Cox regression models and with COPD exacerbations using negative binomial models.

Results: Among 428 COPD patients, OSA and nocturnal hypoxemia were ruled out in 41%, while 27% had iNH and 32% had OSA (overlap syndrome COPD/OSA -OVS-). OVS was independently associated with obesity as defined by a BMI ≥ 30 kg/m², and with severe COPD exacerbations ($p < 0.01$), whereas iNH was associated with lower FEV₁ and lower resting SaO₂. Compared to COPD patients without OSA or iNH, those with untreated OVS had a greater mortality (HR: 1.74 95% CI=1.03-2.94) and risk of COPD exacerbations (IRR: 1.44, 95% CI,1.05-2.03).

Conclusions: OSA and iNH are frequent in patients with COPD and the prevalences decrease or increase respectively with the disease severity. COPD patients with untreated OVS but not with iNH had a greater risk of all-cause mortality and COPD exacerbations.

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Int J Chron Obstruct Pulmon Dis

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. 2025 Apr 5:20:971-985.

doi: 10.2147/COPD.S505271. eCollection 2025.

[Abnormal Brain Functional Connectivity in Patients with Chronic Obstructive Pulmonary Disease and Correlations with Clinical and Cognitive Parameters](#)

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Affiliations Expand

- PMID: 40207024
- PMCID: [PMC11980928](#)
- DOI: [10.2147/COPD.S505271](#)

Abstract

Background: Cognitive impairment is a major comorbidity of chronic obstructive pulmonary disease (COPD), but the underlying mechanisms are not fully understood. In this study, we used resting-state functional magnetic resonance imaging to investigate brain functional connectivity (FC) abnormalities in patients with COPD and explored the correlation between abnormal FC and COPD-related clinical parameters.

Methods: Forty-one patients with COPD, without a definite diagnosis of cognitive impairment or depression, and 30 age- and sex-matched controls were recruited. A total of 184 resting-state functional connectivity (RSFC) maps were generated for all seed points. Welch's *t*-test was used to assess differences in RSFC between the COPD and control groups, and the correlation coefficients between RSFC and clinical parameters were calculated.

Results: Patients with COPD had lower scores on the Mini-Mental State Exam (MMSE) and Korean version of the Montreal Cognitive Assessment and higher scores on the Beck Depression Inventory than the control group. Additionally, patients with COPD showed decreased RSFC in the left middle-posterior cingulate cortex, left posterior-dorsal cingulate cortex, and right superior occipital gyrus and increased RSFC in the left superior temporal sulcus, left posterior transverse collateral sulcus, right occipital pole, and right precentral gyrus. The regions showing differences in FC correlated with MMSE score, COPD symptom assessment scales, such as the COPD Assessment Test and modified Medical Research Council Dyspnea Scale, and pulmonary function parameters, including forced expiratory volume in one second and forced vital capacity.

Conclusion: Patients with COPD showed significant differences in FC within specific brain regions that correlated with symptoms, cognition, and lung function.

Keywords: Brain functional magnetic resonance imaging; chronic obstructive pulmonary disease; resting state functional connectivity.

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Conflict of interest statement

The authors declare that they have no relevant conflicts of interest for this study.

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

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Observational Study

Int J Chron Obstruct Pulmon Dis

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. 2025 Apr 5:20:987-998.

doi: 10.2147/COPD.S510118. eCollection 2025.

[Biomarkers \(NLR, PLR, SII\) for Frequent COPD Exacerbations: Diagnostic and Clinical Management Implications in a Retrospective Study](#)

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Affiliations Expand

- PMID: 40207023
- PMCID: [PMC11980941](#)
- DOI: [10.2147/COPD.S510118](#)

Abstract

Objective: To evaluate the diagnostic and predictive value of the neutrophil-to-lymphocyte ratio (NLR), platelet-to-lymphocyte ratio (PLR), and systemic immune-inflammation index (SII) for frequent exacerbations of chronic obstructive

pulmonary disease (AECOPD), and to develop a risk stratification scoring system to optimize clinical management in resource-limited healthcare settings.

Patients and methods: This retrospective observational study enrolled 16,849 AECOPD patients, categorized into frequent exacerbators (≥ 2 exacerbations/year, $n=3,488$) and non-frequent exacerbators (<2 exacerbations/year, $n=13,361$). Comparative analyses of clinical characteristics and inflammatory biomarkers (NLR, PLR, SII, CRP, PCT) were conducted. Spearman correlation, receiver operating characteristic (ROC) curve analysis, and binary logistic regression were employed to assess biomarker performance. A risk scoring system was developed using odds ratios (OR) and regression coefficients (β) of NLR and PLR.

Results: The frequent exacerbators group exhibited significantly higher median NLR (6.71 vs 5.10, $P < 0.001$), mean PLR (239 ± 204 vs 218 ± 195 , $P < 0.001$), and median SII (1,137.48 vs 847.54, $P < 0.001$). NLR, PLR and SII showed strong positive correlations with CRP and PCT ($P < 0.001$). ROC analysis identified NLR (specificity = 84.1%) and PLR (sensitivity = 55%) as optimal diagnostic indicators. Regression analysis confirmed NLR and PLR as independent risk factors for frequent exacerbations. The risk stratification system categorized patients into low-risk (<290 points; annual exacerbation rate 17%), intermediate-risk (290-768 points; 19.1%), and high-risk (>768 points; 23.4%) groups.

Conclusion: NLR and PLR serve as cost-effective biomarkers for identifying high-risk frequent exacerbators patients with COPD in primary care settings. The percentile-based scoring system enables management strategies to address clinical needs in resource-constrained healthcare environments.

Keywords: COPD; NLR; PLR; biomarkers; exacerbation.

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Conflict of interest statement

The authors report no conflicts of interest in this work.

- [53 references](#)
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. 2025 Apr 9;20(1):47.

doi: [10.1007/s11657-025-01534-3](https://doi.org/10.1007/s11657-025-01534-3).

[Association of hospital-initiated bone densitometry with hospitalization for fragility fracture at Lille University Hospital among adults with chronic obstructive pulmonary disease](#)

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Affiliations Expand

- PMID: 40202555
- PMCID: [PMC11982132](https://pubmed.ncbi.nlm.nih.gov/PMC11982132/)
- DOI: [10.1007/s11657-025-01534-3](https://doi.org/10.1007/s11657-025-01534-3)

Abstract

A retrospective study was conducted to calculate the cumulative incidence of hospital-initiated bone densitometry, in the year following hospitalization for fragility fracture in patients with chronic obstructive pulmonary disease. This cohort study demonstrated low rates of hospital-initiated bone densitometry with a 1-year cumulative incidence of 22.6%.

Background: Osteoporosis is one of the most frequent comorbidities in chronic obstructive pulmonary disease (COPD) patients. A study was conducted to assess the management of osteoporosis in COPD patients using the INCLUDE health data warehouse.

Objectives: The primary objective was to calculate the cumulative incidence of hospital-initiated bone densitometry, in the year following hospitalization for fragility fracture in COPD patients.

Patients and methods: A retrospective, monocentric, observational study was conducted at Lille University Hospital with patients identified from January 2013 to December 2021. Patients with COPD, aged 40 or over, and hospitalized for a fragility fracture according to the ICD-10 classification were included. Bone densitometry

was indexed according to French Common Procedures Classification (CCAM) acts by INCLUDE.

Results: A total of 365 patients (~ 60% male, mean age 73.5 ± 12.3 years, and median Charlson score 2.0 (1.0; 4.0)) were included. Hospitalization units for fractures were orthopedics (n = 168), geriatrics (n = 46), rheumatology (n = 45), pneumology (n = 24), and others (n = 82). A total of 499 fractures were identified, most of them severe (hip (36.4%), vertebrae (30.1%), proximal humerus (11.5%), pelvis (10.7%), etc.). During the first year, 69 patients (18.9%) died, and 81 underwent hospital-initiated bone densitometry. The cumulative incidence of bone densitometry in the 1st year was 22.6% [CI 95% 18.3-27.1%]. Independent determinants of performing bone densitometry were female gender, low Charlson score, hospitalization in rheumatology, and vertebral fracture(s).

Conclusion: The cumulative incidence of hospital-initiated bone densitometry, within 1 year of hospitalization for a fragility fracture in COPD patients was relatively low.

Keywords: Antiosteoporosis medications; Bone mineral density; Chronic obstructive pulmonary disease; Fracture; Osteoporosis.

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Conflict of interest statement

Declarations. Conflicts of interest: Julien Paccou has received honoraria from Amgen, MSD, Eli Lilly, Kyowa Kirin, and Theramex. Olivier Le Rouzic reports personal fees and non-financial support unrelated to the submitted work from AstraZeneca, Boehringer Ingelheim, Chiesi, CSL Behring, GlaxoSmithKline, MSD France, Vertex and Vitalaire. Cecile Philippoteaux received honoraria from Amgen, Lilly, Kyowa Kirin, Galapagos, and Abbvie. For the remaining authors, none was declared.

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Observational Study

Int J Chron Obstruct Pulmon Dis

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. 2025 Apr 4:20:957-969.

doi: 10.2147/COPD.S512880. eCollection 2025.

[Evolution of Peak Inspiratory Flow During Hospitalization of Patients with COPD - A Prospective Monocentric Observational Study](#)

[Philipp Suter](#)^{1,2}, [Thomas Grob ty](#)³, [Julien Vaucher](#)^{1,4}, [Ga l Grandmaison](#)¹

Affiliations Expand

- PMID: 40201420
- PMCID: [PMC11977561](#)
- DOI: [10.2147/COPD.S512880](#)

Abstract

Purpose: Effective treatment of chronic obstructive pulmonary disease (COPD) primarily relies on treatment delivered through inhaler devices. The effectiveness of dry powder inhalers is compromised by insufficient peak inspiratory flow (PIF). Understanding the evolution of PIF during hospitalization is crucial for optimizing inhaler selection and improving patient outcomes.

Patients and methods: A prospective monocentric observational study was conducted at Fribourg Hospital, Switzerland, from August 2022 to December 2022. PIF was assessed at hospital admission and discharge in all patients with COPD admitted to the internal medicine division. The primary outcome was the evolution of maximum PIF at a fixed medium-low resistance (R2) during hospitalization. Secondary outcomes included the variation of PIF in the intra-assessment evaluation and transitioning between sufficient and insufficient PIF.

Results: Forty-nine patients were enrolled, 61% were men and 65% experienced an acute COPD exacerbation (AECOPD). The maximum PIF for R2 increased from 64.8 ± 17.2 L/min at admission to 70.7 ± 17.9 L/min at discharge, showing a 5.9 L/min improvement (95% CI: 2.4-9.5, p < 0.01). A hospitalization >5 days in patients hospitalized for an AECOPD is associated with a higher increase in PIF (p < 0.05). In the intra-assessment measurement, we observed an increase in PIF in the successive measurements (p < 0.01).

Conclusion: Hospitalized patients with COPD experienced a significant increase in PIF during their stay. These results appear to be independent of the reason for hospitalization but need to be confirmed with a larger sample. Nevertheless, these findings underscore the importance of regular PIF assessment and influence inhaler selection.

Keywords: COPD; chronic obstructive pulmonary disease; inhalers; peak inspiratory flow; peak inspiratory flow rate.

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Conflict of interest statement

Prof. Dr Julien Vaucher reports grants from SNSF, Leenaards Foundation, and AGLA, outside the submitted work. The authors declare that they have no other known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Thorax

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. 2025 Apr 8:thorax-2024-222699.

doi: 10.1136/thorax-2024-222699. Online ahead of print.

[Incidence and prevalence of asthma, chronic obstructive pulmonary disease and interstitial lung disease between 2004 and 2023: harmonised analyses of longitudinal cohorts across England, Wales, South-East Scotland and Northern Ireland](#)

[Hannah Whittaker](#)¹, [Adriana Kramer Fiala Machado](#)^{#2}, [Sara Hatam](#)^{#3}, [Sarah Cook](#)^{#4}, [Sean Scully](#)^{#5}, [Hywel Turner T Evans](#)^{#6}, [Thomas Bolton](#)^{7,8}, [Constantinos Kallis](#)⁹, [John Busby](#)¹⁰, [Liam G Heaney](#)¹¹, [Aziz Sheikh](#)¹², [Jennifer K Quint](#)¹³; [CVD-COVID-UK/COVID-IMPACT Consortium](#)

Collaborators, Affiliations Expand

- PMID: 40199588
- DOI: [10.1136/thorax-2024-222699](https://doi.org/10.1136/thorax-2024-222699)

Free article

Abstract

Background: We describe the epidemiology of asthma, chronic obstructive pulmonary disease (COPD) and interstitial lung disease (ILD) from 2004 to 2023 in England, Wales, Scotland and Northern Ireland (NI) using a harmonised approach.

Methods: Data from the National Health Service England (NHSE), Clinical Practice Research Datalink Aurum in England, Secure Anonymised Information Linkage Databank in Wales, DataLoch in South-East Scotland and the Honest Broker Service in NI were used. A harmonised approach to COPD, asthma and ILD case definitions, study designs and study populations across the four nations was performed. Age-sex-standardised incidence rates and point prevalence were calculated between 2004 and 2023 depending on data availability. Logistic and negative binomial regression compared incidence and prevalence rates between the start and end of each study period. Linear extrapolation projected incidence rates between 2020 and 2023 to illustrate how observed and projected rates differed.

Results: Incidence rates were lower in 2019 versus 2005 for asthma (England: incidence rate ratio 0.89, 95% CI 0.88 to 0.90; Wales: 0.66, 0.65 to 0.68; Scotland: 0.67, 0.64 to 0.71; NI: 0.84, 0.81 to 0.86), COPD (England: 0.83, 0.82 to 0.85; Wales: 0.67, 0.65 to 0.69) and higher for ILD (England: 3.27, 3.05 to 3.50; Wales: 1.39, 1.27 to 1.53; Scotland: 1.63, 1.36 to 1.95; NI: 3.03, 2.47 to 3.72). In NHSE, the incidence of asthma was similar in June 2023 versus November 2019, but lower for COPD and higher for ILD. Prevalence of asthma in 2019 in England, Wales, Scotland and NI was 9.7%, 15.9%, 13.2% and 7.0%, respectively, for COPD 4.5%, 5.1%, 4.4% and 3.0%, and for ILD 0.4%, 0.5%, 0.6% and 0.3%. Projected incidence rates were 2.8, 3.4 and 1.8 times lower for asthma, COPD and ILD compared with observed rates at the height of the pandemic.

Interpretation: Asthma, COPD and ILD affect over 10 million people across the four nations, and a substantial number of diagnoses were missed during the pandemic.

Keywords: Asthma Epidemiology; COPD epidemiology; Interstitial Fibrosis.

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Conflict of interest statement

Competing interests: HW reports a grants from NIHR BRC for work conducted in the NHSE SDE. SH reports employment from DataLoch for the submitted work. SS reports grants from Industrial Strategy Challenge Fund, MRC and HDR UK for the submitted work. AS reported grants from HDR UK and ISCF for the submitted work and from asthma and lung UK outside the submitted work. JKQ reports grants from Industrial Strategy Challenge Fund, MRC and HDR UK for the submitted work and from GSK, Evidera, Chiesi and AZ outside the submitted work. SC, HTTE, TB, AKFM, LGH, JB and CK have no conflicts of interest.

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Med Clin (Barc)

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. 2025 Apr 7;164(10):106910.

doi: 10.1016/j.medcli.2025.106910. Online ahead of print.

[Spirometric alterations and their risk factors in young ambulatory population](#)

[Article in English, Spanish]

[Marc Vila](#)¹, [Sandra Casas-Recasens](#)², [Rosa Faner](#)³, [Vinicius Rosa Oliveira](#)⁴, [Alvar Agustí](#)⁵

Affiliations Expand

- PMID: 40198997
- DOI: [10.1016/j.medcli.2025.106910](https://doi.org/10.1016/j.medcli.2025.106910)

Abstract

Introduction: Recent studies have shown that about 10% of adults aged 20-40 years in the general population have reduced spirometric values, and that this is associated with a greater risk of respiratory and non-respiratory diseases and early mortality at 20 years of follow-up. Thirty years ago, the IBERPOC study identified a

very high prevalence (18%) of chronic obstructive pulmonary disease (COPD) in the Osona region (Catalonia, Spain) in people older than 40 years of age.

Objective: To investigate the current prevalence of spirometric alterations, clinical manifestations and risk factors in adults aged 18-50 years in Osona.

Methods: Two hundred forty-one participants living in Osona were prospectively included (149 women (61,8%) and 92 men (38,2%)), with a mean age of 34,2±10,3 years, living in Osona.

Results: Results showed that: (1) the prevalence of spirometric abnormalities before bronchodilation (<lower limit of normal; LLN) in the population studied was 20.7% (14,5% FEV₁, 10,8% FVC and 7,9% FEV₁/FVC), particularly in males who also smoked more and more often worked in potentially risk labours; (2) 20-30% of participants referred respiratory symptoms, particularly in females; (3) the comparison between participants with normal or abnormal spirometry showed that the latter did not have a higher smoking exposure or early life-events but had been diagnosed of COPD, asthma or diabetes more frequently.

Conclusions: The 20.7% of young adults in Osona have abnormal spirometric values, similarly to the results of the IBERPOC study more than 30 years ago. The investigation of its origin merits a larger study that includes environmental, genetic and epigenetic measurements.

Keywords: Asma; Asthma; Bronchitis; Bronquitis; COPD; EPOC; Emphysema; Enfisema; Espirometría; Spirometry; Tabaco; Tobacco.

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Am J Respir Cell Mol Biol

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. 2025 Apr 8.

doi: 10.1165/rcmb.2024-0303OC. Online ahead of print.

[CXCR4 Blockade Alleviates Pulmonary and Cardiac Outcomes in Early COPD](#)

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Affiliations Expand

- PMID: 40198797
- DOI: [10.1165/rcmb.2024-0303OC](https://doi.org/10.1165/rcmb.2024-0303OC)

Abstract

Chronic obstructive pulmonary disease (COPD) is a prevalent respiratory disease lacking effective treatment. Focusing on early COPD should help to discover disease modifying therapies. We examined the role of the CXCL12/CXCR4 axis in early COPD using human samples and murine models. Blood samples and lung tissues from both individuals with early COPD and controls were analyzed for CXCL12 and CXCR4 levels. To generate an early-like COPD model, 10-week-old male C57BL/6J mice were exposed to cigarette smoke (CS) for 10 weeks and intranasal instillations of polyinosinic-polycytidylic acid (poly(I:C)) for the last five weeks to mimic exacerbations. The number of cells expressing CXCR4 was increased in the blood of individuals with COPD, as well as in the blood of exposed mice. Lung CXCL12 expression was higher in both early COPD patients and exposed mice. Exposed mice presented mild airflow obstruction, peri-bronchial fibrosis, and right heart thickening. The density of fibrocyte-like cells expressing CXCR4 increased in the bronchial submucosa of these mice. Conditional inactivation of CXCR4 as well as pharmacological inhibition of CXCR4 with plerixafor injections improved lung function, reduced inflammation, and protected against CS and poly-(I:C)-induced airway and cardiac remodeling. CXCR4^{-/-} and plerixafor-treated mice also had fewer CXCR4-expressing circulating cells and a lower density of peri-bronchial fibrocyte-like cells. We demonstrate that targeting CXCR4 has beneficial effects in an animal model mimicking early COPD. While these preclinical findings are encouraging, further research is needed to explore the potential for transferring these insights into clinical applications, including drug repurposing.

Keywords: COPD pathology; cytokine biology; macrophage biology.

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Ann Am Thorac Soc

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. 2025 Apr 8.

doi: 10.1513/AnnalsATS.202405-500OC. Online ahead of print.

[Characteristics Associated with Lung Function Trajectories: An Analysis of the SPIROMICS Cohort](#)

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Affiliations Expand

- PMID: 40198759
- DOI: [10.1513/AnnalsATS.202405-500OC](https://doi.org/10.1513/AnnalsATS.202405-500OC)

Abstract

Rationale: Discovering the biological basis of progression in chronic obstructive pulmonary disease (COPD), especially of rapid decline (RD) in FEV1, is essential to develop precision therapies.

Objectives: First, to define baseline characteristic of RD (≥ 100 mL/year), relative to those who were stable-to-improved (S/I) or with intermediate decline (D)-categories based on spirometric data from the Framingham Offspring Cohort. Second, to examine these categories as predictors of longitudinal COPD outcomes, adjusting for baseline characteristics.

Methods: Among ever-smoking SPIROMICS participants with ≥ 2 spirometric measurements over 8 years, we fit slopes of postbronchodilator FEV1 change by linear regression. We used ordinal regression, testing baseline characteristics as predictors of lung function change categories (S/I, D and RD) and used those categories to assess associated clinical outcomes.

Measurements and main results: In this heavy smoking cohort (≥ 20 pack-years), there were 747 S/I (40%) and 336 RD (18%). In adjusted models of baseline factors associated with trajectories of decline, steeper decline was associated with better initial lung function (all $P < 0.001$) and greater likelihood of baseline bronchodilator responsiveness (S/I, D, RD: 32%, 37%, 43%; $P < 0.001$); no association between RD and race, ethnicity, socioeconomic status, medical history, or respiratory

medication use. Regarding clinical endpoints, RD was associated with greater symptom burden, worse health-related quality of life and increased mortality, but not exacerbation frequency.

Conclusion: Categorical definitions of S/I and RD highlight bronchodilator responsiveness and smoking as risks for adverse outcomes, including death. Contrasting these disease trajectories will support the future identification of the biological bases of COPD progression.

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. 2025 Apr 7;31(1):129.

doi: 10.1186/s10020-025-01191-9.

[Lipid metabolism reprogramming in chronic obstructive pulmonary disease](#)

[Qianqian Liang](#)¹, [Yide Wang](#)¹, [Zheng Li](#)^{2,3,4,5}

Affiliations Expand

- PMID: 40197131
- PMCID: [PMC11974042](#)
- DOI: [10.1186/s10020-025-01191-9](#)

Abstract

Chronic Obstructive Pulmonary Disease (COPD) is a complex and diverse respiratory disorder, characterized by ongoing respiratory symptoms and restricted airflow. The major clinical manifestations typically encompass chronic cough, sputum production, and wheezing. The main pathological characteristics involve infiltration of inflammatory cells, overproduction of mucus, and damage to the alveolar walls. The underlying causes of COPD are complex and remain incompletely elucidated, thought to originate from the combined effect of various factors. Lipids, as hydrophobic molecules, fulfill three fundamental functions: energy storage, membrane biosynthesis, and signal transduction. Lipid metabolism is intricately intertwined with various metabolic pathways and plays a pivotal role in the complex pathogenesis of COPD. Delving into lipid metabolism, as well as the particular modifications and roles of lipid molecules in cells, is of paramount importance in the context of COPD. This review primarily aims to elucidate the role of fatty acid metabolism in the onset and progression of COPD. Additionally, it examines the potential of lipid metabolism reprogramming as a promising therapeutic approach, illuminating new paths for the management and treatment of this disabling respiratory condition.

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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.

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

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Editorial

ERJ Open Res

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. 2025 Apr 7;11(2):00827-2024.

doi: 10.1183/23120541.00827-2024. eCollection 2025 Mar.

[Should all patients with COPD be treated with inhaled triple therapy?](#)

[Don D Sin](#)^{1,2}, [Mohsen Sadatsafavi](#)³

Affiliations Expand

- PMID: 40196716
- PMCID: [PMC11973708](#)
- DOI: [10.1183/23120541.00827-2024](#)

Abstract

Triple therapy should be initiated earlier in the course of COPD <https://bit.ly/3Nh9W6j>.

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Conflict of interest statement

Conflict of interest: D.D. Sin is the Deputy Chief Editor of the European Respiratory Journal, and has received honoraria for giving COPD talks from GSK, BI and AZ. M. Sadatsafavi has received funding from AZ directly to his research account at the University of British Columbia for an unrelated study, and honoraria and speaker fees from AZ and GSK for unrelated activities.

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. 2025 Apr 7;11(2):00802-2024.

doi: 10.1183/23120541.00802-2024. eCollection 2025 Mar.

[Effect of benralizumab treatment on the airway microbiome in COPD](#)

[Koirobi Haldar](#)¹, [Vijay Mistry](#)¹, [Mathew Richardson](#)¹, [Corinne Hamblet](#)², [Maria Jison](#)³, [Michael R Barer](#)⁴, [Christopher McCrae](#)⁵, [Christopher E Brightling](#)¹

Affiliations Expand

- PMID: 40196715
- PMCID: [PMC11973710](#)
- DOI: [10.1183/23120541.00802-2024](#)

Abstract

Background: One-third of patients with COPD have an eosinophilic inflammatory phenotype. Benralizumab is an afucosylated humanised monoclonal antibody that targets the interleukin-5 receptor α subunit, leading to rapid and near-complete eosinophil depletion *via* antibody-dependent cellular cytotoxicity. We hypothesised that benralizumab-targeted immune modulation could have an impact on the airway microbiome in COPD. The objective of the present study was to investigate the effect of benralizumab treatment on inflammation and the sputum microbiome in COPD.

Methods: Sputum samples from 94 COPD patients enrolled to the GALATHEA trial ([NCT02138916](#)) and randomised to receive placebo (33), benralizumab at 100 mg (29) or 30 mg (32) over 52 weeks were analysed at baseline, week 24 and at end of treatment (week 56). Sputum microbiota taxonomic profiles and diversity indices, generated from paired-end Illumina sequencing targeting the 16S rRNA gene, were used for comparative analyses. Linear mixed model analyses were applied to blood and sputum cell counts and eosinophil mediators for within- and between-treatment group analyses.

Results: Participants treated with 100 and 30 mg benralizumab, respectively, showed a significant reduction from baseline in both blood and sputum eosinophil counts (blood: $p=1.2e-10$ and $p=8.8e-10$; sputum $p=0.03$ and $p=0.004$) and eosinophil-derived serum mediators (eosinophil cationic protein: $p<3e-09$ and $p<2e-$

08; eosinophil-derived neurotoxin: $p < 8e-12$ and $p < 2e-09$). No significant changes in the composition or diversity of the sputum microbiome were observed.

Conclusions: In this study, the airway microbiome measured in sputum was unaffected by a targeted reduction of eosinophilic inflammation with benralizumab treatment.

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Conflict of interest statement

Conflict of interest: K. Haldar, M.R. Barer and V. Mistry have no conflict of interest. C. McCrae is an employee of AstraZeneca and holds stock in the company. C. Hamblet and M. Jison are AstraZeneca employees and may own stock or stock options. C.E. Brightling has received grants and consultancy fees paid to his institution from 4D Pharma, Areteia, AstraZeneca, Chiesi, Genentech, GlaxoSmithKline, Mologic, Novartis, Regeneron Pharmaceuticals, Roche and Sanofi.

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. 2025 Apr 7;11(2):00438-2024.

doi: 10.1183/23120541.00438-2024. eCollection 2025 Mar.

[Delaying disease progression in COPD with early escalation to triple therapy: a modelling study \(DEPICT-2\)](#)

[Dave Singh](#)¹, [Diego Fabian Litewka](#)², [Joan B Soriano](#)³, [Adrian Rendon](#)⁴, [Frederico Leon Arrabal Fernandes](#)⁵, [Rafael Páramo-Arroyo](#)⁶, [Tim Trinidad](#)⁷, [Hakan Günen](#)⁸, [Sudeep Acharya](#)⁹, [Bhumika Aggarwal](#)⁹, [Gur Levy](#)¹⁰, [Chris Compton](#)¹¹, [Abdelkader El Hasnaoui](#)¹², [Peter Daley-Yates](#)¹³

Affiliations Expand

- PMID: 40196713
- PMCID: [PMC11973711](#)
- DOI: [10.1183/23120541.00438-2024](#)

Abstract

Introduction: In patients with COPD, dual bronchodilator (long-acting muscarinic antagonist (LAMA)/long-acting β 2-agonist (LABA)) and triple therapy (inhaled corticosteroid/LAMA/LABA) reduce the risk of exacerbations and lung function decline in the short-mid-term, but their long-term impact is unknown. This modelling study explores long-term impact of these therapies on lung function decline, quality of life (QoL) and all-cause mortality.

Methods: This modelling approach used a longitudinal nonparametric superposition model using published data regarding exacerbations, QoL (assessed by St George's Respiratory Questionnaire (SGRQ)) and mortality. The model simulated disease progression from 40 to 75 years of age and assessed the impact of initiating dual bronchodilator at age 45 years ("LAMA/LABA only" group) and escalation to triple therapy at age 50 years ("Escalation to triple" group) on forced expiratory volume in 1 s (FEV₁) decline, QoL and mortality.

Results: Model simulation predicted that by 75 years of age, "LAMA/LABA only" preserves 159.1 mL of FEV₁ *versus* no treatment, while "Escalation to triple" preserves an additional 376.5 mL and 217.3 mL of FEV₁ *versus* no pharmacotherapy and "LAMA/LABA only", respectively. In "LAMA/LABA only", the SGRQ score reduces (-3.2) *versus* no treatment, which further reduces to -7.5 in "Escalation to triple". In "LAMA/LABA only", mortality reduces by 5.4% by 75 years *versus* no treatment, while the "Escalation to triple" shows further decrease in mortality by 12.0%.

Conclusion: Early pharmacotherapy initiation and escalation from dual bronchodilator to triple therapy could slow disease progression by preserving lung function and improving QoL and survival in patients with COPD.

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Conflict of interest statement

Conflict of interest: D. Singh has received consultancy fees from Aerogen, AstraZeneca, BIAL, Boehringer Ingelheim, Chiesi, Cipla, CSL Behring, EpiEndo, Genentech, GlaxoSmithKline, Glenmark, Gossamer Bio, Kinaset Therapeutics, Menarini, Novartis, Orion, Pulmatrix, Sanofi, Teva, Theravance Biopharma and Verona Pharma. Conflict of interest: D.F. Litewka has received speaker fees from GSK, Novartis, AstraZeneca, Sanofi, Boehringer Ingelheim and Tuteur and has participated in advisory boards by GSK. Conflict of interest: J.B. Soriano and H. Günen declare no conflicts of interest in this work. Conflict of interest: A. Rendon has received consulting and speaker fees from, and participated in advisory boards

for GSK, Boehringer Ingelheim, AstraZeneca, Chiesi and Sanofi; and has received travel support from Chiesi and GSK. Conflict of interest: F.L. Arrabal Fernandes has received consulting fees and travel support from GSK, Boehringer Ingelheim and AstraZeneca and speaker fees from Abbott, GSK, AstraZeneca, Boehringer Ingelheim, Sanofi and Chiesi; has participated in advisory boards by GSK, Boehringer Ingelheim and Sanofi; and is a part of Brazilian Respiratory Society. Conflict of interest: R. Páramo-Arroyo has received consulting fees, grants/contracts and travel support from GSK; speaker fees from GSK, AstraZeneca and Silanes; holds royalties/licenses from GSK, AstraZeneca and Lopmont; and was a part of Sociedad Mexicana de Neumología. Conflict of interest: T. Trinidad has received consulting fees from Orient Euro Pharmaceutical Philippines; speaker fees and travel support from GSK, Orient Euro Pharmaceutical Philippines and United American Philippines; and served on the advisory of Department of Health Philippines (Clinical Practice Guideline for COPD). Conflict of interest: S. Acharya, B. Aggarwal, G. Levy, C. Compton and A. El Hasnaoui are employees of GSK and hold GSK shares. Conflict of interest: P. Daley-Yates received consulting fees from GSK for data analysis related to this modelling study.

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

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Review

J Med Internet Res

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. 2025 Apr 7:27:e64742.

doi: 10.2196/64742.

[Effectiveness of Virtual Reality-Complemented Pulmonary Rehabilitation on Lung Function, Exercise Capacity, Dyspnea, and Health Status in Chronic Obstructive Pulmonary Disease: Systematic Review and Meta-Analysis](#)

[Yuyin Chen](#)¹, [Yuanyuan Zhang](#)², [XiuHong Long](#)^{#2}, [Huiqiong Tu](#)^{#2}, [Jibing Chen](#)^{#3}

Affiliations Expand

- PMID: 40193185
- DOI: [10.2196/64742](#)

Free article

Abstract

Background: Chronic obstructive pulmonary disease (COPD) is a progressive respiratory condition characterized by persistent airflow obstruction. Pulmonary rehabilitation (PR) is a cornerstone of COPD management but remains underutilized due to barriers such as low motivation and accessibility issues. Virtual reality (VR)-complemented PR offers a novel approach to overcoming these barriers by enhancing patient engagement and rehabilitation outcomes.

Objective: This review aims to evaluate the effect of VR-complemented PR compared with comparators on lung function, exercise capacity, dyspnea, health status, and oxygenation in patients with COPD. Additionally, the study aimed to identify which comparator type (active exercise vs nonactive exercise control group) and intervention duration would result in the greatest improvements in rehabilitation outcomes. The study also assessed patient-reported experience measures, including acceptability and engagement.

Methods: A comprehensive search of 11 international and Chinese databases identified randomized controlled trials (RCTs) published up to November 2024. Data were analyzed using RevMan 5.4, with pooled effect sizes reported as mean differences (MDs) and 95% CIs.

Results: A total of 16 RCTs involving 1052 participants were included. VR-complemented PR significantly improved lung function (forced expiratory volume in 1 second [FEV1] [L], MD 0.25, $P < .001$; FEV1/forced vital capacity [FVC], MD 6.12, $P < .001$; FVC, MD 0.28, $P < .001$) compared with comparators. Exercise capacity, assessed by the 6MWD, significantly improved (MD 23.49, $P < .001$) compared with comparators; however, it did not reach the minimally clinically important difference of 26 m, indicating limited clinical significance despite statistical significance. VR-complemented PR also significantly reduced dyspnea measured by the modified British Medical Research Council scale (MD -0.28, $P < .001$), improved health status measured by the COPD Assessment Test (MD -2.95, $P < .001$), and enhanced oxygenation status measured by SpO₂ (MD 1.35, $P = .04$) compared with comparators. Subgroup analyses revealed that VR-complemented PR had a significantly greater effect on FEV1 (L) (MD 0.32, $P = .005$) and 6MWD (MD 40.93, $P < .001$) compared with the nonactive exercise control group. Additionally, VR-complemented PR showed a greater improvement in FEV1/FVC (MD 6.15, $P < .001$) compared with the active exercise control group. Intervention duration influenced outcomes, with 5-12-week programs showing the greatest improvement in 6MWD (MD 38.96, $P < .001$). VR-complemented PR was well-accepted, with higher adherence and engagement rates than comparators.

Conclusions: VR-complemented PR significantly improves lung function, exercise capacity, dyspnea, health status, and oxygenation in patients with COPD compared with comparators, while enhancing adherence and engagement. Subgroup analyses showed greater effects on FEV1 (L) and 6MWD compared with the nonactive exercise control group, and a larger improvement in FEV1/FVC compared with the active exercise control group. Interventions (5-12 weeks) yielded the most significant benefits in exercise capacity. These findings highlight VR as a promising adjunct to traditional PR, with future research focusing on long-term outcomes and standardized protocols.

Keywords: chronic obstructive pulmonary disease; dyspnea; exercise capacity; exergaming; health status; lung function; meta-analysis; pulmonary rehabilitation; randomized controlled trial; systematic review; video games; virtual reality.

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Supplementary info

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JAMA Intern Med

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. 2025 Apr 7.

doi: 10.1001/jamainternmed.2025.0279. Online ahead of print.

[A Person-Centered Approach to Supplemental Oxygen Therapy in the Outpatient Setting: A Review](#)

[Angela O Suen](#)¹, [Susan S Jacobs](#)², [Mary R Kitlowski](#)³, [Richard D Branson](#)⁴, [Anand S Iyer](#)^{5,6,7,8}

Affiliations Expand

- PMID: 40193114
- DOI: [10.1001/jamainternmed.2025.0279](https://doi.org/10.1001/jamainternmed.2025.0279)

Abstract

Importance: Approximately 1.5 million adults in the US use supplemental oxygen annually in the outpatient setting. However, many do not receive delivery systems that adequately meet their needs, and few receive education about devices or how to maintain independence. This Review summarizes guidelines and evidence on outpatient supplemental oxygen across several cardiopulmonary conditions, highlights evidence gaps where benefits are unclear, and discusses outcomes that inform a person-centered framework for supplemental oxygen therapy.

Observations: Most studies of supplemental oxygen have been conducted in chronic obstructive pulmonary disease, with limited high-quality data in other cardiopulmonary conditions. Data strongly support supplemental oxygen therapy in people with severe resting desaturation (oxygen saturation [SpO₂] of 88% or less), with demonstrated improvement in mortality. Whether supplemental oxygen improves symptoms or function in patients with isolated severe exertional desaturation remains inconclusive, prompting an individualized approach and exertional oxygen testing if a patient is mobile and reporting exertional symptoms. Apart from cor pulmonale, evidence does not support supplemental oxygen therapy in patients with moderate resting or exertional desaturation (SpO₂ of 89% to 93%). Supplemental oxygen's broad impact on patient-centered outcomes; the supplemental oxygen landscape of devices, testing, prescription, and delivery; and how to weigh the potential harms vs benefits with patients are summarized. These data inform a person-centered supplemental oxygen framework to help patients minimize loss of independence and improve quality of life across the following domains: (1) health care values and preferences; (2) functional status, mobility, and frailty; (3) cognition and supplemental oxygen education; (4) physical symptoms; (5) psychological and social impact; and (6) caregiver support. Guidance on deimplementation and future directions are also summarized.

Conclusions and relevance: Supplemental oxygen therapy should follow a person-centered approach that empowers patients and caregivers; helps patients improve independence and quality of life by optimizing function, mobility, and social well-being; weighs benefits and burdens; and engages in shared decision-making when the evidence is unclear.

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Respir Care

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. 2025 Apr 7.

doi: 10.1089/respcare.12611. Online ahead of print.

[Impact of Telemonitoring With Exacerbation Prediction Algorithm Versus Telemonitoring Alone on Hospitalizations and Health-Related Quality of Life in Patients With COPD](#)

[Thomas Kronborg^{1,2}](#), [Stine Hangaard^{1,2}](#), [Sisse Heiden Laursen^{1,2,3,4}](#), [Lisa Korsbakke Emtækær Hæsum^{1,4}](#), [Julie Egmos¹](#), [Clara Bender¹](#), [Pernille Heyckendorff Secher^{1,4}](#), [Ole Hejlesen¹](#), [Flemming Witt Udsen¹](#)

Affiliations Expand

- PMID: 40192545
- DOI: [10.1089/respcare.12611](https://doi.org/10.1089/respcare.12611)

Abstract

Background: Unreported and untreated exacerbations of COPD have significant negative impacts on health status, disease progression, rate of hospitalization, and readmission. The present study investigated whether a COPD exacerbation prediction algorithm embedded into a telemonitoring system can reduce the number of hospitalizations and improve health-related quality of life (HRQOL) compared with telemonitoring alone. **Methods:** A total of 137 participants were enrolled in this single-blinded randomized controlled trial. Patients were eligible for inclusion if they had a COPD diagnosis, were adults, had fixed residence in Aalborg Municipality in Denmark, and already used an existing telemonitoring system. The primary outcome was the between-group difference in the number of acute hospitalizations per subject after 6 months of follow-up. Secondary outcomes included the difference in all-cause hospitalization, HRQOL measured by 12-item Short Form Health Survey (version 2) and EuroQol-5 Dimension Questionnaire (EQ-5D-5L), and mortality after 6 months. Data were analyzed according to the intention-to-treat principle. **Results:** The adjusted incidence rate ratio (IRR) of acute hospitalizations per subject was 1.30 (95% CI 0.50-3.38). The odds ratio (OR) for the hospitalization proportion was 2.10 (95% CI: 0.72-6.09). The adjusted IRR for the number of all-cause hospitalizations were 1.25 (95% CI: 0.51-3.07), whereas the OR for an all-cause hospitalization proportion was 1.92 (95% CI: 0.70-5.26). The adjusted OR for mortality was 0.46 (95% CI: 0.11-1.94). The adjusted mean difference in the physical component score and mental component score was 0.77 (95% CI: -1.72 to 3.47) and 0.91 (95% CI: -2.63 to 4.72), respectively, and -0.05 (95% CI: -0.14 to 0.03) for the EQ-5D index score. All results were nonstatistically significant. **Conclusions:** No

definitive conclusions could be drawn regarding the effect on hospitalizations and HRQOL when implementing a COPD prediction algorithm in addition to telemonitoring.

Keywords: Denmark; chronic obstructive; comparative effectiveness research; disease risk prediction; exacerbation; machine learning; pulmonary disease; telemedicine.

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Respir Med

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. 2025 Apr 4:241:108083.

doi: 10.1016/j.rmed.2025.108083. Online ahead of print.

[Ultrasound as diagnostic tool in diaphragm dysfunction: A prospective construct validity study](#)

[Wytze S de Boer¹](#), [Krista L Parlevliet²](#), [Leonie A Kooistra³](#), [David Koster⁴](#), [Jellie A Nieuwenhuis⁵](#), [Mireille A Edens⁶](#), [Jan Willem K van den Berg⁷](#), [Martijn F Boomsma⁸](#), [Jos A Stigt⁹](#), [Dirk Jan Slebos¹⁰](#), [Marieke L Duiverman¹¹](#)

Affiliations Expand

- PMID: 40187575
- DOI: [10.1016/j.rmed.2025.108083](https://doi.org/10.1016/j.rmed.2025.108083)

Abstract

Introduction: Diaphragm dysfunction is a frequently overlooked cause of dyspnea. Diagnosis typically relies on a combination of history, symptoms, and imaging. Diaphragm ultrasound is a promising alternative for fluoroscopy. This study evaluated the construct validity of ultrasound compared to traditional diagnostic methods in diaphragm dysfunction.

Methods: A prospective, operator-blinded study was conducted at two centers in the Netherlands. Thirty-six adults with suspected diaphragm dysfunction underwent fluoroscopy, pulmonary function tests, and ultrasound examination. The primary outcome was the agreement between predefined ultrasound diagnostic criteria and traditional diagnostic criteria (fluoroscopy, pulmonary function tests). Secondary outcomes included concordance of diagnostic criteria with the treating physician's final diagnosis, agreement of individual test parameters, and inter-rater reliability.

Results: The diagnostic criteria for ultrasound and traditional tests were concordant in 55.6 (95 CI: 0.381-0.721) of cases. Ultrasound criteria showed higher concordance with the treating physician's final diagnosis (75.0 , 95 CI: 0.578-0.879) compared to traditional test criteria (63.9 , 95 CI: 0.462-0.792). Individual parameters; visual ultrasound assessment, Thickening Fraction (TF), Diaphragm Excursion (DE), and fluoroscopy, had high concordance with the final diagnosis at 91.4 , 90.3 , 88.3 , and 91.7 , respectively. Inter-rater reliability was good for fluoroscopy, visual ultrasound assessment, and DE, but poor for TF.

Conclusion: This study demonstrates that ultrasound is a reliable tool for diagnosing diaphragm dysfunction, showing high concordance with the treating physician's final diagnosis and strong performance of individual parameters. The robust inter-rater reliability for visual assessment and DE supports its use as alternative to traditional methods like fluoroscopy in clinical practice (ClinicalTrials.gov number: [NCT05682027](https://clinicaltrials.gov/ct2/show/study/NCT05682027)).

Keywords: Diaphragm; Fluoroscopy; Ultrasound.

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Conflict of interest statement

Declaration of competing interest The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: W.S. de Boer reports was provided by Isala Hospital. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Diabetes Res Clin Pract

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. 2025 Apr 3:223:112122.

doi: 10.1016/j.diabres.2025.112122. Online ahead of print.

[Comparison of SGLT2 and DPP4 inhibitors on clinical outcomes in COPD patients with diabetes: A nationwide cohort study](#)

[Ting-Chia Chang](#)¹, [You-Cyuan Liang](#)², [Chih-Cheng Lai](#)³, [Chung-Han Ho](#)⁴, [Yi-Chen Chen](#)⁵, [Kuang-Ming Liao](#)⁶, [Fu-Wen Liang](#)⁷

Affiliations Expand

- PMID: 40187535
- DOI: [10.1016/j.diabres.2025.112122](https://doi.org/10.1016/j.diabres.2025.112122)

Abstract

Background: This study aimed to evaluate the association between sodium-glucose cotransporter 2 inhibitor (SGLT2i) use and the risk of exacerbation and mortality among patients with chronic obstructive pulmonary disease (COPD) and diabetes mellitus (DM).

Methods: Taiwan's National Health Insurance Research Database was used to select the COPD patients with DM and those prescribed SGLT2i and dipeptidyl peptidase-4 inhibitor (DPP4i). To reduce the selection and confounding bias, an active comparator new user design was used in current study to estimate the SGLT2i effects. The risk of COPD exacerbation and mortality was calculated using Cox regression model.

Results: We identified 188 SGLT2i-users and 181 DPP4i users. SGLT2i use was associated with a significantly lower risk of overall COPD exacerbation (HR, 0.69; 95% CI, 0.52-0.92). In addition, SGLT2i users demonstrated a significantly lower risk of severe acute exacerbations with Hazard ratio of 0.35 (95% CI, 0.20-0.61) than DPP4i users. However, no significant differences in mortality were observed between groups (HR, 1.51, 95% CI, 0.53-4.25).

Conclusion: SGLT2i use in COPD patients with DM was associated with reduced risks of COPD exacerbation, particularly for severe acute exacerbation compared with DPP4i. This finding suggested that SGLT2i therapy may have a protective effect against severe exacerbations in COPD management.

Keywords: Chronic obstructive pulmonary disease; Exacerbation; Mortality; Sodium-glucose cotransporter 2 inhibitor.

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Conflict of interest statement

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

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Med Sci Monit

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. 2025 Apr 5:31:e947098.

doi: 10.12659/MSM.947098.

[Hemoglobin-Albumin-Lymphocyte-Platelet Index and Risk of In-Hospital Mortality in 793 Adult Patients Hospitalized for Acute Exacerbations of Chronic Obstructive Pulmonary Disease](#)

[Makbule Ozlem Akbay](#)¹, [Dilek Ernam](#)¹, [Lale Sertcelik](#)¹, [Fatma Ozbaki](#)¹

Affiliations Expand

- PMID: 40186341
- PMCID: [PMC11980517](#)
- DOI: [10.12659/MSM.947098](#)

Abstract

BACKGROUND Chronic obstructive pulmonary disease (COPD) is a progressive inflammatory condition of the airways, recognized as a leading cause of morbidity and mortality worldwide. Acute exacerbations of COPD (AECOPD) significantly worsen clinical outcomes and often result in hospitalization, which is linked to increased mortality and a substantial socioeconomic burden. This study aimed to

evaluate the role of the hemoglobin-albumin-lymphocyte-platelet (HALP) index in predicting the risk of in-hospital mortality in adult patients hospitalized for AECOPD. **MATERIAL AND METHODS** A total of 793 patients (mean±SD age: 71.5±10.2 years, range 23.8-98.4 years, 69.1% males) hospitalized with AECOPD were included in this retrospective cohort study. Data on patient demographics, comorbidities, laboratory findings on the day of hospital admission, intensive care unit (ICU) stay (on initial admission or over the course of hospitalization), and in-hospital mortality rates were recorded. The factors predicting in-hospital mortality risk were analyzed via multivariate logistic regression analysis. Receiver operating characteristic (ROC) curve analysis was performed to determine the performance of HALP score in identifying patients at risk of in-hospital mortality. **RESULTS** Multivariate logistic regression analysis revealed a significant association of lower HALP scores (OR 0.758, 95% CI: 0.586 to 0.980, P=0.034) with increased risk of in-hospital mortality. ROC curve analysis revealed the HALP score to identify patients at risk of in-hospital mortality at a cut-off value of <16.84 (area under curve [AUC]: 0.678, 95% CI: 0.615-0.742, P<0.001) with a sensitivity of 69.1%, specificity of 60.4%, and a NPV of 96.3%. **CONCLUSIONS** Our findings indicate that the HALP score (at a cut-off value of <16.84) can identify AECOPD patients at high risk of in-hospital mortality, emphasizing its potential use as a simple immune-nutritional prognostic biomarker in assisting accurate prognostic assessment and timely adjustment of treatment options in at-risk patients.

Conflict of interest statement

Conflict of interest: None declared

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

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MeSH terms, SubstancesExpand

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Thorax

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. 2025 Apr 4:thorax-2024-222682.

doi: 10.1136/thorax-2024-222682. Online ahead of print.

[Sex differences in COPD in relation to smoking exposure: a population-based cohort study](#)

[Yunus Çolak](#)^{1,2}, **[Børge G Nordestgaard](#)**^{2,3}, **[Peter Lange](#)**^{1,2,4}, **[Shoaib Afzal](#)**^{5,3}

Affiliations Expand

- PMID: 40185636
- DOI: [10.1136/thorax-2024-222682](https://doi.org/10.1136/thorax-2024-222682)

Abstract

Background: Sex discrepancies in the association between smoking and development and prognosis of chronic obstructive pulmonary disease (COPD) are controversial. We tested the hypothesis that females compared with males are more susceptible to the detrimental effects of smoking in relation to COPD.

Methods: We identified 47 231 males and 57 806 females from the Copenhagen General Population Study. Smoking amount was assessed with sex interaction against COPD-related outcomes, including the cross-sectional association with airway obstruction, chronic bronchitis and dyspnoea, assessed using logistic regression analyses, and longitudinal association with exacerbation and mortality, assessed using Cox proportional hazard regression adjusted for potential confounders.

Results: The increase in risk of airway obstruction (N=7367), chronic bronchitis (N=9206) and dyspnoea (N=8541) with higher smoking amount was greater in females compared with males. During 15 years' follow-up (median 9.3 years), the increase in risk of exacerbation (events=2756), respiratory mortality (events=711) and all-cause mortality (events=10 658) with higher smoking was greater for females compared with males. Compared with never-smokers, adjusted HRs for exacerbation increased from 4.64 (95% CI 2.83 to 7.61) in females with 10 pack-years to 41.6 (95% CI 28.8 to 60.2) in females with ≥50 pack-years, and from 2.21 (95% CI 0.92 to 5.32) in males with 10 pack-years to 23.7 (95% CI 12.9 to 43.5) in males with ≥50 pack-years. Corresponding HR increases for respiratory mortality were 2.04 (95% CI 1.27 to 3.26) to 11.1 (95% CI 7.39 to 16.8) in females and 1.09 (95% CI 0.62 to 1.92) to 5.66 (95% CI 3.96 to 8.11) in males, and for all-cause mortality, HR increases were 1.50 (95% CI 1.34 to 1.67) to 3.53 (95% CI 3.11 to 4.00) in females and 1.62 (1.45-1.81) to 2.94 (2.69-3.21) in males, respectively.

Conclusions: Females seem more susceptible to the detrimental effects of smoking in development and prognosis of COPD compared with males.

Keywords: COPD epidemiology; Clinical Epidemiology; Tobacco and the lung.

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Conflict of interest statement

Competing interests: YÇ reports personal fees from AstraZeneca, Boehringer Ingelheim, and GlaxoSmithKline, and grants and personal fees from Sanofi outside the submitted work. PL reports grants and personal fees from AstraZeneca and Sanofi and personal fees from Boehringer Ingelheim and GlaxoSmithKline outside the submitted work. BGN and SA have nothing to disclose. The views expressed are those of the authors.

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Chest

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. 2025 Apr 2:S0012-3692(25)00412-X.

doi: 10.1016/j.chest.2025.02.043. Online ahead of print.

[Investigating the Long-Term Effects of COVID-19 Infection on Healthcare Utilization in Individuals with Chronic Obstructive Pulmonary Disease](#)

[Joseph Munn](#)¹, [Peter Austin](#)², [Clare Atzema](#)³, [Stacey Butler](#)⁴, [Candace McNaughton](#)³, [Xuesong Wang](#)⁵, [Andrea S Gershon](#)⁶

Affiliations Expand

- PMID: 40185364
- DOI: [10.1016/j.chest.2025.02.043](https://doi.org/10.1016/j.chest.2025.02.043)

Abstract

Background: Individuals with chronic obstructive pulmonary disease (COPD) are at elevated risk of severe outcomes following COVID-19 infection.

Research questions: Does COVID-19 have a long-term impact on healthcare utilization (HCU) for individuals with COPD?

Study design and methods: We conducted a retrospective matched cohort study using health administrative data from Ontario Canada, between April 2020 and June 2022. Individuals with physician-diagnosed COPD who received a COVID-19 PCR test were included. COVID-19 positive and negative patients were matched on age, sex, vaccination status, PCR test date, and a propensity score. Patients were followed from the end of the acute infection period (12-weeks post-PCR) until the study end date. Per-person-year HCU rates were captured and compared. Analyses were stratified by COVID-19 variant eras (Wild-Type/Alpha/Beta, Delta, and Omicron) and vaccination status (0, 1, 2, and ≥ 3).

Results: We identified 31,540 matched pairs. Mean age was 66.4 years and 49.9% were male. Individuals with positive COVID-19 tests had 9% higher HCU rates than those who tested negative (rate ratio [RR]: 1.09 CI: 1.067-1.127). Stratifying by variant, Wild-Type/Alpha/Beta and Omicron variants had 16% (RR: 1.16, CI: 1.119-1.22) and 5% (RR: 1.051, CI: 1.01-1.092) higher HCU rates respectively. Individuals with ≥ 3 vaccinations did not have elevated rates of HCU (RR: 1.03, CI: 0.981-1.081) compared to those who tested negative.

Interpretation: COVID-19 positive COPD patients had significantly greater long-term HCU usage. Although Omicron has been considered milder than previous variants, it was still associated with significantly elevated long-term HCU. Individuals with ≥ 3 vaccinations who tested positive for COVID-19 had similar HCU rates to those who tested negative, suggesting that vaccinations can reduce long-term healthcare utilization.

Keywords: COVID-19; Chronic Obstructive Pulmonary Disease; Clinical Epidemiology; Post-COVID-19 Condition.

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Review

Clin Med (Lond)

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. 2025 Apr 2:100305.

doi: 10.1016/j.clinme.2025.100305. Online ahead of print.

[Occupational lung disease: what the general physician needs to know](#)

[Dr Patrick Howlett](#)¹, [Professor Joanna Szram](#)², [Dr Johanna Feary](#)³

Affiliations Expand

- PMID: 40185239
- DOI: [10.1016/j.clinme.2025.100305](https://doi.org/10.1016/j.clinme.2025.100305)

Free article

Abstract

Occupational exposures are a common and preventable cause of lung disease. About 1 in 6 cases of COPD and asthma worldwide are related to work. Early recognition of occupational lung disease improves outcomes. Doctors should ask about work history in patients with respiratory symptoms. This educational review article briefly outlines key clinical features, relevant to the general physician, of common occupational lung diseases seen in the UK. These conditions include work-related asthma, pneumoconioses, hypersensitivity pneumonitis and COPD. Referral to a specialist is recommended when an occupational cause is suspected. Most occupational lung diseases are preventable with adequate workplace safety measures and early medical attention.

Keywords: Occupation; lung.

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Conflict of interest statement

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

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Respir Med

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. 2025 Apr 2:241:108084.

doi: 10.1016/j.rmed.2025.108084. Online ahead of print.

[Anemia in COPD and cardiovascular mortality](#)

[Ana Ibarra-Macia](#)¹, [Eduardo Garcia-Pachon](#)²

Affiliations Expand

- PMID: 40185161
- DOI: [10.1016/j.rmed.2025.108084](https://doi.org/10.1016/j.rmed.2025.108084)

No abstract available

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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. 2025 Apr 3;65(4):2500044.

doi: 10.1183/13993003.00044-2025. Print 2025 Apr.

[Who really responds to asthma biologics? The clue lies in the journey before treatment](#)

[Freda Yang](#)¹, [Apostolos Bossios](#)^{2 3 4}

Affiliations Expand

- PMID: 40180360
- DOI: [10.1183/13993003.00044-2025](#)

No abstract available

Conflict of interest statement

Conflict of interest: F. Yang reports payment or honoraria for lectures, presentations, manuscript writing or educational events from GSK and AstraZeneca, support for attending meetings from AstraZeneca, and is a member of the British Thoracic Society Asthma Specialist Advisory Group. A. Bossios reports grants from AstraZeneca, payment or honoraria for lectures, presentations, manuscript writing or educational events from Chiesi, GSK and AstraZeneca, and leadership roles with European Respiratory Society as Head of Assembly 5 (Airway diseases, asthma, COPD, and chronic cough), co-chair of the Nordic severe asthma network, member of the steering committee of SHARP, the ERS severe asthma Clinical Research Collaboration, and is a member of the steering committee of the Swedish National Airway Register.

Comment on

- [Pre-biologic disease trajectories are associated with morbidity burden and biologic treatment response in severe asthma.](#)

Soendergaard MB, Hjortdahl F, Hansen S, Bjerrum AS, von Bülow A, Hilberg O, Bonnesen Bertelsen B, Johnsen CR, Lock-Johansson S, Vijdea R, Rasmussen LM, Schmid JM, Ulrik CS, Porsbjerg C, Håkansson KEJ. Eur Respir J. 2025 Apr 3;65(4):2401497. doi: 10.1183/13993003.01497-2024. Print 2025 Apr. PMID: 39788633 Free PMC article.

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Expert Rev Respir Med

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. 2025 Apr 8:1-10.

doi: 10.1080/17476348.2025.2488967. Online ahead of print.

[Evaluation of exacerbation severity in patients with COPD exacerbations according to the GOLD 2023 report](#)

[Halil İbrahim Yakar](#)¹, [Gülistan Karadeniz](#)², [Tevfik Özlü](#)³, [Akın Kaya](#)⁴, [Erdoğan Çetinkaya](#)⁵, [Tarkan Özdemir](#)⁶, [Ümran Erbay](#)⁷, [Özlem Şengören Dikiş](#)⁸, [Dildar Duman](#)⁹, [Osman Demir](#)¹⁰, [Gökhan Aykun](#)¹, [Sedef Şule Bozkır](#)², [Şebnem Emine Parspur](#)⁷, [Melike Demir](#)⁹, [Murat Kavas](#)⁹, [Utku Tapan](#)⁸, [Handan İnönü Köseoğlu](#)¹, [Ahmet Cemal Pazarlı](#)¹, [Burcu Babaoğlu Elkhatroushi](#)⁵, [Hüseyin Yıldırım](#)¹, [Deniz Doğan Mülazimoğlu](#)⁴, [Ensar Cihat](#)¹¹, [Zeynep Betül Özcan](#)¹², [İrem Aras](#)⁴

Affiliations Expand

- PMID: 40178362
- DOI: [10.1080/17476348.2025.2488967](#)

Abstract

Background: The criteria for COPD exacerbation were redefined in the GOLD 2023 report. This study aimed to evaluate and compare the severity of exacerbations in patients hospitalized with COPD exacerbations [ECOPD] based on the new severity classification defined in the GOLD 2023 report.

Research design and methods: A prospective, cross-sectional, and observational study included a total of 513 ECOPD patients from nine university hospitals. Patients were classified into three groups according to the GOLD 2023 COPD exacerbation severity criteria.

Results: The mean age of the total patients was 68.9 ± 8.8 years, with 83.4% being male. The distribution of exacerbation severity was as follows: mild [24.4%], moderate [50.8%], and severe [24.8%]. The rate of ICU admission [0.8%-4.2%-27.5%] and in-hospital mortality [1.6%-3.9%-9.2%] increased progressively from the mild to the severe exacerbation group [$p < 0.001$; $p = 0.012$, respectively]. Factors affecting 180-day mortality included age, smoking pack-years, mMRC score, hypoxemia, elevated CRP, low HCT, low eosinophil, CCI, and experiencing moderate to severe exacerbations. Severe exacerbations were associated with COPD duration, smoking pack-years, mMRC score, hypoxemia, low eosinophil, reduced FEV₁%, and treatment non-adherence.

Conclusions: Our study demonstrates that the new ECOPD severity classification is a distinctive and objective tool for predicting ICU admission and in-hospital mortality.

Keywords: COPD; Turkey; exacerbation; mortality; severity; survival analysis.

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Cochrane Database Syst Rev

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. 2025 Apr 3;4(4):CD015997.

doi: 10.1002/14651858.CD015997.

[Dual combination therapy versus long-acting bronchodilators alone for chronic obstructive pulmonary disease \(COPD\): a systematic review and network meta-analysis](#)

[Yuji Oba](#)¹, [Mona Pathak](#)², [Tinashe Maduke](#)¹, [Eddie W Fakhouri](#)¹, [Sofia Dias](#)³

Affiliations Expand

- PMID: 40178181
- PMCID: [PMC11967328](#)

- DOI: [10.1002/14651858.CD015997](https://doi.org/10.1002/14651858.CD015997)

Abstract

This is a protocol for a Cochrane Review (intervention). The objectives are as follows: To assess the comparative efficacy and safety of fixed-dose dual inhalers (i.e. LABA/LAMA versus ICS/LABA) and combination therapies versus LABA or LAMA monotherapy in individuals with moderate to very severe COPD, using network meta-analysis, and to rank these treatments based on their efficacy and safety.

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Conflict of interest statement

Y Oba is a Cochrane Editor and was not involved in the editorial process.

T Maduke: none known.

E Fakhouri: none known.

M Pathak: none known.

S Dias: none known.

- [69 references](#)

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. 2025 Apr 2;15(1):11356.

doi: 10.1038/s41598-025-96007-5.

[Multidimensional analysis of anxiety symptoms in patients with chronic obstructive pulmonary disease \(COPD\)](#)

[Li'ao Wang](#)¹, [Dong Miao](#)¹, [Meiying Wang](#)¹, [Gang He](#)¹, [Zhengqiao Li](#)¹, [Yunsheng Hou](#)¹, [Lei Zhang](#)²

Affiliations Expand

- PMID: 40175594
- PMCID: [PMC11965338](#)
- DOI: [10.1038/s41598-025-96007-5](#)

Abstract

To explore the potential classes of anxiety symptoms in patients with chronic obstructive pulmonary disease (COPD) and analyze their distinct characteristics. Convenience sampling was used to select 211 cases of COPD from 12 hospitals in Hebei Province. The following scales were used: General Information Questionnaire, Anxiety Inventory for Respiratory Disease (AIR), BODE index, Montreal Cognitive Assessment (MoCA), and SF-36 Quality of Life scale. Latent profile analysis (LPA) was conducted on the anxiety symptoms of the survey subjects, and univariate analysis and ordinal logistic regression were used to analyze the risk factors of different profiles. Anxiety symptoms among COPD patients were classified into three types: low-risk anxiety type (57.8%), moderate anxiety-fear type (23.2%), and high anxiety-fear type (19.0%). Ordered multinomial logistic regression analysis revealed that the duration of disease, BODE index, MoCA scores, and SF-36 scores were identified as independent risk factors for the potential classes of anxiety symptoms in COPD patients ($p < 0.05$). There is heterogeneity in anxiety symptoms among COPD patients. Medical staff can provide targeted interventions based on the characteristics and risk factors of different populations to alleviate anxiety symptoms.

Keywords: Anxiety; Chronic obstructive pulmonary disease; Latent profile analysis; Nursing; Risk factors.

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Conflict of interest statement

Declarations. Competing interests: The authors declare no competing interests.

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

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J Atheroscler Thromb

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. 2025 Apr 2.

doi: 10.5551/jat.65451. Online ahead of print.

[Sex Differences Regarding the Risk of Incident Venous Thromboembolism in Hospitalized Patients with an Acute Exacerbation of Chronic Obstructive Pulmonary Disease](#)

[Jiaqi Pu¹, Qun Yi^{1,2}, Yuanming Luo³, Hailong Wei⁴, Huiqing Ge⁵, Huiguo Liu⁶, Jianchu Zhang⁷, Xianhua Li⁸, Pinhua Pan⁹, XiuFang Xie⁸, Mengqiu Yi¹⁰, Lina Cheng¹⁰, Hui Zhou¹¹, Jiarui Zhang¹, Lige Peng¹, Jiaxin Zeng¹, Xueqing Chen¹, Haixia Zhou¹; MAGNET AECOPD Registry Investigators](#)

Affiliations Expand

- PMID: 40175131
- DOI: [10.5551/jat.65451](https://doi.org/10.5551/jat.65451)

Free article

Abstract

Aims: Sex differences in the risk of venous thromboembolism (VTE) among patients with an acute exacerbation of chronic obstructive pulmonary disease (AECOPD) have so far only been sparsely described. This study aimed to investigate the differences in the risk of VTE events between male and female AECOPD patients and to determine whether any specific risk factors for VTE vary between the sexes.

Methods: We prospectively enrolled patients hospitalized for AECOPD from ten medical centers in China. The primary outcome was the occurrence of VTE. Univariate and multivariate logistic regression analyses were conducted to

determine whether sex was an independent risk factor for VTE and also to identify any sex-specific risk factors.

Results: In total, 13,664 patients were included. VTE occurred in 5.5% of females and 3.3% of males ($P < 0.001$). A multivariate logistic regression analysis identified female sex as an independent risk factor for VTE in patients with AECOPD (odds ratio [OR] = 1.439, 95% confidence interval [CI] = 1.177-1.759, $P < 0.001$) after adjusting for confounding factors. Common risk factors for both sexes included age, chronic heart failure, severe lung disease, stroke, a recent surgical history, a history of VTE, and respiratory failure. Additional risk factors unique to males were sepsis (OR = 9.514, 95% CI = 4.513-20.056, $P < 0.001$), varicose veins (OR = 6.170, 95% CI = 3.237-11.763, $P < 0.001$), and rheumatological disorders (OR = 2.677, 95% CI = 1.184-6.052, $P = 0.018$). No sex-specific risk factors were identified for females.

Conclusion: Female sex was found to be an independent risk factor for VTE and some sex-specific risk factors exist among inpatients with AECOPD. These findings highlight the importance of considering sex and sex-related factors when assessing the VTE risk in AECOPD patients.

Keywords: Acute exacerbation of chronic obstructive pulmonary disease; Risk factors; Sex differences; Venous thromboembolism.

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Review

Eur Respir Rev

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. 2025 Apr 2;34(176):240258.

doi: 10.1183/16000617.0258-2024. Print 2025 Apr.

[Extrapulmonary effects of lung volume reduction in severe emphysema: a systematic review](#)

[Else A M D Ter Haar](#)^{1,2}, [Dirk-Jan Slebos](#)^{3,2}, [Jorine E Hartman](#)^{3,2}

Affiliations Expand

- PMID: 40174955
- PMCID: [PMC11963015](#)
- DOI: [10.1183/16000617.0258-2024](#)

Abstract

Background: Lung volume reduction, either surgical or bronchoscopic, is an effective therapeutic strategy that improves pulmonary function, quality of life and exercise capacity in patients with advanced emphysema. The aim of this review was to evaluate the extrapulmonary effects of this treatment.

Methods: PubMed, Embase and Web of Science were searched until 19 August 2024. The extrapulmonary effects were classified into nine distinct domains. Studies that reported outcomes related to one of the predefined extrapulmonary domains with a follow-up duration of at least 1 month were eligible for inclusion. A descriptive summary of the effects from all studies was compiled.

Results: A total of 85 articles were included. The majority of studies were conducted in patients who underwent lung volume reduction surgery (74%). The greatest improvements were found in respiratory muscle strength, ventilatory drive, diaphragm morphology and body mass index. While the effects were less pronounced, beneficial outcomes were also observed for body composition, inflammation, oxidative stress, anxiety, depression and bone mineral density. The overall treatment effect of lung volume reduction on cardiac function and pulmonary arterial pressure was inconclusive; however, there is no evidence to suggest any significant deterioration. For the extrapulmonary domains of cognition, sleep and peripheral muscle function, evidence is currently insufficient to determine whether lung volume reduction has any impact.

Conclusion: Lung volume reduction treatment has multiple beneficial extrapulmonary effects in patients with severe emphysema and lung hyperinflation. These findings support the use of lung volume reduction as a treatment for this patient population.

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Conflict of interest statement

Conflict of interest: D-J. Slebos reports grants and consultancy paid to his institution from PulmonX, MoreAir, Nuvaira, PulmAir, FreeFlowMedical and Apreo all outside the submitted work. E.A.M.D. ter Haar and J.E. Hartman have nothing to disclose.

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

Supplementary info

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Am J Respir Crit Care Med

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. 2025 Apr 2.

doi: 10.1164/rccm.202501-0028OC. Online ahead of print.

[Oscillometry-defined Small Airway Dysfunction in Tobacco-exposed Adults with Impaired or Preserved Airflow](#)

[Mustafa Abdo](#)¹, [Henrik Watz](#)^{2,3}, [Frederik Trinkmann](#)⁴, [Sabine Bohnet](#)⁵, [Miriam Annabella Marcella Guess](#)⁵, [Johannes Roeben](#)⁵, [Katharina May](#)⁶, [Martin Reck](#)⁷, [Benjamin-Alexander Bollmann](#)⁸, [Susanne Stiebeler](#)⁹, [Sabine Dettmer](#)¹⁰, [Benjamin Waschki](#)^{11,12}, [Klaus F Rabe](#)^{13,14}, [Klaas Frederik Franzen](#)⁵, [Jens Vogel-Claussen](#)¹⁵

Affiliations Expand

- PMID: 40173271
- DOI: [10.1164/rccm.202501-0028OC](#)

Abstract

Rationale: Small airway dysfunction (SAD) is a key feature of COPD and might present in tobacco-exposed adults with normal spirometry. So far, the role of oscillometry-defined SAD in this population is largely unexplored.

Objective: To investigate the prevalence of oscillometry-defined SAD and its associations with airway structural changes, quality of life (QoL), metabolic and cardiovascular disease (CVD) in tobacco-exposed adults with impaired or preserved airflow.

Methods: In a sub-cohort (n=1628) nested within a lung cancer screening trial, we assessed airway disease using preBD-spirometry, oscillometry, and AI-powered CT. Impaired airflow included airflow obstruction (AFO) and preserved ratio impaired spirometry (PRISm). Subjects with preserved airflow (PA), defined as FEV1 and FEV1/FVC > LLN, were further stratified as PA with SAD (PA-SAD) or normal lung function. SAD was defined as the frequency dependence of resistance (R_{5-19}) or reactance area (AX) > ULN. CT biomarkers included airway wall thickness (AWT-Pi10), lumen diameter, branch count, and emphysema. QoL was measured using the EQ-5D-5L.

Results: The overall prevalence of SAD was 39%. SAD was present in 26% of subjects with PA and in 60% of those with impaired airflow. The frequency of AFO, PRISm and PA-SAD was 21%, 15% and 16%, respectively. Similar to impaired airflow, subjects with PA-SAD had lower EQ-5D-5L score, greater AWT-Pi10, narrower lumen, lower branch count, and higher rate of metabolic and CVD than those with normal lung function, (all p-values <0.01). However, they had minimal emphysema and significantly higher branch count than those with AFO. Subjects with AFO or PRISm and concurrent SAD had greater structural changes and more frequent CVD than those with AFO or PRISm alone. SAD was associated with CVD, OR: 1.91 (95% CI: 1.55 - 2.36), even after adjusting for confounders and metabolic disease.

Conclusion: SAD is highly prevalent among tobacco-exposed adults and is associated with airway structural changes, impaired QoL, and increased rate of CVD, even in those with PA. PA-SAD is distinct from AFO by its preserved airway count and minimal emphysema. This article is open access and distributed under the terms of the Creative Commons Attribution Non-Commercial No Derivatives License 4.0 (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Keywords: Pre-COPD; SAD; oscillometry.

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Multicenter Study

Pulmonology

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. 2025 Dec 31;31(1):2470566.

doi: 10.1080/25310429.2025.2470566. Epub 2025 Apr 2.

Quality of life associated with breathlessness in the multinational Burden of Obstructive Lung Disease (BOLD) study: A cross-sectional analysis

Alexander Müller^{1,2}, Emiel F M Wouters^{1,3,4}, Peter Burney⁵, James Potts⁵, Joao Cardoso^{6,7}, Mohammed Al Ghobain⁸, Michael Studnicka⁹, Daniel Obaseki^{10,11}, Asma Elsony¹², Kevin Mortimer^{13,14}, David Mannino^{15,16}, Rain Jögi¹⁷, Rana Ahmed¹², Asaad Nafees¹⁸, Maria Fatima Rodrigues^{19,20}, Cristina Bárbara^{21,22}, Rune Nielsen^{23,24}, Thorarinn Gíslason^{25,26}, Hamid Hacene Cherkaski²⁷, Karima El Rhazi²⁸, Christer Janson²⁹, Mahesh Padukudru Anand³⁰, Sanjay Juvekar^{31,32}, Herminia Brites Dias³³, Frits M E Franssen^{4,34}, Dhiraj Agarwal³¹, Sylvia Hartl^{1,3}, Terence Seemungal³⁵, Stefanni Nonna Paraguas³⁶, Imed Harrabi³⁷, Meriam Dengezli^{38,39}, Abdul Rashid⁴⁰, Gregory Erhabor¹⁰, Mohammed El Biaze⁴¹, Parvaiz Koul⁴², Daisy J A Janssen^{2,34,43}, André F S Amaral^{5,44}; BOLD Collaborative Research Group

Affiliations Expand

- PMID: 40171577
- PMCID: [PMC11974890](#)
- DOI: [10.1080/25310429.2025.2470566](#)

Abstract

Introduction: Evidence of an association between breathlessness and quality of life from population-based studies is limited. We aimed to investigate the association of both physical and mental quality of life with breathlessness across several low-, middle- and high-income countries.

Methods: We analysed data from 19 714 adults (31 sites, 25 countries) from the Burden of Obstructive Lung Disease (BOLD) study. We measured both mental and physical quality of life components using the SF-12 questionnaire, and defined breathlessness as grade ≥ 2 on the modified Medical Research Council scale. We used multivariable linear regression to assess the association of each quality-of-life component with breathlessness. We pooled site-specific estimates using random-effects meta-analysis.

Results: Both physical and mental component scores were lower in participants with breathlessness compared to those without. This association was stronger for the physical component (coefficient = -7.59; 95%CI -8.60, -6.58; $I^2 = 78.5\%$) than for the mental component (coefficient = -3.50; 95%CI -4.36, -2.63; $I^2 = 71.4\%$). The association between physical component and breathlessness was stronger in high-income countries (coefficient = -8.82; 95%CI -10.15, -7.50). Heterogeneity across sites was partly explained by sex and tobacco smoking.

Conclusion: Quality of life is worse in people with breathlessness, but this association varies widely across the world.

Keywords: Dyspnoea; breathlessness; quality of life.

Conflict of interest statement

DM is a consultant to AstraZeneca, GlaxoSmithKline, Regeneron, Genentech, Up-to-Date and is an expert witness on behalf of people suing the tobacco and vaping industries.

FR reports grants and personal fees from A. Menarini, Boehringer Ingelheim, Teva Pharma, Novartis, GlaxoSmithKline, AstraZeneca, VitalAire and Nippon Gases outside the submitted work.

DJAJ reports lecture fees from AstraZeneca, Abbott and Chiesi, all paid to the institution and outside the submitted work.

- [38 references](#)
- [2 figures](#)

Supplementary info

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Review

Zhonghua Jie He He Hu Xi Za Zhi

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. 2025 Apr 12;48(4):392-395.

doi: 10.3760/cma.j.cn112147-20250208-00071.

[\[Impact and management of comorbidities in patients with chronic obstructive pulmonary disease and obstructive sleep apnea\]](#)

[Article in Chinese]

[W L Sun](#)¹, [Y H Chen](#)²

Affiliations Expand

- PMID: 40159061
- DOI: [10.3760/cma.j.cn112147-20250208-00071](https://doi.org/10.3760/cma.j.cn112147-20250208-00071)

Abstract

in [English, Chinese](#)

Chronic obstructive pulmonary disease (COPD) and obstructive sleep apnea (OSA) are both common respiratory system disorders that often coexist. The combination of COPD and OSA, known as overlap syndrome (OS), can lead to severe hypoxemia, hypercapnia, poor sleep quality, and increased risks of arrhythmias, pulmonary hypertension, right heart failure, and other complications. This ultimately results in high rates of hospitalization and mortality. Currently, clinical practice tends to be reductionist, with insufficient awareness of the dangers posed by OS. There is a need for more proactive screening, diagnosis, and close monitoring and correction of nocturnal hypoxia in OS patients. Non-invasive ventilation is the most important treatment for OS. It is crucial to further address the differences in patient conditions during the day and night, as well as between stable and acute exacerbation phases, to refine and standardize non-invasive ventilation therapy. Additionally, actively preventing and managing related complications will help improve the prognosis of OS.

Supplementary info

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Thorax

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[Use of inhaled corticosteroids in bronchiectasis: data from the European Bronchiectasis Registry \(EMBARC\)](#)

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Free article

Abstract

Introduction: Current bronchiectasis guidelines advise against the use of inhaled corticosteroids (ICS) except in patients with associated asthma, allergic bronchopulmonary aspergillosis (ABPA) and/or chronic obstructive pulmonary disease (COPD). This study aimed to describe the use of ICS in patients with bronchiectasis across Europe.

Methods: Patients with bronchiectasis were enrolled into the European Bronchiectasis Registry from 2015 to 2022. Patients were grouped into ICS users and non-users at baseline and clinical characteristics associated with ICS use were investigated. Patients were followed up for clinical outcomes of exacerbation, hospitalisation and mortality for up to 5 years. We evaluated if elevated blood eosinophil counts (above the laboratory upper limit of normal) modified the effect of ICS on exacerbations.

Results: 19 324 patients were included for analysis and 10 109 (52.3%) were recorded as being prescribed ICS at baseline. After exclusion of patients with a history of asthma, COPD and/or ABPA, 3174/9715 (32.7%) patients with bronchiectasis were prescribed ICS. Frequency of ICS use varied across countries, ranging from 17% to 85% of included patients. ICS users had more severe disease, with significantly worse lung function, higher Bronchiectasis Severity Index scores and more frequent exacerbations at baseline ($p < 0.0001$). Overall, ICS users did not have a reduced risk of exacerbation or hospitalisation during follow-up, but a significant reduction in exacerbation frequency was observed in the subgroup of

ICS users with elevated blood eosinophil counts (relative risk 0.70, 95% CI 0.59 to 0.84, $p < 0.001$).

Conclusion: ICS use is common in bronchiectasis, including in those not currently recommended ICS according to bronchiectasis guidelines. ICS use may be associated with reduced exacerbation frequency in patients with elevated blood eosinophils.

Keywords: bronchiectasis.

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Conflict of interest statement

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

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Multicenter Study

BMJ Open

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Clinical factors associated with multimorbidity, polypharmacy and medication regimen complexity among adults with hypertension: a multicentre cross-sectional study

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Affiliations Expand

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- PMCID: [PMC11987124](#)
- DOI: [10.1136/bmjopen-2024-091997](#)

Abstract

Objectives: Factors associated with multimorbidity, polypharmacy and Medication Regimen Complexity Index (MRCI) may vary across countries. However, such data are lacking in the present study setting. This study aimed to identify factors associated with multimorbidity, polypharmacy and MRCI among adults living with hypertension in public hospitals of South Gondar Zone.

Design: Multicentred cross-sectional design **SETTING:** Public hospitals of Comprehensive Specialised and Primary Hospitals, Ethiopia.

Participants: Adults living with hypertension who had follow-up visits at outpatient clinics and were selected by systematic random sampling from 1 December 2021 to 28 February 2022.

Primary and secondary outcome measures: Medication regimen complexity was assessed using a 65-item medication regimen complexity tool. Sociodemographic data were collected through an interview, while polypharmacy and clinical characteristics were documented using a checklist. Data were entered into SPSS V.26 and analysed using STATA V.17. A binary logistic regression model was used to determine the AOR of factors associated with multimorbidity and polypharmacy. For factors influencing MRCI, an ordinal logistic regression was used.

Results: We found participants from Nefas Mewucha Hospital (AOR = 0.3, 95% CI 0.15 to 0.59) and Mekane Eyesus Hospital (AOR = 0.17, 95% CI 0.07 to 0.38), compared with Debre Tabor Comprehensive Specialised Hospital, polypharmacy (AOR = 5.52, 95% CI 1.49 to 20.39), medium (AOR = 19.76, 95% CI 5.86 to 66.56) and high MRCI (AOR = 120.32, 95% CI 33.12 to 437.07) were associated with multimorbidity. Multimorbidity (AOR = 25.4, 95% CI 7.48 to 86.23), controlled blood pressure (AOR = 0.43, 95% CI 0.19 to 0.92) and duration of hypertension therapy 5 years or more (AOR = 2.12, 95% CI 1.08 to 4.16) were associated with polypharmacy.

Whereas controlled BP (AOR = 0.48, 95% CI 0.32 to 0.72) and multimorbidity (AOR = 14.55, 95% CI 9.00 to 23.52) were significantly associated with high MRCI. The prevalence of multimorbidity, high MRCI and polypharmacy was found in 46.1%, 35.22% and 12.29% of participants, respectively.

Conclusion: A considerable proportion of participants with hypertension experienced multimorbidity, polypharmacy and high medication complexity. Polypharmacy, primary hospital setting and high MRCI were independent variables associated with multimorbidity. On the other hand, multimorbidity and controlled BP were associated with polypharmacy and MRCI. Hypertension care should consider multimorbidity, polypharmacy and medication complexity.

Keywords: Drug Therapy; EPIDEMIOLOGIC STUDIES; Hypertension.

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Conflict of interest statement

Competing interests: None declared.

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J Allergy Clin Immunol Pract

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[Multimorbidity Patterns of Asthma Exacerbation in an Older Cohort: Prognostic Implications](#)

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Affiliations Expand

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Abstract

Background: Asthma frequently coexists with other diseases associated with poor asthma control and low quality of life. Asthma exacerbation refers to severe episodes of disease worsening. Few studies have focused on identifying multimorbidity patterns in asthma and assessing their effects on asthma exacerbations.

Objective: To identify distinct multimorbidity patterns associated with asthma exacerbation in an older cohort and evaluate their impact on prognosis.

Methods: We performed a Mini Batch K-Means clustering analysis of the comorbidities of 849 patients with asthma in this retrospective cohort study. Logistic regression analysis was performed to quantify independent associations between the identified phenotypes and outcomes.

Results: We identified four multimorbidity patterns in patients with asthma. Clusters 1 (N=232, 27.33%), 2 (N=122, 14.37%), 3 (N=149, 17.55%), and 4 (N=346, 40.75%) were characterized by predominantly allergic, predominantly respiratory, predominantly cardiometabolic, and fewer comorbidities, respectively. Clusters 2 was at a significantly increased risk of intensive care unit admission (odds ratio [OR], 2.30), noninvasive ventilation (OR, 2.68), mechanical ventilation (OR, 1.93) and 1-year ED revisits for asthma (OR, 3.10). Cluster 3 had the highest risk of 1-year readmission for comorbidities (OR, 2.53) and one-year ED revisit for comorbidities (OR, 1.84).

Conclusion: We identified four multimorbidity patterns associated with clinical characteristics and adverse outcomes in patients at risk for asthma exacerbations. Comorbidities can be recognized as treatable traits that can minimize the risk of future exacerbations and the adverse effects of asthma.

Keywords: Asthma; clustering analysis; exacerbation; impacts; multimorbidity patterns.

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Lipids Health Dis

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[Obesity, composite dietary antioxidant index, and their interactive association with the risk of cardiometabolic multimorbidity in the elderly from a large national survey](#)

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Affiliations Expand

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- PMCID: [PMC11983756](#)
- DOI: [10.1186/s12944-025-02549-y](#)

Abstract

Background: Dietary antioxidants and obesity are considered significant targets for disease prevention in the elderly. However, a possible cardiometabolic multimorbidity (CMM) correlated to dietary antioxidants and obesity is unknown. This study aimed to examine the relationship between dietary antioxidants and obesity with CMM in the older population.

Methods: We used data from the NHANES 2003-2018 cycles, including older adults aged 60 and above. Dietary antioxidant status was assessed using the CDAI, calculated from six micronutrients (vitamins A, C, E, selenium, zinc, and carotenoids), and obesity was classified based on BMI. We applied restricted cubic spline models to explore nonlinear associations and logistic regression to assess the associations between pro-oxidant diet, obesity, and CMM. The joint effects of pro-oxidant diet and obesity on CMM were evaluated using additive interaction indices: RERI, AP, and SI, to determine the synergistic impact of these factors. Subgroup analyses by age, sex, ethnicity, and hypertension status were also conducted to assess the synergistic effect of these factors within different population groups.

Results: A total of 13,178 older adults (mean age 69.85 ± 0.10 years; 45.1% male) were included in this study. A pro-oxidant diet and obesity jointly increased CMM risk, with the Pro-oxidant diet & Obese group having the highest risk (adjusted OR

3.11, 95% CI: 2.39-4.04), indicating that their likelihood of CMM was more than three times higher compared to the reference group (Anti-oxidant diet & Non-Obese group). The Anti-oxidant diet & Obese group (adjusted OR 2.03, 95% CI: 1.59-2.59) and the Pro-oxidant diet & Non-Obese group (adjusted OR 1.33, 95% CI: 1.08-1.64) also showed elevated risks, although to a lesser extent. These findings suggest that both dietary factors and obesity independently contribute to CMM risk, but their combined effect is more pronounced. The interaction between a pro-oxidant diet and obesity was synergistic, with the RERI indicating a positive interaction (0.75, 95% CI: 0.21, 1.29), the AP showing 24% of the combined effect due to their interaction, and the SI indicating a synergistic effect greater than additive (SI 1.55, 95% CI: 1.11-2.16). Subgroup analyses showed stronger interactions in females, younger individuals, non-Hispanic Whites, and those with hypertension.

Conclusions: Obesity and a pro-oxidative diet are correlated with the occurrence of CMM; there exists an interaction between obesity and a pro-oxidative diet concerning the initiation and advancement of CMM. Subgroup studies revealed more pronounced interactions among females, younger adults, non-Hispanic Whites, and individuals with hypertension.

Keywords: CDAI; Cardiometabolic multimorbidity; NHANES; Obesity; The elderly.

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Conflict of interest statement

Declarations. Ethics approval and consent to participate: The study protocol was approved by the Ethics Review Board of the National Center for Health Statistics (<https://www.cdc.gov/nchs/nhanes/irba98.htm>). Written informed consent was obtained from all participants. Consent for publication: Not applicable. Competing interests: The authors declare no competing interests.

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BMC Public Health

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. 2025 Apr 7;25(1):1294.

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Role of sarcopenia in Temporal progression trajectory of cardiometabolic diseases: a prospective study in UK biobank

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Affiliations Expand

- PMID: 40189542
- PMCID: [PMC11974161](#)
- DOI: [10.1186/s12889-025-22500-1](#)

Abstract

Background: Although sarcopenia has been linked to a range of cardiometabolic diseases (CMDs, including coronary heart disease [CHD], stroke, and diabetes here), its role in the temporal progression from healthy to single CMD, subsequently to cardiometabolic multimorbidity (CMM, coexistence of ≥ 2 CMDs in an individual), and further to death remains unclear. In this study, we aimed to examine the associations of sarcopenia with the risk of CMDs, CMM, and mortality along the CMD progression trajectory.

Methods: We used data from UK Biobank of 413,326 participants free of CMDs at baseline. Multi-state models were used to analyze the transition-specific associations of sarcopenia status measured by handgrip strength, muscle mass, and gait speed (according to the 2019 European Working Group of Sarcopenia in Older People 2) with the progression from no CMD to single CMD, CMM, and ultimately to death. The role of specific sarcopenia components was also assessed.

Results: During a median follow-up of 13.1 years, 51,705 participants experienced ≥ 1 CMD, 6,003 had CMM, and 24,495 died. Compared with people free of sarcopenia, participants with confirmed/severe sarcopenia had higher risk experiencing transitions from no CMD to single CMD or death (hazard ratio [HR] 1.42 and 2.08) and also higher risk from single CMD to CMM progression or death (HR 1.69 and 2.05). Significant associations were observed for participants with probable sarcopenia with smaller effect sizes. All three sarcopenia components increased the risk of most transitions, and stronger associations were observed for low gait speed. In stratified analyses, the associations between sarcopenia and mortality-related transitions were modified by specific lifestyles.

Conclusions: Sarcopenia is an independent risk factor of CMD, CMM progression, and all-cause mortality among middle-aged and older people.

Keywords: Cardiometabolic Multimorbidity; Cardiometabolic diseases; Multi-state model; Sarcopenia; UK biobank.

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Conflict of interest statement

Declarations. Ethics approval and consent to participate: This research was conducted using UK Biobank Resource under project number 84443. The UK Biobank has been approved by the North West Multi-centre Research Ethics Committee as a Research Tissue Bank, and separate ethical clearance is not required for researchers under this approval (updated ref 21/NW/0157, 18 June 2021). All participants of UK Biobank have provided written informed consent. **Consent for publication:** Not applicable. **Competing interests:** The authors declare no competing interests.

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Clin Infect Dis

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[Changes in the prevalence of non-AIDS conditions among hospitalized persons with HIV in the United States and Canada, 2008-2018](#)

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[Lesko³](#), [George A Yendewa¹³](#), [Gregory D Kirk^{3,4}](#), [Kathleen A McGinnis¹⁴](#), [Stephen A Berry^{3,4}](#); [North American AIDS Cohort Collaboration on Research and Design \(NA-ACCORD\) of the International epidemiology Databases to Evaluate AIDS \(IeDEA\)](#)

Collaborators, Affiliations Expand

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- DOI: [10.1093/cid/ciaf167](https://doi.org/10.1093/cid/ciaf167)

Abstract

Background: Hospitalization causes among persons with HIV (PWH) have shifted to non-AIDS conditions, but the complete disease profile of hospitalized PWH has not been well described. To inform hospitalization and readmission prevention efforts, we examined non-AIDS disease prevalence among PWH hospitalized in four US and one Canadian cohorts.

Methods: Among PWH with ≥ 1 hospitalization from 2008 to 2018, we used log-binomial regression with generalized estimating equations to estimate trends in the annual prevalence of hepatitis B virus (HBV), hepatitis C virus (HCV), hypertension, hyperlipidemia, diabetes mellitus, chronic kidney disease stage ≥ 3 (CKD), and multimorbidity (≥ 2 and ≥ 3 conditions), defined using longitudinal diagnosis, medication, and laboratory data.

Results: We examined 6,781 hospitalized PWH who were 75% cisgender men, 40% White, and 38% Black. From 2008 to 2018, the proportion of PWH in care who had ≥ 1 hospitalization decreased from 9.6% to 6.3%. Age- and cohort-adjusted prevalence increased for hyperlipidemia (relative change per year 3.6% [95% CI 2.5%, 4.7%]), diabetes mellitus (2.8% [1.3%, 4.4%]), CKD (3.3% [1.7%, 4.9%]), ≥ 2 conditions (1.3% [0.6%, 2.0%]), and ≥ 3 conditions (3.0% [1.7%, 4.3%]); decreased for HCV infection (-2.0% [-3.0%, -0.9%]); and remained stable for HBV infection (1.6% [-1.1%, 4.3%]) and hypertension (0.4% [-0.2%, 1.1%]).

Conclusions: Hospitalized PWH had an increasing burden of several non-AIDS conditions and multimorbidity not accounted for by aging alone. Further work is needed to understand these conditions' role in hospitalization risk among PWH. Our findings reinforce that hospital discharge planning in PWH should include efforts to ensure chronic conditions are adequately managed.

Keywords: HIV; aging; comorbidity; hypertension.

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

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J Clin Med

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[Reconsidering Gender in Asthma: Is It All About Sex? A Perspective Review](#)

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Affiliations Expand

- PMID: 40217954
- DOI: [10.3390/jcm14072506](#)

Abstract

Asthma is a prevalent chronic condition, affecting an estimated 260 million people worldwide, according to the 2021 Global Burden of Disease Study. This condition significantly impacts individuals of all ages. One notable finding is that asthma prevalence among adults was higher in females than males. Recent evidence suggests that these disparities in asthma prevalence and outcomes are likely due to complex interactions among hormonal, anatomical, and environmental factors, coupled with societal and behavioral influences. The interchangeable use of the terms "sex" and "gender" in the scientific literature is frequently inconsistent. Biological sex is defined by anatomical and physiological characteristics determined by genetics; "gender", on the other hand, is a more complex construct and a universally accepted definition is still lacking. This lack of clarity, coupled with potential knowledge gaps, misunderstandings, or the inherent difficulty in differentiating sex- and gender-related effects, often leads to the terms being poorly defined or used interchangeably. Such imprecise usage hinders accurate data interpretation and research progress. This paper provides a perspective review synthesizing current knowledge regarding the influence of sex and gender on asthma, specifically focusing on their impact on disease pathogenesis, clinical presentation, severity, and management strategies.

Keywords: asthma; exacerbation; gender; perspective; review; severity.

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BMC Pulm Med

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. 2025 Apr 11;25(1):172.

doi: [10.1186/s12890-025-03617-w](https://doi.org/10.1186/s12890-025-03617-w).

[Association of eosinophil-to-monocyte ratio with asthma exacerbations in adults: a cross-sectional analysis of NHANES data](#)

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- PMID: 40217197
- DOI: [10.1186/s12890-025-03617-w](https://doi.org/10.1186/s12890-025-03617-w)

Abstract

Background: The eosinophil-to-monocyte ratio (EMR) has emerged as a promising biomarker for assessing inflammation in various diseases, and this study aims to investigate its potential in predicting asthma exacerbations.

Methods: This cross-sectional study used data from the National Health and Nutrition Examination Survey (NHANES) 1999-2020. A total of 4,738 adults were included in the analysis, and weighted analyses were performed to ensure a representative sample of the general population. The relationship between EMR and asthma exacerbation risk was assessed using multivariable logistic regression with progressively adjusted covariates across multiple models. Subgroup analyses were performed by stratifying key covariates to explore interactions. Restricted cubic spline (RCS) analysis was applied to evaluate non-linear relationships. Sensitivity analyses confirmed the robustness and reliability of the results.

Results: Elevated EMR levels were significantly associated with an increased risk of asthma exacerbations ($p < 0.001$ in all models). In the highest EMR quartile (Q4), the odds ratio for exacerbation compared to the lowest quartile (Q1) was 1.54 (95% CI:

1.23, 1.93) in Model 1, increasing to 1.56 (95% CI: 1.24, 1.97) in Model 2 and 1.58 (95% CI: 1.24, 2.02) in Model 3, after further adjustments. Subgroup analyses showed consistent associations across various characteristics (all p for interaction > 0.05), while RCS analysis revealed a linear relationship without threshold effects (p for nonlinear > 0.05).

Conclusion: EMR demonstrates strong potential as a biomarker for predicting asthma exacerbations, with implications for personalized asthma management.

Keywords: Asthma; Biomarker; Eosinophil-to-monocyte ratio (EMR); Exacerbation; NHANES.

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Conflict of interest statement

Declarations. Ethics approval and consent to participate: NHANES protocols and consent procedures were approved by the NCHS Research Ethics Review Board. Written informed consent was obtained from all participants, and the study adhered to STROBE guidelines to maintain rigorous methodological and ethical standards. For further details, please refer to NCHS NHANES and NCHS ERB Approval. **Consent for publication:** No individual personal information is disclosed in this publication, and all data have been de-identified to maintain participant confidentiality. **Competing interests:** The authors declare no competing interests. **Clinical trial number:** Not applicable.

- [36 references](#)

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NPJ Prim Care Respir Med

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. 2025 Apr 11;35(1):22.

doi: 10.1038/s41533-025-00425-x.

[BTS/NICE/SIGN guideline for asthma 2024: Diagnosis, monitoring and chronic asthma management. How does this compare to GINA 2024?](#)

[Kevin Gruffydd-Jones](#)¹

Affiliations Expand

- PMID: 40216760
- DOI: [10.1038/s41533-025-00425-x](#)

No abstract available

Conflict of interest statement

Competing interests: Dr Gruffydd-Jones has spoken on behalf and acted as an advisor to GSK and Astra Zeneca, He was a member of the BTS/NICE/SIGN Guidelines Committee.

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Lancet Respir Med

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. 2025 Apr 8:S2213-2600(25)00057-8.

doi: 10.1016/S2213-2600(25)00057-8. Online ahead of print.

[Inflammatory risks and asthma attacks: what comes next?](#)

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Affiliations Expand

- PMID: 40215992
- DOI: [10.1016/S2213-2600\(25\)00057-8](https://doi.org/10.1016/S2213-2600(25)00057-8)

No abstract available

Conflict of interest statement

MA-A has received lecture and advisory board honoraria from GSK, Sanofi, AstraZeneca, and Novartis. AA declares no competing interests. Both authors used AI for error checking only. After using this service, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication. MA-A and AA contributed equally.

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Lancet Respir Med

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. 2025 Apr 8:S2213-2600(25)00037-2.

doi: 10.1016/S2213-2600(25)00037-2. Online ahead of print.

[Inflammatory and clinical risk factors for asthma attacks \(ORACLE2\): a patient-level meta-analysis of control groups of 22 randomised trials](#)

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Affiliations Expand

- PMID: 40215991
- DOI: [10.1016/S2213-2600\(25\)00037-2](https://doi.org/10.1016/S2213-2600(25)00037-2)

Abstract

Background: Clinical risk factors for severe asthma attacks have been identified, but their incremental prognostic values are unclear. Additionally, the incremental contribution of type 2 inflammation, a common, treatable process, is undetermined. We aimed to quantify the prognostic value of baseline characteristics and type 2 inflammatory biomarkers, specifically blood eosinophil count and fractional exhaled nitric oxide (FeNO), to predict asthma attacks.

Methods: In this systematic review and meta-analysis of randomised controlled trials (RCTs), Oxford Asthma Attack Risk Scale 2 (ORACLE2), we searched MEDLINE from Jan 1, 1993, to April 1, 2021, for trials investigating fixed treatment regimen effects on asthma attack rates for at least 6 months with baseline blood eosinophil count and FeNO. Eligible participants were aged 12 years or older with asthma (any severity) who had been randomly assigned to the control group of an RCT. Relevant trials were manually retrieved and reviewed by two independent reviewers (SC and IDP). Disagreements were discussed with five reviewers. Individual patient data (IPD) for meta-analysis were requested from study authors. We investigated the rate of severe asthma attacks (≥ 3 days of systemic corticosteroids) for at least 6 months and prognostic effects of baseline blood eosinophil count and FeNO in control group participants. Rate ratios (RRs) with 95% CIs were derived for annualised asthma attack rates from negative binomial models adjusted for key variables, including blood eosinophil count and FeNO, and interactions between these type 2 inflammatory biomarkers were explored. Certainty of evidence was assessed using GRADE. The heterogeneity of the included studies and potential for ecological bias were quantified by the concordance statistic (C-statistic). This study was registered with PROSPERO, CRD42021245337.

Findings: We identified 976 potentially eligible studies. After automated screening, we manually reviewed 219 full-text articles. Of these, 19 publications comprising 23 RCTs were eligible. 6513 participants (4140 [64%] female; 2370 [36%] male; three missing) spanning 22 RCTs were included for data analysis. 5972 (92%) of 6513 patients had moderate-to-severe asthma. 4615 asthma attacks occurred during 5482 person-years of follow-up (annualised rate 0.84 per person-year). Higher blood eosinophil count or FeNO was linked to higher asthma attack risk (per 10-fold increase, RR 1.48 [95% CI 1.30-1.68] for blood eosinophil count and 1.44 [1.26-1.65] for FeNO; high-certainty evidence). Other prognostic factors were attack history (yes vs no, RR 1.94 [1.61-2.32]); disease severity (severe vs moderate, RR 1.57 [1.22-2.03]); FEV₁ percentage predicted (FEV₁%; per 10% decrease, RR 1.11 [1.08-1.15]); and 5-item Asthma Control Questionnaire score (ACQ-5; per 0.5 increase, RR 1.10 [1.07-1.13]). High blood eosinophil count and FeNO combined were associated with greater risk than either prognostic factor separately. Bronchodilator reversibility was associated with lower risk of severe asthma attacks (per 10% increase, RR 0.93 [0.90-0.96]), with the reduction observed primarily between 0% and 25%. Regarding heterogeneity of the included studies, the C-statistic ranged from 0.58 to 0.95, indicating major differences in patient and disease characteristics between studies. In the univariable meta-analysis per trial, we found substantial

heterogeneity in associations between studies, with I^2 statistics ranging from 0-56 to 0-97.

Interpretation: Blood eosinophil count, FeNO, asthma attack history, disease severity, low lung function (low FEV₁%), and symptoms (ACQ-5 score) are key predictors of asthma attacks. Conversely, we found that moderate bronchodilator reversibility was associated with reduced risk. These findings from high-quality multinational RCTs support incorporation of blood eosinophils and FeNO into clinical risk stratification for targeted risk reduction. More individualised clinical decision-making models should be explored.

Funding: National Institute of Health and Care Research Oxford Biomedical Research Centre; Association pulmonaire du Québec; Fonds de recherche du Québec-Santé; Québec Air-Intersectorialité-Respiratoire-Son network; Stichting Astma Bestrijding; Leiden University Fund; and Academy of Medical Sciences.

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Conflict of interest statement

Declaration of interests Outside this work, CC-P has received speaker honoraria from AstraZeneca, GSK, and Sanofi-Regeneron; and consultancy fees from AstraZeneca, GSK, and Sanofi-Regeneron. SR has received salary support from the National Institute for Health and Care Research (NIHR) UK and the Charlie's Foundation for Research. SR also declares speaker fees from GSK and AstraZeneca, and conference travel support from AstraZeneca. MEW has received consulting, advisory, or speaking honoraria from Allakos, Amgen, Areteia Therapeutics, Arrowhead Pharmaceutical, AstraZeneca, Avalo Therapeutics, Celldex, Connect Biopharma, Eli Lilly, Equillum, GSK, Incyte, Kinaset, Kymera, Merck, MyBiometry, Pharming, Phylaxis, Pulmatrix, Rapt Therapeutics, Recludix Pharma, Regeneron, Roche/Genentech, Sanofi/Genzyme, Sentien, Sound Biologics, Tetherex Pharmaceuticals, Uniquity Bio, Upstream Bio, Verona Pharma, and Zurabio. GB has received speaker honoraria from AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, Merck Sharp & Dohme, Novartis, and Sanofi-Regeneron; he is President of the Belgian Respiratory Society. JC has received grants or contracts from Regeneron, Sanofi, and Novartis. He also has received consulting fees from AstraZeneca, Amgen, Regeneron, and Sanofi and payment of honoraria from AstraZeneca, Amgen, Regeneron, and Sanofi. SED has received consultancy fees from AstraZeneca. CEB has received grants and consultancy fees from 4D Pharma, Areteia, AstraZeneca, Chiesi, Genentech, GSK, Mologic, Novartis, Regeneron Pharmaceuticals, Roche, and Sanofi. MC has received grants or contracts from American Lung Association, AstraZeneca, Gala Therapeutics, Genentech, GSK, National Institutes of Health, Nacion, Novartis, PCORI, Pulmatrix, Sanofi-Aventis, Shionogi, and Theravance Biopharma. He has also received consulting fees from Allakos, Amgen, Apogee, Apreo Health, Arrowhead Pharmaceuticals, Blueprint Medicines, Connect BioPharma, Evommune, Genentech, GSK, Jasper, Kinaset, Merck, Novartis, OM Pharma, Pfizer, Pioneering Medicines, Sanofi-Aventis, Teva, Third Rock Ventures, Upstream Bio, and Verona Pharmaceuticals; honoraria from Amgen, AstraZeneca, Med Learning Group, Regeneron Pharmaceuticals, and Sanofi; and stock options from Aer Therapeutics. NAH has received honoraria for serving as a consultant or advisor to GSK, AstraZeneca, Genentech, Sanofi,

Regeneron, Verona, and Amgen; and research grant support from GSK, AstraZeneca, Genentech, Regeneron, and Sanofi. DJJ has received advisory board and speakers fees from AstraZeneca, Boehringer Ingelheim, Novartis, Teva, GSK, Sanofi-Regeneron, and Chiesi. NM is an employee and shareholder with AstraZeneca. AL is employed by AstraZeneca. ES is a former GSK employee and provided anonymised data from GSK studies CAPTAIN and DREAM; provided inputs into manuscript development; and holds GSK stock options. CC holds shares in GSK and is an employee of GSK. MEH is a Sanofi employee. CTJH is a former employee of Genentech. AS is a Novartis employee. TSCH was supported by a Wellcome Trust Fellowship (211050/Z/18/z); he reports grants from the Guardians of the Beit Fellowship, Pfizer, NIHR Oxford Biomedical Research Centre (BRC), University of Oxford, Kymab, Arcturis, and Asthma+Lung UK; and personal fees from AstraZeneca Pieris. RWB has received institutional research funding from AstraZeneca, Teva, Health Research Council, Cure Kidz, and Perpetual Guardian; personal fees from AstraZeneca, Avillion, and Teva; and is Chair of the Asthma Foundation of New Zealand adolescent and adult asthma guidelines, a reviewer for GINA, and a former member of the Global Initiative for Chronic Obstructive Lung Disease board. JKS has received non-restricted research grants from AstraZeneca, European Respiratory Society Severe Heterogeneous Asthma Research collaboration—Patient Centred Clinical Research Collaboration, Register of Adult Patients with Severe Asthma for Optimal Disease Management Foundation, and ZonMw. EWS has received consultancy fees from GSK. IDP has received honoraria for speaking at sponsored meetings from AstraZeneca, Circassia, AmgenNovartis, Chiesi, Sanofi-Regeneron, Menarini, and GSK; and payments for organising educational events from AstraZeneca, GSK, Sanofi-Regeneron, and Teva. He has received honoraria for attending advisory panels with Genentech, Sanofi-Regeneron, AstraZeneca, GSK, Novartis, Teva, Merck, Circassia, and Amgen. He has received sponsorship to attend international scientific meetings from GSK, AstraZeneca, Sanofi, and Regeneron. SC reports non-restricted research grants from NIHR Oxford BRC, the Quebec Respiratory Health Research Network, the Fondation Québécoise en Santé Respiratoire, AstraZeneca, Sanofi-Regeneron, and Circassia Niox group; speaker honoraria from AstraZeneca, GSK, Sanofi-Regeneron, and Valeo Pharma; consultancy fees from FirstThought, AstraZeneca, GSK, Sanofi-Regeneron, Access Biotechnology, and Access Industries; and sponsorship to attend or speak at international scientific meetings by or for AstraZeneca and Sanofi-Regeneron. He is an advisory board member for and holds stock options in Biometry—a company that is developing an exhaled nitric oxide device (myBiometry). He advised the Institut national d'excellence en santé et services sociaux on an update of the asthma general practice information booklet for general practitioners. Within the submitted work, CC-P has received an education scholarship from the Université de Sherbrooke, and SC reports that he has received non-restricted research grants from the Québec Air-Intersectorialité-Respiratoire-Son network, the Academy of Medical Sciences, and the NIHR Oxford BRC, is the holder of the Association pulmonaire du Québec's Research Chair in Respiratory medicine, and is a clinical research scholar of the Fonds de recherche du Québec. All other authors declare no competing interests.

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Review

Med Clin (Barc)

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. 2025 Apr 10;164(11):106916.

doi: 10.1016/j.medcli.2025.106916. Online ahead of print.

[Allergic rhinitis](#)

[Article in English, Spanish]

[Victoria Cardona](#)¹, [Arnau Salvany-Pijuan](#)², [Javier Pereira-González](#)²

Affiliations Expand

- PMID: 40215921
- DOI: [10.1016/j.medcli.2025.106916](#)

Abstract

Allergic rhinitis is an inflammation of the nasal mucosa caused by immunoglobulin E, presenting with symptoms such as sneezing, nasal itching, congestion, and rhinorrhea. It is often associated with conjunctivitis and asthma, significantly impacting quality of life. An integrated care approach is recommended, spanning from pharmacy and primary care to specialized care for severe or poorly controlled cases. Treatment includes avoiding allergens and using medications like antihistamines and intranasal corticosteroids. Combinations of these medications in a single intranasal spray have shown greater efficacy. In severe cases, immunotherapy is effective if tailored to the causing allergen. Tools like visual analogue scales and mobile applications facilitate monitoring and management of rhinitis, optimizing care and improving patient self management. In this narrative review, all these aspects will be addressed.

Keywords: Alergia; Allergen immunotherapy; Allergy; Antihistamines; Antihistamínicos; Corticosteroides intranasales; Inmunoterapia con alérgenos; Intranasal corticosteroids; Rhinitis; Rhinoconjunctivitis; Rinitis; Rinoconjuntivitis.

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Allergy

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. 2025 Apr 11.

doi: 10.1111/all.16557. Online ahead of print.

[Reply to Correspondence: The Bronchodilator and Anti-Inflammatory Effect of Long-Acting Muscarinic Antagonists in Asthma: An EAACI Position Paper](#)

[I Agache](#)¹, [I M Adcock](#)², [C A Akdis](#)³, [M Akdis](#)³, [G Bentabol-Ramos](#)⁴, [M van den Berge](#)⁵, [C Boccabella](#)⁶, [G W Canonica](#)^{7,8}, [C Caruso](#)⁹, [M Couto](#)¹⁰, [I Davila](#)¹¹, [D Drummond](#)¹², [J Fonseca](#)¹³, [A Gherasim](#)¹⁴, [S Del Giacco](#)¹⁵, [D J Jackson](#)^{16,17}, [M Jutel](#)^{18,19}, [A Licari](#)^{20,21}, [S Loukides](#)²², [A Moreira](#)^{23,24,25}, [M Mukherjee](#)²⁶, [I Ojanguen](#)²⁷, [O Palomares](#)²⁸, [A Papi](#)²⁹, [L Perez de Llano](#)^{30,31}, [O J Price](#)^{32,33}, [M Rukhazde](#)^{34,35}, [M H Shamji](#)^{36,37}, [D Shaw](#)³⁸, [S Sanchez-Garcia](#)³⁹, [A Testera-Montes](#)⁴⁰, [M J Torres](#)⁴⁰, [Ibon Equiluz-Gracia](#)⁴⁰

Affiliations Expand

- PMID: 40214719
- DOI: [10.1111/all.16557](https://doi.org/10.1111/all.16557)

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. 2025 Apr 10.

doi: 10.2174/0113862073377594250407083315. Online ahead of print.

[The Role of Lipid Metabolism Disorders in Rhinitis and Asthma](#)

[Muyun Wu](#)¹, [Jieli Cheng](#)², [Yugin Wen](#)³, [Jing Cheng](#)⁴

Affiliations Expand

- PMID: 40211996
- DOI: [10.2174/0113862073377594250407083315](https://doi.org/10.2174/0113862073377594250407083315)

Abstract

The current core theory of rhinitis and asthma is referred to as the antigen-antibody theory. However, the academic perspective is insufficient to explain the issues that arise in the epidemiology, pathophysiology, and clinical treatment of these diseases. So, the academic field of lipid metabolism disorders emerged. This perspective aims to explore two aspects: firstly, the overall approach and definition (starting with a new origin of the digestive tract rather than antigens from the respiratory tract; the non-digestion of various nutrients and the effects of probiotics result in a series of pathological and physiological changes in the body) and secondly, key aspects, such as 1. Dietary factors and lipid disorders that occur first, followed by airway hyperresponsiveness and asthma; 2. The prominent role of lipid droplet morphology in mast cells manifested as a bridge between lipid metabolites and lipid mediators released during allergies; and 3. Low-energy diet intervention with a significant effect on patients. This perspective offers valuable insights into

new factors for the primary prevention of these diseases and exploring new avenues for the treatment of such diseases.

Keywords: Rhinitis; asthma; diet.; lipid; metabolism.

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Review

Environ Res

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. 2025 Apr 8:121504.

doi: [10.1016/j.envres.2025.121504](https://doi.org/10.1016/j.envres.2025.121504). Online ahead of print.

[**ASTHMA MEDICATION USAGE AFTER ENVIRONMENTAL EXPOSURE TO WILDFIRE SMOKE: A SYSTEMATIC REVIEW**](#)

[Cathy Etherington¹](#), [Anne-Marie Rushby²](#), [Van Nguyen³](#), [Vanessa Thompson⁴](#), [Nina Lazarevic⁵](#), [Sotiris Vardoulakis⁶](#)

Affiliations Expand

- PMID: 40209994
- DOI: [10.1016/j.envres.2025.121504](https://doi.org/10.1016/j.envres.2025.121504)

Abstract

Asthma is a chronic respiratory condition exacerbated by exposure to particulate air pollution. Smoke from landscape fires has been associated with increased mortality, asthma-related admissions to emergency and other hospital departments, and uptake in primary care services. With climate change and more frequent

landscape fires, healthcare systems must prepare for disaster, including surges in asthma medication demand. Past reviews have not resolved the direction and magnitude of the association between PM_{2.5} exposure during landscape fires and asthma medication use. The aim of this review was to investigate the relationship between exposure to landscape fire smoke and the use of asthma medications. We conducted a systematic review of PubMed, Scopus, and Web of Science, identifying peer-reviewed articles that examined asthma medication usage following environmental exposure to landscape fire smoke. After a full-text review, we identified twelve articles, three from Canada, three from the USA and six from Australia, with five being retrospective cohort studies. Despite differences in study design, outcome and exposure assessment, the included studies reported a consistent increase in asthma medication use after exposure to wildfires. There is consistent evidence that exposure to wildfire smoke is associated with an increase in the use of reliever medications, particularly salbutamol. Increases in other asthma management medications were also consistently identified. Increases in demand for asthma medications after exposure to wildfire smoke highlight the urgent need to address the growing frequency and intensity of wildfires driven by climate change.

Keywords: Particulate matter; asthma; bushfire smoke; environmental exposure; medications; wildfire smoke.

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Conflict of interest statement

Declaration of Competing Interest The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Sotiris Vardoulakis reports financial support was provided by HEAL (Healthy Environments And Lives) National Research Network, which receives funding from the National Health and Medical Research Council (NHMRC) Special Initiative in Human Health and Environmental Change (2008937). Sotiris Vardoulakis reports financial support was provided by Asthma Australia Ltd. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper

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. 2025 Apr 8:S2213-2198(25)00312-5.

doi: 10.1016/j.jaip.2025.03.047. Online ahead of print.

[Multimorbidity Patterns of Asthma Exacerbation in an Older Cohort: Prognostic Implications](#)

[Yingying Ge](#)¹, [Rui Zuo](#)², [Hanxu Xi](#)², [Chen Zhang](#)², [Wei Li](#)², [Yahong Chen](#)¹, [Yongchang Sun](#)¹, [Hong Ji](#)³, [Chun Chang](#)⁴

Affiliations Expand

- PMID: 40209928
- DOI: [10.1016/j.jaip.2025.03.047](#)

Abstract

Background: Asthma frequently coexists with other diseases associated with poor asthma control and low quality of life. Asthma exacerbation refers to severe episodes of disease worsening. Few studies have focused on identifying multimorbidity patterns in asthma and assessing their effects on asthma exacerbations.

Objective: To identify distinct multimorbidity patterns associated with asthma exacerbation in an older cohort and evaluate their impact on prognosis.

Methods: We performed a Mini Batch K-Means clustering analysis of the comorbidities of 849 patients with asthma in this retrospective cohort study. Logistic regression analysis was performed to quantify independent associations between the identified phenotypes and outcomes.

Results: We identified four multimorbidity patterns in patients with asthma. Clusters 1 (N=232, 27.33%), 2 (N=122, 14.37%), 3 (N=149, 17.55%), and 4 (N=346, 40.75%) were characterized by predominantly allergic, predominantly respiratory, predominantly cardiometabolic, and fewer comorbidities, respectively. Cluster 2 was at a significantly increased risk of intensive care unit admission (odds ratio [OR], 2.30), noninvasive ventilation (OR, 2.68), mechanical ventilation (OR, 1.93) and 1-year ED revisits for asthma (OR, 3.10). Cluster 3 had the highest risk of 1-year readmission for comorbidities (OR, 2.53) and one-year ED revisit for comorbidities (OR, 1.84).

Conclusion: We identified four multimorbidity patterns associated with clinical characteristics and adverse outcomes in patients at risk for asthma exacerbations. Comorbidities can be recognized as treatable traits that can minimize the risk of future exacerbations and the adverse effects of asthma.

Keywords: Asthma; clustering analysis; exacerbation; impacts; multimorbidity patterns.

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J Allergy Clin Immunol Pract

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doi: 10.1016/j.jaip.2025.03.048. Online ahead of print.

[Assessment of an oral corticosteroid withdrawal pathway for severe asthma patients receiving biologic therapies](#)

[Hnin Ww Aung](#)¹, [Richard J Russell](#)¹, [Claire E Boddy](#)², [Kumaran Balasundaram](#)², [Eleanor Hampson](#)², [Mark Bell](#)², [Lauren A Parnell](#)², [Michelle A Bonnington](#)², [Syed Mohammad](#)², [Miles Levy](#)³, [Karim Meeran](#)⁴, [Salman Siddiqui](#)⁵, [Shamsa Naveed](#)¹, [Peter Bradding](#)⁶

Affiliations Expand

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- DOI: [10.1016/j.jaip.2025.03.048](https://doi.org/10.1016/j.jaip.2025.03.048)

Abstract

Background: The optimal approach for weaning maintenance oral corticosteroids (mOCS) in severe asthma patients receiving biologics remains unclear. Previous studies assessed hypothalamic-pituitary-adrenal function at 5 mg daily prednisolone, a supraphysiological dose for many, necessitating further mOCS reduction for adrenal recovery.

Objective: We evaluated a protocol-driven nurse-led mOCS withdrawal pathway with clinical oversight for severe asthma patients receiving biologics.

Methods: Severe asthma patients receiving biologics who had reduced mOCS to 5 mg prednisolone daily and maintained good asthma control, entered the withdrawal pathway. Prednisolone was decreased to 4 mg daily for 6 weeks then 3 mg daily for 6 weeks, followed by 09.00 serum cortisol measurement. Patients with cortisol >25 nmol/L followed a 20-week weaning protocol. Serum cortisol was re-checked 12 weeks after stopping mOCS.

Results: Of 102 patients, 92 had cortisol >25 nmol/L on 3 mg prednisolone and continued weaning. Seventy-three (72%) successfully discontinued mOCS with median [IQR] cortisol increasing from 192 [88-299] nmol/L on 3 mg prednisolone to 314 [248-437] nmol/L 12 weeks after discontinuation ($p<0.0001$). Twenty-nine patients (28%) paused weaning due to adrenal insufficiency symptoms ($n=22$), worse asthma control ($n=1$), anxiety ($n=2$) and other reasons ($n=4$). The baseline cortisol in this group was 53 [25-166] nmol/L, and they are currently well receiving median 3.0 [3.0-3.9] mg prednisolone. Duration of prior OCS use was significantly shorter in the successfully weaned group compared to those who failed ($p=0.003$). No serious adverse events occurred.

Conclusion: Most clinically stable asthma patients receiving biologics successfully withdrew mOCS without requiring dynamic adrenal function testing.

Keywords: adrenal insufficiency; asthma; cortisol; maintenance; oral corticosteroids; prednisolone; weaning.

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Pediatr Infect Dis J

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. 2025 Apr 3.

doi: 10.1097/INF.0000000000004818. Online ahead of print.

[Impact of RSV Prevention in Infancy on Prevalence of Asthma Among 9-14-Year-old Native American Children in the Southwest United States](#)

[Rachel M Hartman](#)¹, [Jessica E Atwell](#), [Carol Tso](#), [Ladonna Becenti](#), [Laura B Brown](#), [Ruth A Karron](#), [Kamellia Kellywood](#), [Samantha Martin](#), [Katherine L O'Brien](#), [Robert C Weatherholtz](#), [Laura L Hammitt](#)

Affiliations Expand

- PMID: 40208934
- DOI: [10.1097/INF.0000000000004818](https://doi.org/10.1097/INF.0000000000004818)

Abstract

Background: The impact of respiratory syncytial virus (RSV) prevention on persistent childhood asthma is unknown. We revisited Native American children 9-14 years old who participated as infants in a phase III, randomized, placebo-controlled trial of an efficacious monoclonal antibody (motavizumab) for prevention of RSV to quantify asthma prevalence and investigate relationships between RSV prevention and subsequent asthma.

Methods: Families that participated in the phase III RSV prevention trial were contacted. Following informed consent, data were collected by parental questionnaire and medical record review to assess respiratory health. Composite outcomes for asthma were defined using a combination of questionnaire and chart review data. Relative risk reductions (RRRs) for asthma-related outcomes were stratified by motavizumab and placebo recipients.

Results: Of the 2127 original trial participants, 97% were eligible for enrollment in this follow-up study, of which 1773 (86%) were enrolled at a median age of 11 years (range: 9-14). The composite measure of asthma prevalence was 18.2% (95% confidence interval: 16.5, 20). The point estimate for persistent asthma was lower in motavizumab recipients [17.5% (15.4, 19.7)] compared with placebo recipients [19.7% (16.6, 23.1)], but this difference was not statistically significant [RRR: 11.1% (-9.1, 27.6)].

Conclusions: Asthma-related outcomes occurred less frequently among children who received motavizumab compared with placebo in infancy; however, these findings were not statistically significant, related to insufficient study power. The potential for reduction in asthma related to the prevention of RSV should be further evaluated in larger studies, especially given the elevated asthma prevalence observed in Native American children in this study.

Keywords: asthma; indigenous health; respiratory syncytial virus.

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Conflict of interest statement

J.E.A. is an employee of Pfizer and may receive stock or stock options. R.A.K. reports funding from the NIH (contract 75N93019D00031) and from Sanofi for the evaluation of live-attenuated RSV vaccines. L.L.H. reports research grants to her institution from AstraZeneca, Merck and Pfizer. The remaining authors have no funding or conflicts of interest to disclose.

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Expert Rev Respir Med

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. 2025 Apr 12:1-16.

doi: 10.1080/17476348.2025.2491722. Online ahead of print.

[Approaches to reduce the risk of severe asthma in children with preschool wheeze](#)

[Andrew Bush](#)¹, [Bianca Schaub](#)²

Affiliations Expand

- PMID: 40208254
- DOI: [10.1080/17476348.2025.2491722](https://doi.org/10.1080/17476348.2025.2491722)

Abstract

Introduction: Asthma is a common, serious condition. We can treat the symptoms of mild-moderate disease, but severe asthma is life-threatening despite treatment. We cannot cure asthma and have no specific preventive strategies.

Areas covered: We performed a PubMed search using the terms 'Severe asthma' and 'Prevention' and 'Preschool wheeze' limited to children, humans and English language over the previous five years. We searched the bibliographies of relevant references and also our personal archives. We cover transgenerational, antenatal and early life factors which increase the risk of pre-school wheeze; the factors promoting or protecting the pre-school wheezer from developing school age asthma; and the factors leading to one of the three types of severe asthma defined by WHO (untreated, difficult to treat, and treatment resistant).

Expert opinion: Currently we have no pharmacological preventive strategies. Risk can be reduced by public health measures such as reduction in smoking and

environmental pollution, and there are tantalizing hints from comparison of farming to other environments that exploring how environmental modulation may lead to more specific, personalized strategies. The effects of the new RSV prevention strategies are awaited. We need a better understanding of the pathways driving disease progression, and biomarkers of risk.

Keywords: Air pollution; airway inflammation; airway remodeling; eosinophil; exhaled nitric oxide; inhaled corticosteroid; microbiome; nicotine.

Plain language summary

Asthma is one of the most common non-communicable diseases worldwide and is incurable. We can often treat the symptoms of mild-to-moderate asthma effectively, but severe asthma may be refractory and severely impair quality of life. Prevention would therefore be optimal. Prevention of severe asthma could be via preventing asthma developing at all or preventing progression to severe disease. The roots of asthma are transgenerational, antenatal and in the early years, and we describe possible ways of intervening to prevent asthma across the developmental spectrum. Significant risk reduction can be achieved by public health measures such as reductions in smoking, air pollution and child poverty, but we have no specific personalized therapies to reduce risk. The most promising avenue arises from the observation that babies born on cattle or poultry farms have a low risk of allergies and asthma, perhaps related to increased bacterial and fungal diversity in the environment, and early innate immune stimulation, but more work is needed. If mild-moderate asthma is not to become severe, active, which may be subclinical inflammation needs to be treated aggressively. Also, important is education to get the basic management steps, and, especially in low resource settings, ensuring that essential asthma medications are made available.

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J Asthma Allergy

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. 2025 Apr 5:18:491-505.

doi: 10.2147/JAA.S497218. eCollection 2025.

[Peripheral Airway Obstruction in Association with Symptoms and Quality of Life in Asthma](#)

[Georgia Papapostolou](#)¹, [Abir Nasr](#)¹, [Linnea Jarenbäck](#)¹, [Kerstin Romberg](#)², [Alf Tunsäter](#)¹, [Jaro Ankerst](#)¹, [Leif Bjermer](#)¹, [Ellen Tufvesson](#)¹

Affiliations Expand

- PMID: 40206516
- PMCID: [PMC11980927](#)
- DOI: [10.2147/JAA.S497218](#)

Abstract

Introduction: Forced Oscillation Technique (FOT) is increasingly used to measure obstruction in the airways; however, the association between airway obstruction and the actual symptom burden in asthma is not known. Therefore, we aimed to investigate central and peripheral airway obstruction, measured by FOT, in association to symptoms and quality of life in asthma.

Methods: 319 asthma patients were recruited and answered questionnaires focusing on symptoms (ACT, ACQ, Nijmegen, HADS and SNOT-22) and quality of life (MiniAQLQ and MiniRQLQ) and performed FOT measurements estimating airway resistance (R5: total resistance, R19: central resistance, R5-R19: peripheral resistance) and reactance (X5) during inspiration and expiration.

Results: Asthma groups classified based on ACT score cut-off points at 16, 20, and 25 showed higher R5, R5-R19, and lower X5 with increasing symptoms, which was not evident when applying a cut-off of only 20. ACQ-5 cut-offs at 0.75 and 1.5 captured differences in R5 and X5, whereas a Nijmegen cut-off of 23 showed differences in R5 and R19. The total scores from most questionnaires (except for the HADS and SNOT-22) correlated with many of the FOT results, but there were different patterns of correlation between airway obstruction and symptoms in uncontrolled and controlled asthma. Additionally, specific questions were associated with airway obstruction.

Conclusion: The increasing symptoms in patients with asthma assessed using questionnaires correlated well with predominantly increasing peripheral airway obstruction. A correlation also exists with the Nijmegen score, which is not specific to asthma. The cut-off points used to define asthma control may capture peripheral airway dysfunction.

Keywords: airway obstruction; asthma; quality of life; symptom.

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Conflict of interest statement

The authors report no conflicts of interest in this work.

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- [5 figures](#)

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BMC Pulm Med

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. 2025 Apr 9;25(1):166.

doi: 10.1186/s12890-025-03627-8.

[Airway inflammation, bronchial hyperresponsiveness, and anti-asthma therapy responses in cough variant asthma and classic asthma with FEV₁% ≥80% predicted](#)

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Affiliations Expand

- PMID: 40205578
- PMCID: [PMC11980309](#)
- DOI: [10.1186/s12890-025-03627-8](#)

Abstract

Objective: To explore the differentiation of airway inflammation, bronchial hyperresponsiveness and anti-asthma therapy responses between the cough variant asthma (CVA) and classic asthma (CA) patients with FEV₁% ≥80% predicted.

Methods: In the first monocentre retrospective cross-sectional study, 402 patients with suspicion of CA and 544 patients with chronic cough were enrolled. Further prospective monocentre study was conducted and 66 patients of suspected asthma with negative bronchial dilation test (BDT) but positive bronchial challenge (BCT) test were enrolled and followed up for 4 weeks.

Results: CA patients had higher fractional exhaled nitric oxide (FENO) values than CVA patients (36.0 ppb vs. 24.0 ppb, $p < 0.0001$). The predictive value of FENO for positive BCT was significantly lower in chronic cough patients compared to those with suspicion of CA (AUC = 0.603 vs. 0.728). Following four weeks anti-asthma therapy, both the CVA and CA groups showed significant improvement in both the large and small airway function and symptom relief. There was no significant difference between the respective groups. The two most valuable spirometric variables for predicting a positive response to anti-asthma treatment were the improvements of FEV₁ (Δ FEV₁, cut-off values = 90 ml for CA and 110 ml for CVA) and FEV₁% (Δ FEV₁%, cut-off values = 3.49% for CA and 2.59% for CVA) after BDT in baseline of CA and CVA patients, respectively.

Conclusion: Patients with CVA exhibited lower levels of airway eosinophilic inflammation compared to those with mild CA. Most patients with mild CA and CVA could benefit promptly from anti-asthma treatment. Additionally, an improvement in FEV₁ and FEV₁% during BDT can potentially predict positive responses to anti-asthma therapy in both groups.

Keywords: Airway inflammation; Anti-asthma therapy; Bronchial hyperresponsiveness; Classic asthma; Cough variant asthma.

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Conflict of interest statement

Declarations. Ethics approval and consent to participate: The study was approved by the Institutional Review Board of the Shanghai General Hospital (no. [2020]30). The prospective study in PART II was registered on chictr.org.cn (No. ChiCTR2000029065). Informed consent in PART II was obtained for all subjects. As PART I in our study was a retrospective study, the requirement for obtaining informed consent from participants was waived by the ethics committee (no. 2017KY159). The research was conducted in accordance with the ethical standards of the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards. **Consent for publication:** Not applicable. **Competing interests:** The authors declare no competing interests.

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Respir Res

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. 2025 Apr 10;26(1):132.

doi: 10.1186/s12931-025-03209-6.

[Evaluation of the influenza vaccine protection in the house dust mite-induced chronic allergic asthma mice model and the evaluation of squalene oil in water emulsion as an adjuvant candidate](#)

[So Yeon Ahn](#)¹, [Thi Len Ho](#)², [Eun-Ju Ko](#)^{3 4 5}

Affiliations Expand

- PMID: 40205548
- PMCID: [PMC11984255](#)
- DOI: [10.1186/s12931-025-03209-6](#)

Abstract

Background: Despite the importance of influenza vaccination in asthma patients, the efficacy of this vaccine in asthma has not been well elucidated. We aimed to compare the efficacy of an influenza vaccine of the asthmatic and control mice. We also evaluated the efficacy of AddaVax™ as an adjuvant candidate, which is equivalent to the MF59 influenza vaccine adjuvant in the elderly.

Method: House dust mite extracts were intranasally injected into six-week-old female BALB/c mice to induce chronic allergic asthma. Antibody responses after split-inactivated A/Puerto Rico/8/34 H1N1 influenza vaccination with or without AddaVax™ adjuvant were measured using ELISA. Homologous viral protection was determined by measuring the survival rate, lung inflammation level, and lung virus titer after challenge with the human influenza virus strain A/Puerto Rico/8/1934 H1N1. Antigen-specific T cell responses were determined using flow cytometry.

Result: The chronic asthma mice immunized with split-inactivated A/Puerto Rico/8/34 H1N1 influenza vaccine showed significant weight loss and higher lung viral load after homologous influenza infection than naïve vaccinated mice. Antigen-specific IgG, IgG1, and IgG2a production did not differ between the naïve and asthma mice. However, serum HI titer was lower in asthma-vaccinated mice after infection. The application of AddaVax™ to a vaccine for mice with asthma enhanced the efficacy of homologous antiviral protection but elicited eosinophil infiltration in the lungs after homologous influenza virus infection.

Conclusion: The immune response after split inactivated A/PR8 vaccine differed between asthma and naïve mice, particularly in terms of antibody activity and T cell populations. This study enhances our understanding of how asthma status may influence the effectiveness of influenza vaccine and offers insights into the AddaVax™-induced eosinophilic inflammation, guiding the development of virus vaccine strategies for both healthy individuals and asthma patients.

Keywords: AddaVax™; Adjuvant; Asthma; HDM-induced asthma; Influenza vaccine; T cell.

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Conflict of interest statement

Declarations. Ethical approval: All mouse experiments were performed in accordance with the guidelines of Jeju National University approved by the Institutional Animal Care and Use Committee (protocol number 2021-0051). **Consent to Participate:** Not applicable. **Consent for publication:** Not applicable. **Competing interests:** The authors declare no competing interests.

- [64 references](#)
- [7 figures](#)

Supplementary info

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Review

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. 2025 Apr 7:S0091-6749(25)00375-6.

doi: 10.1016/j.jaci.2025.03.025. Online ahead of print.

[Personalised therapeutic approaches for asthma](#)

[Ioana Agache](#)¹, [Ian M Adcock](#)², [Federico Baraldi](#)³, [Kian Fan Chung](#)⁴, [Ibon Equiluz-Gracia](#)⁵, [Sebastian L Johnston](#)⁶, [Marek Jutel](#)⁷, [Parameswaran Nair](#)⁸, [Alberto Papi](#)³, [Celeste Porsbjerg](#)⁹, [Omar S Usmani](#)¹⁰, [Deborah A Meyers](#)¹¹, [Magdalena Zemelka-Wiacek](#)¹², [Eugene R Bleecker](#)¹³

Affiliations Expand

- PMID: 40203996
- DOI: [10.1016/j.jaci.2025.03.025](#)

Abstract

Differences in host susceptibility and environmental exposures result in significant heterogeneity in asthma clinical expression, natural evolution and response to treatment. These differences are influenced by many factors including genomics, epigenomics, transcriptomics, proteomics and metabolomics, many of which are modified by environmental and allergic exposures. The complex and multiple characteristics that interact in asthma development and progression pose significant challenges for personalized management. This review aims to guide the clinician in its management decisions by reviewing each of the components important in developing this therapeutic paradigm and by providing several integrated goals for precision or personalized medicine for asthma. Biologic characteristics of asthma in relation to the genomics, exposome and hypersensitivity reactions (allergic responsiveness) resulting in the asthma diathesis are discussed. Further insights including the use of targeted biologics and allergen immunotherapy are provided, while discussing the importance of targeting the epithelium, mucus production, airway smooth muscle and the small airways. We examine the value of multivariate cluster analyses as a new paradigm that can inform treatment decisions and the potential of adaptive trial design to evaluate known and novel predictive biomarkers and characterize disease heterogeneity.

Keywords: asthma; biomarkers; endotypes; precision medicine.

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BMC Pulm Med

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. 2025 Apr 8;25(1):161.

doi: 10.1186/s12890-025-03636-7.

[The diagnostic value of combined pulmonary function test and exhaled nitric oxide monitoring in cough variant asthma with or without gastroesophageal reflux disease: a retrospective study](#)

[Sen Li](#)¹, [Siyao Xu](#)¹, [Yuan Yang](#)¹, [Zhe Wang](#)¹, [Yaru Hou](#)²

Affiliations Expand

- PMID: 40200292
- PMCID: [PMC11980150](#)
- DOI: [10.1186/s12890-025-03636-7](#)

Abstract

Introduction: This study aimed to investigate the effect of fractional exhaled nitric oxide (FeNO), a marker of airway inflammation, together with small airway function tests in diagnosing cough variant asthma (CVA), particularly in patients with gastroesophageal reflux disease (GERD).

Methods: This retrospective cohort study included adult patients with chronic cough for more than eight weeks who were divided into a CVA group and a control group. Participants underwent pulmonary function tests and FeNO measurements. Statistical tests and ROC curve analysis were used to assess diagnostic accuracy.

Results: CVA patients had higher FeNO levels than controls, regardless of with or without GERD. There were no significant differences in FEV1, FVC, and FEV1/FVC ratio between the control and CVA groups, but CVA patients had significantly lower

MEF25, MEF50, MEF75, and MMEF values. FeNO was negatively correlated with MEF50, MEF75, and MMEF. The AUC of FeNO in diagnosing CVA was 0.862. Combining FeNO with MMEF resulted in the highest diagnostic accuracy (AUC = 0.909). The diagnostic benefits of FeNO and FeNO + MMEF were similar in GERD patients.

Conclusion: Combining FeNO with small airway function tests, especially MMEF, can improve the diagnostic accuracy of CVA, while FeNO and FeNO + MMEF performed similar diagnostic accuracy in patients with GERD.

Clinical trial number: Not applicable.

Keywords: Asthma diagnosis; Cough variant asthma; Fractional exhaled nitric oxide; Gastroesophageal reflux disease; Pulmonary function test.

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Conflict of interest statement

Declarations. Ethics approval and consent to participate: The study was approved by the Ethical Committee of HanZhong Central Hospital. Given the retrospective nature of the study, informed consent was waived by the ethics committee, and all procedures were performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its subsequent amendments. Competing interests: The authors declare no competing interests.

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- [2 figures](#)

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Thorax

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. 2025 Apr 8:thorax-2024-222699.

doi: 10.1136/thorax-2024-222699. Online ahead of print.

[Incidence and prevalence of asthma, chronic obstructive pulmonary disease and interstitial lung disease between 2004 and 2023: harmonised analyses of longitudinal cohorts across England, Wales, South-East Scotland and Northern Ireland](#)

[Hannah Whittaker¹, Adriana Kramer Fiala Machado^{#2}, Sara Hatam^{#3}, Sarah Cook^{#4}, Sean Scully^{#5}, Hywel Turner T Evans^{#6}, Thomas Bolton^{7,8}, Constantinos Kallis⁹, John Busby¹⁰, Liam G Heaney¹¹, Aziz Sheikh¹², Jennifer K Quint¹³; CVD-COVID-UK/COVID-IMPACT Consortium](#)

Collaborators, Affiliations Expand

- PMID: 40199588
- DOI: [10.1136/thorax-2024-222699](https://doi.org/10.1136/thorax-2024-222699)

Free article

Abstract

Background: We describe the epidemiology of asthma, chronic obstructive pulmonary disease (COPD) and interstitial lung disease (ILD) from 2004 to 2023 in England, Wales, Scotland and Northern Ireland (NI) using a harmonised approach.

Methods: Data from the National Health Service England (NHSE), Clinical Practice Research Datalink Aurum in England, Secure Anonymised Information Linkage Databank in Wales, DataLoch in South-East Scotland and the Honest Broker Service in NI were used. A harmonised approach to COPD, asthma and ILD case definitions, study designs and study populations across the four nations was performed. Age-sex-standardised incidence rates and point prevalence were calculated between 2004 and 2023 depending on data availability. Logistic and negative binomial regression compared incidence and prevalence rates between the start and end of each study period. Linear extrapolation projected incidence rates between 2020 and 2023 to illustrate how observed and projected rates differed.

Results: Incidence rates were lower in 2019 versus 2005 for asthma (England: incidence rate ratio 0.89, 95% CI 0.88 to 0.90; Wales: 0.66, 0.65 to 0.68; Scotland: 0.67, 0.64 to 0.71; NI: 0.84, 0.81 to 0.86), COPD (England: 0.83, 0.82 to 0.85; Wales: 0.67, 0.65 to 0.69) and higher for ILD (England: 3.27, 3.05 to 3.50; Wales: 1.39, 1.27 to 1.53; Scotland: 1.63, 1.36 to 1.95; NI: 3.03, 2.47 to 3.72). In NHSE, the incidence of asthma was similar in June 2023 versus November 2019, but lower for COPD and higher for ILD. Prevalence of asthma in 2019 in England, Wales, Scotland and NI was 9.7%, 15.9%, 13.2% and 7.0%, respectively, for COPD 4.5%, 5.1%, 4.4% and 3.0%, and for ILD 0.4%, 0.5%, 0.6% and 0.3%. Projected incidence rates were 2.8, 3.4 and 1.8 times lower for asthma, COPD and ILD compared with observed rates at the height of the pandemic.

Interpretation: Asthma, COPD and ILD affect over 10 million people across the four nations, and a substantial number of diagnoses were missed during the pandemic.

Keywords: Asthma Epidemiology; COPD epidemiology; Interstitial Fibrosis.

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Conflict of interest statement

Competing interests: HW reports a grants from NIHR BRC for work conducted in the NHSE SDE. SH reports employment from DataLoch for the submitted work. SS reports grants from Industrial Strategy Challenge Fund, MRC and HDR UK for the submitted work. AS reported grants from HDR UK and ISCF for the submitted work and from asthma and lung UK outside the submitted work. JKQ reports grants from Industrial Strategy Challenge Fund, MRC and HDR UK for the submitted work and from GSK, Evidera, Chiesi and AZ outside the submitted work. SC, HTTE, TB, AKFM, LGH, JB and CK have no conflicts of interest.

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J Allergy Clin Immunol Pract

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. 2025 Apr 6:S2213-2198(25)00310-1.

doi: 10.1016/j.jaip.2025.04.001. Online ahead of print.

[Thunderstorm asthma: current perspectives and emerging trends](#)

[Francis Thien](#)¹, [Janet M Davies](#)², [Jo A Douglass](#)³, [Mark Hew](#)⁴

Affiliations Expand

- PMID: 40199421
- DOI: [10.1016/j.jaip.2025.04.001](https://doi.org/10.1016/j.jaip.2025.04.001)

Abstract

Isolated episodes and epidemic outbreaks of thunderstorm asthma have now been documented for over 40 years, with global geographical reach across Europe, North America, Middle East, Asia, Oceania and Africa. This phenomenon encompasses

specific environmental and meteorological factors, interacting with aeroallergen propagation and exposure in susceptible allergen-sensitized individuals and populations. There is a likely contribution from climate change with prolonged allergenic pollen seasons combined with increased pollen allergenicity, as well as heightened likelihood of extreme weather events. Differential population susceptibility to thunderstorm asthma presentations, hospitalizations and deaths with increased vulnerability of certain ethnic groups suggest a gene-environment interaction. This Clinical Commentary reviews the characteristics and updates the epidemiology of thunderstorm asthma; examines the role of aerobiology and climate change; discusses risk factors for emergency presentations, hospital admissions and deaths; considers latest research and predictors of thunderstorm asthma, and proposes strategies to manage and mitigate risk.

Keywords: Thunderstorm; allergic rhinitis; asthma; climate change; grass pollen; mold.

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Adv Ther

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. 2025 Apr 8.

doi: 10.1007/s12325-025-03175-x. Online ahead of print.

[The Real-World Impact of Glucagon-Like Peptide 1 Receptor Agonists on Asthma Control in People with High-Risk Asthma and Obesity](#)

[Alan Kaplan¹, Heath Heatley², John Townsend², Derek Skinner², Victoria Carter², Richard Hubbard², Tan Tze Lee³, Mariko Siyue Koh⁴, David Price⁵](#)

Affiliations Expand

- PMID: 40198520

- DOI: [10.1007/s12325-025-03175-x](https://doi.org/10.1007/s12325-025-03175-x)

Abstract

To quantify the impact of Glucagon-like peptide1 receptor-agonists (GLP1-RAs) on asthma control, we analysed people with asthma and obesity, using the Optimum Patient Care Research Database (OPCRD). We identified 10,111 GLP1-RA exposed people and 50,555 unexposed controls. The exposed cohort had higher BMI and more uncontrolled asthma [risk domain asthma control (RDAC) and overall asthma control (OAC)]. The exposed cohort lost more weight and had improved asthma control for both RDAC (odds ratio 2.11 95% CI 1.90-2.36) and OAC (OR 2.10, 95%CI 1.81-2.45) scores. GLP1-RA drugs appear to improve asthma control for people with obesity.

Keywords: Asthma; Asthma outcomes; GLP1s; Obesity.

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Conflict of interest statement

Declarations. Conflict of Interest: Alan Kaplan is a member of the advisory board of, or speakers bureau for, ALK, AstraZeneca, Belus, Boehringer Ingelheim, Covis, Eisai, GlaxoSmithKline, Idorsia, Merck Frosst, Moderna, Novo Nordisk, Novartis, Pfizer, Purdue, Sanofi, Teva, Trudel and Valeo. Heath Heatley, John Townend, Derek Skinner, Victoria Carter, and Richard Hubbard are employees of Observational & Pragmatic Research Institute, Singapore. Tan Tze Lee is an advisory Board Member for Boehringer Ingelheim, AstraZeneca, Takeda, GlaxoSmithKline, Merck Sharp & Dohme, Mundipharma, and Janssen. Honoraria were received for these advisory boards. Honoraria were received for speaking at CMEs for AstraZeneca in the past. Conference sponsorships from AstraZeneca, Boehringer Ingelheim, Merck Serono, GlaxoSmithKline, Novartis, Mundipharma and Merck Sharp & Dohme. Research grants from Merck Serono (Concor Study), Merck Sharp & Dohme (Aboard study). Mariko Siyue Koh reports grant support from AstraZeneca, and honoraria for lectures and advisory board meetings paid to her hospital (Singapore General Hospital) from GlaxoSmithKline, AstraZeneca, Novartis, Sanofi, and Boehringer Ingelheim, outside the submitted work. David B. Price has advisory board membership with AstraZeneca, Boehringer Ingelheim, Chiesi, GlaxoSmithKline, Novartis, Viatrix, Teva Pharmaceuticals; consultancy agreements with AstraZeneca, Boehringer Ingelheim, Chiesi, GlaxoSmithKline, Novartis, Viatrix, Teva Pharmaceuticals; grants and unrestricted funding for investigator-initiated studies (conducted through Observational and Pragmatic Research Institute Pte Ltd) from AstraZeneca, Chiesi, Viatrix, Novartis, Regeneron Pharmaceuticals, Sanofi Genzyme, and UK National Health Service; payment for lectures/speaking engagements from AstraZeneca, Boehringer Ingelheim, Chiesi, Cipla, Inside Practice, GlaxoSmithKline, Medscape, Viatrix, Novartis, Regeneron Pharmaceuticals and Sanofi Genzyme, Teva Pharmaceuticals; payment for travel/accommodation/meeting expenses from AstraZeneca, Boehringer Ingelheim, Novartis, Medscape, Teva Pharmaceuticals.; owns 74% of the social enterprise Optimum Patient Care Ltd (Australia and UK) and 92.61% of Observational and Pragmatic Research Institute Pte Ltd (Singapore); is peer reviewer for grant committees of the UK Efficacy and Mechanism Evaluation Programme, and Health Technology Assessment; and he was an expert witness for GlaxoSmithKline. David B. Price is an Editorial Board member of Advances in Therapy. David B Price was

not involved in the selection of peer reviewers for the manuscript nor any of the subsequent editorial decisions. Ethics Approval: The OPCRD is approved by the Health Research Authority for clinical research use and governed by the Anonymized Data Ethics and Protocols Transparency Committee (ADEPT). This study was approved by the ADEPT committee (ADEPT0523) as an independent body of experts and regulators commissioned by the Respiratory Effectiveness Group to govern the standard of research conducted on internationally recognized databases.

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Review

[Monoclonal Antibodies](#)

No authors listed

In: LiverTox: Clinical and Research Information on Drug-Induced Liver Injury [Internet]. Bethesda (MD): National Institute of Diabetes and Digestive and Kidney Diseases; 2012.

2025 Apr 9.

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Excerpt

Monoclonal antibodies are immunoglobulins that have a high degree of specificity (mono-specificity) for an antigen or epitope. Monoclonal antibodies are typically derived from a clonal expansion of antibody producing malignant human plasma cells. The initial monoclonal antibodies were created by fusing spleen cells from an immunized mouse with human or mouse myeloma cells (malignant self-perpetuating antibody producing cells), and selecting out and cloning the hybrid cells (hybridomas) that produced the desired antibody reactivity. These initial monoclonal products were mouse antibodies and were very valuable in laboratory and animal research and diagnostic assays, but were problematic as therapeutic

agents because of immune reactions to the foreign mouse protein. Subsequently, production of chimeric mouse-human monoclonal antibodies and means of further “humanizing” them and producing fully human recombinant monoclonal antibodies were developed. The conventions used in nomenclature of monoclonal antibodies indicate whether they are mouse derived (-omab), chimeric (-ximab), humanized (-zumab) or fully human (-umab).

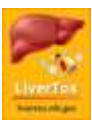
Monoclonal antibodies have broad clinical and experimental medical uses. Many of the initial monoclonal antibodies used in clinical medicine were immunomodulatory agents with activity against specific immune cells, such as CD4 or CD3 lymphocytes, which are important in the pathogenesis of rejection after solid organ transplantation. Subsequently, monoclonal antibodies were prepared against specific cytokines (anti-cytokines), which were believed to play a role in cell and tissue damage in immunologically mediated diseases such as rheumatoid arthritis, ankylosing spondylitis, inflammatory bowel disease, multiple sclerosis and psoriasis, among others. In addition, therapeutic monoclonal antibodies were developed, aimed at blocking or inhibiting the activity of specific enzymes, cell surface transporters or signaling molecules and have been used in cancer chemotherapy and to treat severe viral infections. Use of monoclonal antibodies is currently broadening to therapy of other severe, nonmalignant conditions including asthma, atopic dermatitis, migraine headaches, hypercholesterolemia, osteoporosis, bacterial diseases (such as anthrax) and viral infections (such as COVID-19). Thus, the therapeutic monoclonal antibodies do not fall into a single class and have broad therapeutic uses. As of 2022, more than 80 therapeutic monoclonal antibodies have been approved for use in the United States.

Monoclonal antibodies are generally well tolerated. Because they are large proteins (typically 150-200,000 daltons in size) they require parenteral, often intravenous, administration. Circulating proteins are metabolized by many cells, but particularly by hepatocytes. Proteins undergo hepatic uptake by endocytosis and are either degraded or recycled to the cell surface for secretion. The hepatic metabolism of antibodies often determines their half-life. Proteins are broken down by cellular proteases into small peptides and amino acids that can be used to synthesize other proteins. Metabolism of proteins does not generate toxic intermediates and, therefore, monoclonal antibodies are unlikely to induce drug induced liver injury via production of toxic metabolites. On the other hand, the peptides that are generated by the metabolism of the exogenously administered protein may ultimately be presented as foreign epitopes and generate an immune response. In addition, the primary effect of the monoclonal antibody may generate a response, either immune or otherwise, that leads to an immune mediated hepatic injury. Finally, monoclonal antibodies that suppress the immune system may cause reactivation of latent infections, including tuberculosis, herpes simplex, varicella zoster (shingles) and hepatitis B.

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Multidiscip Respir Med

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. 2025 Apr 8:20.

doi: 10.5826/mrm.2025.1006.

[The role of Fraction Exhaled Nitric Oxide \(FeNO\) in asthma management: an Italian consensus statement on clinical and economic aspects](#)

[Matteo Bonini](#)¹, [Rosa Annibale](#)², [Simona Barbaglia](#)³, [Marco Bo](#)⁴, [Federica Capano](#)⁴, [Mariagrazia Celeste](#)⁵, [Pasquale Di Girolamo Faraone](#)², [Sabrina Ferri](#)⁵, [Carlotta Galeone](#)⁶, [Mario Picozza](#)⁷, [Umberto Restelli](#)⁸, [Sofia Silvola](#)⁸, [Fabio Luigi Massimo Ricciardolo](#)⁹

Affiliations Expand

- PMID: 40197695
- DOI: [10.5826/mrm.2025.1006](#)

Abstract

Background: Chronic respiratory diseases cause significant global morbidity and mortality, with asthma being a major contributor. Globally, 461,000 asthma-related deaths and a prevalence of 262 million subjects were estimated in 2019. The objective of this paper is to summarize experts' opinions in the field of asthma to produce evidence on the clinical and economic impact of FeNO test in asthma management, as well as on its standard operational procedures.

Methods: The analysis conducted is based on a literature review of the FeNO test's role in asthma, focusing on its clinical and economic impact, strengths and limitations. Insights were gathered through interviews with ten Key Opinion Leaders in asthma management from various Italian regions. Their thoughts were summarized into key-messages and discussed in a joint meeting. A final document

consolidating these discussions was outlined and approved by the experts involved.

Results: The FeNO test is crucial in the clinical management of asthma, aiding in phenotypic classification and guiding therapeutic decisions, particularly in severe cases. The value of FeNO assessment is supported by extensive literature evidence and recommended by international guidelines. Moreover, published economic analyses highlight the sustainability of the initial investment in FeNO technology thanks to a reduction of short-term medical costs for National Health Services by decreasing hospital admissions, specialist visits, and exacerbations related to asthma management. The test should be conducted at the first visit at the asthma centre and then regularly during follow-ups to monitor therapy adherence, adjust treatments, and predict response to drugs. FeNO testing facilitates early detection of bronchial inflammation, shortening the time for patients to access appropriate therapy. Despite its ease of use, interpreting the results requires specialist oversight due to potential confounding factors.

Conclusions: FeNO testing significantly improves asthma management by aiding in phenotyping, therapeutic strategy formulation, and monitoring. It enhances disease control, accelerates patient care, and offers economic benefits by reducing hospital admissions and treatment needs. However, practical and economic barriers can limit its adoption. Standardized test execution and result interpretation by specialists are essential for accurate patient management. The inclusion of FeNO assessment among exempt services for asthma patients would at last promote its equitable access.

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Observational Study

Hum Vaccin Immunother

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. 2025 Dec;21(1):2488557.

doi: 10.1080/21645515.2025.2488557. Epub 2025 Apr 6.

[Drug survival of omalizumab in atopic asthma: Impact of clinical and genetic variables](#)

[Susana Rojo-Tolosa](#)^{1,2,3}, [Alberto Caballero-Vázquez](#)^{1,3}, [Laura E Pineda-Lancheros](#)^{3,4}, [José A Sánchez-Martínez](#)¹, [María V González-Gutiérrez](#)¹, [Gonzalo Jiménez-Gálvez](#)¹, [Alberto Jiménez-Morales](#)^{2,3}, [Concepción Morales-García](#)^{1,3}

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- PMID: 40189906
- DOI: [10.1080/21645515.2025.2488557](https://doi.org/10.1080/21645515.2025.2488557)

Free article

Abstract

It is estimated that 40-50% of severe asthma has an atopic basis, representing a clinical challenge and a significant economic burden for healthcare systems. The most effective treatment has emerged with the use of biologic therapies such as omalizumab; however, the rate of therapy switching due to loss of efficacy is high, which has a negative impact on the healthcare system. The aim was to evaluate the influence of genetic polymorphisms as predictors of omalizumab survival. We conducted a retrospective observational cohort study of 110 patients with uncontrolled severe allergic asthma treated with omalizumab in a tertiary hospital. We analyzed *FCER1A* (rs2251746, rs2427837), *FCER1B* (rs1441586, rs573790, rs1054485, rs569108), *C3* (rs2230199), *FCGR2A* (rs1801274), *FCGR2B* (rs3219018, rs1050501), *FCGR3A* (rs10127939, rs396991), *IL1RL1* (rs1420101, rs17026974, rs1921622) and *GATA2* (rs4857855) by real-time PCR using Taqman probes. Drug survival was defined as the time from initiation to discontinuation of omalizumab. Cox regression analysis adjusted for the presence of respiratory disease, GERD, SAHS and years with asthma showed that the SNPs *FCER1B* rs573790 - CT ($p < .001$; HR = 3.38; CI95% = 1.66-6.87), *FCGR3A* rs10127939-AC ($p = .018$; HR = 3.85; CI95% = 1.25-11.81) and *FCGR3A* rs396991-CC ($p = .020$; HR = 2.23; CI95% = 1.14-4.38) were the independent variables associated with worse survival in patients diagnosed with asthma. A trend toward statistical significance was also found between and *FCGR3A* rs10127939-CC ($p = .080$; HR = 0.13; CI95% = 0.01-1.28) and longer drug survival. The results of this study demonstrate the potential influence of the polymorphisms studied on omalizumab survival and the clinical benefit that could be achieved by defining predictive biomarkers of drug survival.

Keywords: Atopic asthma; drug survival; omalizumab.

Supplementary info

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. 2025 Apr 6:1942602X251328333.

doi: 10.1177/1942602X251328333. Online ahead of print.

[Evidence to Practice: As-Needed Inhaled Corticosteroid Therapy for Asthma Control](#)

[Ann O Nichols](#)¹, [Lynne P Meadows](#)², [Deborah D'Souza-Vazirani](#)¹

Affiliations Expand

- PMID: 40189837
- DOI: [10.1177/1942602X251328333](https://doi.org/10.1177/1942602X251328333)

Abstract

School nurses support students living with asthma through care coordination activities that reflect current asthma guidelines. Staying abreast of new and beneficial approaches that may improve asthma management and decrease student absences can be challenging due to time constraints and ingrained treatment practices. As a tool for school nurses, this article reviews the results of the Patient-Centered Outcomes Research Institute study on the use of symptom-based corticosteroid therapy for students with mild, persistent asthma and includes the NASN Implementation Guidance for School Nurses. Families who experience barriers to daily use of asthma controller therapy may benefit when this change in care is appropriate for their student.

Keywords: access to care; asthma; care coordination; collaborative communication; evidence-based practice; inhalers; parent/family; school nurses; social determinants of health.

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J Allergy Clin Immunol

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. 2025 Apr 4:S0091-6749(25)00370-7.

doi: 10.1016/j.jaci.2025.03.020. Online ahead of print.

[Early-Life Wheeze Trajectories Are Associated with Distinct Asthma Transcriptomes Later in Life](#)

[Kieran J Phelan](#)¹, [Krishna M Roskin](#)², [Jeffrey W Burkle](#)³, [Wan-Chi Chang](#)³, [Lisa J Martin](#)⁴, [Jocelyn M Biagini](#)⁵, [Latha Satish](#)³, [David B Haslam](#)⁶, [Daniel Spagna](#)³, [Seth Jenkins](#)³, [Elsie Parmar](#)³, [Leonard B Bacharier](#)⁷, [Tebeb Gebretsadik](#)⁸, [Michelle Gill](#)⁹, [Diane R Gold](#)¹⁰, [Daniel J Jackson](#)¹¹, [Christine C Johnson](#)¹², [Susan V Lynch](#)¹³, [Kathryn E McCauley](#)¹³, [Chris G McKennan](#)¹⁴, [Rachel Miller](#)¹⁵, [Carole Ober](#)¹⁶, [Dennis R Ownby](#)¹⁷, [Patrick H Ryan](#)¹⁸, [Nathan Schoettler](#)¹⁹, [Sweta Singh](#)²⁰, [Cynthia M Visness](#)²¹, [Matthew C Altman](#)²², [James E Gern](#)¹¹, [Gurjit K Khurana Hershey](#)²³; [Environmental Influences on Child Health Outcomes—Children’s Respiratory and Environmental Workgroup](#)

Affiliations Expand

- PMID: 40189159
- DOI: [10.1016/j.jaci.2025.03.020](https://doi.org/10.1016/j.jaci.2025.03.020)

Abstract

Rationale: Early childhood wheeze is characterized by heterogeneous trajectories having differential associations with later life asthma development.

Methods: The Children's Respiratory Environmental Workgroup (CREW) is a collective of 12 birth cohorts, 7 of which conducted an additional visit with a nasal lavage collected and subjected to bulk RNA-sequencing. Early-life wheeze trajectories were defined using latent class analysis of longitudinal early-life wheezing data. Weighted gene correlation network analysis was utilized to associate gene expression patterns and current asthma with early-life wheeze trajectories.

Results: We investigated 743 children (mean [SD] age 17 [5.1] years, 360 [48.5%] male). Four patterns of early life wheeze were identified: infrequent, transient, late-onset, persistent. Early life transient wheeze was associated with gene expression patterns related to increased antiviral response and late-onset wheeze was

associated with decreased insulin signaling and glucose metabolism. Early-life persistent wheeze was associated with gene expression modules of type 2 inflammation and epithelial development, but these modules did not distinguish those with current asthma. Children who had persistent wheeze in early life and current asthma displayed a unique increase in expression of genes enriched for neuronal processes and ciliated epithelial function compared to those without asthma.

Conclusions: Early-life longitudinal wheeze trajectories are associated with specific asthma transcriptomes later in life. These data suggest early-life asthma prevention strategies may be most beneficial when tailored to the specific wheeze pattern.

Keywords: asthma; pediatrics; transcriptomics; wheeze.

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Respir Investig

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. 2025 Apr 4;63(3):444-452.

doi: 10.1016/j.resinv.2025.03.007. Online ahead of print.

[Long-term, real-world effectiveness of biologics for severe uncontrolled asthma: The PROSPECT study](#)

[Kazuhiisa Asai](#)¹, [Takashi Iwanaga](#)², [Mai Takahashi](#)³, [Masahiro Eda](#)³, [Takehiro Hirai](#)³, [Tadataka Yabuta](#)⁴, [Naoyuki Makita](#)⁴, [Yuji Tohda](#)⁵

Affiliations Expand

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- DOI: [10.1016/j.resinv.2025.03.007](https://doi.org/10.1016/j.resinv.2025.03.007)

Free article

Abstract

Background: Several biologics (BIOs) are available to treat severe uncontrolled asthma. However, there are limited data regarding their long-term effectiveness in real-world clinical practice. We investigated the long-term, over 24 months, effectiveness of initiating a BIO in patients with severe uncontrolled asthma deemed candidates for BIO therapy.

Methods: PROSPECT was a multicenter observational cohort study that enrolled patients with severe uncontrolled asthma in Japan. We divided the patients into two groups according to whether they did (BIO group) or did not (non-BIO group) initiate a BIO within 12 weeks of enrollment. The BIO (omalizumab, mepolizumab, benralizumab, and dupilumab) was chosen at the physician's discretion considering the patient's asthma phenotype.

Results: Of 306 patients enrolled, 285 were included in the full analysis set (BIO group: n = 125; non-BIO group: n = 160). The adjusted least-squares mean change in post-bronchodilator forced expiratory volume in 1 s at 24 months was 0.17 L (95% confidence interval [CI]: 0.11 to 0.23) and 0.04 L (95% CI: -0.02 to 0.10) in the BIO and non-BIO groups, respectively (adjusted difference: 0.13 L; 95% CI: 0.04 to 0.21, P = 0.004). The changes from baseline to 6, 12, and 18 months were significantly greater in the BIO group. Reduction in asthma exacerbations, improvement in 5-item Asthma Control Questionnaire scores, decreased daily oral corticosteroid doses, and higher oral corticosteroid withdrawal rate were observed in the BIO group.

Conclusions: Initiation of a BIO was associated with significant improvements in long-term lung function and asthma control among patients with severe uncontrolled asthma in real-world clinical practice.

Trial registration: University Hospital Medical Information Network clinical trials registry (Japan), UMIN000038006. First registered: September 13, 2019.

Keywords: Biologics; Clinical practice; Effectiveness; Real-world; Severe asthma.

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Conflict of interest statement

Declaration of competing interest K. Asai has received honoraria from AstraZeneca, GlaxoSmithKline, and Boehringer Ingelheim. T. Iwanaga has received honoraria from Kyorin, GlaxoSmithKline, AstraZeneca, Boehringer Ingelheim, Novartis, and Sanofi. M. Takahashi, M. Eda, T. Hirai, T. Yabuta, and N. Makita are employees of AstraZeneca. Y. Tohda has received honoraria from AstraZeneca, Kyorin, Boehringer Ingelheim, Sanofi, GlaxoSmithKline, Daiichi Sankyo, Novartis, and Meiji Seika Pharma; and subsidies/donations to the institution from Boehringer Ingelheim, Kyorin, and Taiho.

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Eur J Pharm Sci

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. 2025 Apr 2:209:107093.

doi: 10.1016/j.ejps.2025.107093. Online ahead of print.

[Assessment of ventilation heterogeneity and particle deposition in asthmatics using combined SPECT/CT imaging and computational modeling approaches](#)

[Xuan Zhang¹](#), [Prathish K Rajaraman¹](#), [Frank Li²](#), [Sanghun Choi³](#), [Alejandro P Comellas⁴](#), [Eric A Hoffman⁵](#), [Sean B Fain⁶](#), [David W Kaczka⁷](#), [Benjamin M Smith⁸](#), [Jiwoong Choi⁹](#), [Mario Castro⁹](#), [Sally E Wenzel¹⁰](#), [Nizar N Jarjour¹¹](#), [Mark L Schiebler¹¹](#), [Elliot Israel¹²](#), [Bruce D Levy¹²](#), [John V Fahy¹³](#), [Serpil C Erzurum¹⁴](#), [Andrew Babiskin¹⁵](#), [Minori Kinjo¹⁶](#), [Ross Walenga¹⁶](#), [Ching-Long Lin¹⁷](#)

Affiliations Expand

- PMID: 40185289
- DOI: [10.1016/j.ejps.2025.107093](#)

Free article

Abstract

Purpose: This study investigated asthma phenotypes and their associations with ventilation heterogeneity and particle deposition by utilizing Single-Photon Emission Computed Tomography (SPECT) imaging, quantitative Computed Tomography (qCT) imaging-based subgrouping, and a whole-lung computational model.

Materials and methods: Two datasets were analyzed: one from a combined SPECT and CT (SPECT/CT) study with six asthmatic subjects, and another from the Severe Asthma Research Program (SARP) with 209 asthmatic subjects. Data from 35 previously acquired healthy subjects served as a control group. Each subject underwent CT scans at full inspiration and expiration, along with pulmonary function testing (PFT). The SPECT/CT study included ventilation SPECT imaging. Key qCT variables such as airway diameter, wall thickness, percentage of air trapping (AirT%), and percentage of small airway disease (fSAD%) were assessed. A subject-specific whole-lung computational fluid and particle dynamics (CFPD) model predicted airway resistance, particle deposition fraction, and the coefficient of variation (CV) for ventilation heterogeneity. Subjects were categorized into four

predefined asthma imaging subgroups/clusters with increasing severity (C1-C4). CFPD-predicted CVs were validated against SPECT measurements. We compared PFT, qCT, and CFPD variables across SARP clusters and analyzed particle deposition fractions in large conducting, small conducting, and respiratory airways.

Results: Cluster C4 exhibited a significantly distinct ventilation profile compared to other clusters and health controls. This distinction contrasted with the insignificant differences between ventilation profiles in severity subgroups defined by conventional spirometry-based guidelines. Airway resistance varied significantly across the asthma clusters. Although both C3 and C4 clusters represented severe asthma, only C4 showed a significant increase in AirT%, primarily due to fSAD%. Since inflammatory phenotypes differ - C3 with wall thickening in large and small conducting airways, and C4 with elevated fSAD% and Emph% in small conducting and respiratory airways - fine particles (~5 µm) and ultrafine particles (~1 µm) are more effective at reaching the respective regions in C3 and C4. Given that C2 and C4 have hyper-responsive phenotypes with narrowed conducting airways, fine particles are more effective in reaching these areas. Airway enlargement in targeted segments of the left lower lobe resulted in improved particle deposition.

Conclusion: Our cluster-informed CFPD-based approach enhances the understanding of ventilation heterogeneity in asthma and holds potential for refining strategies for inhalational therapies.

Keywords: Asthma; CFPD; CT; Clusters; Particle deposition; SPECT; Ventilation heterogeneity.

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Review

Clin Med (Lond)

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. 2025 Apr 2:100305.

doi: 10.1016/j.clinme.2025.100305. Online ahead of print.

[Occupational lung disease: what the general physician needs to know](#)

[Dr Patrick Howlett](#)¹, [Professor Joanna Szram](#)², [Dr Johanna Feary](#)³

Affiliations Expand

- PMID: 40185239
- DOI: [10.1016/j.clinme.2025.100305](#)

Free article

Abstract

Occupational exposures are a common and preventable cause of lung disease. About 1 in 6 cases of COPD and asthma worldwide are related to work. Early recognition of occupational lung disease improves outcomes. Doctors should ask about work history in patients with respiratory symptoms. This educational review article briefly outlines key clinical features, relevant to the general physician, of common occupational lung diseases seen in the UK. These conditions include work-related asthma, pneumoconioses, hypersensitivity pneumonitis and COPD. Referral to a specialist is recommended when an occupational cause is suspected. Most occupational lung diseases are preventable with adequate workplace safety measures and early medical attention.

Keywords: Occupation; lung.

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Conflict of interest statement

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

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. 2025 Apr 2:S2213-2198(25)00298-3.

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[Head-to-head effectiveness comparison of biological therapies in patients with mixed eosinophilic and allergic severe asthma](#)

[Jorge Sánchez](#)¹, [Leidy Alvarez](#)², [Ana-Lorena Caraballo](#)³, [Luis-Carlos Santamaria](#)³, [Ana-Milena Acevedo](#)⁴, [Ana Calle](#)³, [Margarita Olivares](#)⁵

Affiliations Expand

- PMID: 40185202
- DOI: [10.1016/j.jaip.2025.03.035](#)

Abstract

Background: Studies comparing biological therapies for severe asthma usually have a selection bias considering that some of these therapies are indicated for allergic asthma and others for eosinophilic asthma. Severe mixed asthma (SMA) was considered in patients with both allergic and eosinophilic (mixed) severe asthma. In SMA, dupilumab, omalizumab, mepolizumab, and benralizumab, can be used. Currently there are no head-to-head studies comparing the clinical response of biological therapies in this group of patients.

Objective: To compare the effectiveness of four biological therapies in SMA.

Methods: Prospective study with one year of follow-up. Severe asthma patients with markers for allergic asthma (total IgE >100IU/L and sIgE to aeroallergens) and eosinophilic asthma (Eosinophils >150 cells/ml) were recruited. Sociodemographic and clinical characteristics were evaluated at baseline to assess significant differences between groups. The primary outcome was the proportion of patients achieving > 20 points in the Asthma Control Test (ACT), and as secondary outcomes we evaluated the number of severe exacerbations of asthma per year and change in FEV1.

Results: A total of 133 patients participated in the study (dupilumab n=43, omalizumab=32, mepolizumab=32, benralizumab=26). At baseline, the groups did not have significant differences in sociodemographic or clinical characteristics. After one year with biological therapies, the four groups presented a significant improvement in clinical outcomes with few between groups differences. There was no difference for the main outcome (ACT) in the four groups. Dupilumab and mepolizumab demonstrated a higher interval improvement in FEV1 than omalizumab. Dupilumab users had the highest proportion of patients who achieved

a 200 ml improvement in FEV1 over omalizumab and benralizumab. The greatest adherence was observed among benralizumab users.

Conclusion: In SMA the four biological therapies offer similar symptom control according to ACT but there are some differences according to FEV1 and adherence. Therefore, the selection of these therapies in SMA must be based on particular aspects of each patient.

Keywords: Allergy; Asthma; Benralizumab; Biologic; Dupilumab; Eosinophilic; Immunoglobulin E; Mepolizumab; Omalizumab; Rhinosinusitis.

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Ann Am Thorac Soc

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doi: 10.1513/AnnalsATS.202410-1115RL. Online ahead of print.

[A Strategy to Reduce Out-of-User-Life Utilization and Waste of Expired Budesonide-Formoterol pMDI Inhalers in Mild Asthma](#)

[Kevin R Stein](#)¹, [Eliot Jost](#)², [Abigail R Barker](#)³, [Suzanne M Simkovich](#)⁴, [Charles W Goss](#)⁵, [Mansi Agarwal](#)⁶, [Mark D Huffman](#)⁷, [Kaharu Sumino](#)⁸, [Roy Pleasents](#)^{9,10}, [Mario Castro](#)¹¹, [Helen K Reddel](#)¹², [James G Krings](#)¹³

Affiliations Expand

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- DOI: [10.1513/AnnalsATS.202410-1115RL](https://doi.org/10.1513/AnnalsATS.202410-1115RL)

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Editorial

Eur Respir J

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. 2025 Apr 3;65(4):2500044.

doi: 10.1183/13993003.00044-2025. Print 2025 Apr.

[Who really responds to asthma biologics? The clue lies in the journey before treatment](#)

[Freda Yang](#)¹, [Apostolos Bossios](#)^{2 3 4}

Affiliations Expand

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No abstract available

Conflict of interest statement

Conflict of interest: F. Yang reports payment or honoraria for lectures, presentations, manuscript writing or educational events from GSK and AstraZeneca, support for attending meetings from AstraZeneca, and is a member of the British Thoracic Society Asthma Specialist Advisory Group. A. Bossios reports grants from AstraZeneca, payment or honoraria for lectures, presentations, manuscript writing or educational events from Chiesi, GSK and AstraZeneca, and leadership roles with European Respiratory Society as Head of Assembly 5 (Airway diseases, asthma, COPD, and chronic cough), co-chair of the Nordic severe asthma network, member of the steering committee of SHARP, the ERS severe asthma Clinical Research Collaboration, and is a member of the steering committee of the Swedish National Airway Register.

Comment on

- [Pre-biologic disease trajectories are associated with morbidity burden and biologic treatment response in severe asthma.](#)

Soendergaard MB, Hjortdahl F, Hansen S, Bjerrum AS, von Bülow A, Hilberg O, Bonnesen Bertelsen B, Johnsen CR, Lock-Johansson S, Vijdea R, Rasmussen LM, Schmid JM, Ulrik CS, Porsbjerg C, Håkansson KEJ. Eur Respir J. 2025 Apr 3;65(4):2401497. doi: 10.1183/13993003.01497-2024. Print 2025 Apr. PMID: 39788633 Free PMC article.

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Published Erratum

Allergy

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. 2025 Apr 3.

doi: 10.1111/all.16541. Online ahead of print.

[Correction to: D.J. Jackson, M.E. Wechsler, G. Brusselle, R. Buhl. Targeting the IL-5 pathway in eosinophilic asthma: A comparison of anti-IL-5 versus anti-IL-5 receptor agents. Allergy 2024;1-10. <https://doi.org/10.1111/all.16346>](#)

No authors listed

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- DOI: [10.1111/all.16541](https://doi.org/10.1111/all.16541)

No abstract available

Erratum for

- [Targeting the IL-5 pathway in eosinophilic asthma: A comparison of anti-IL-5 versus anti-IL-5 receptor agents.](#)

Jackson DJ, Wechsler ME, Brusselle G, Buhl R. Allergy. 2024 Nov;79(11):2943-2952. doi: 10.1111/all.16346. Epub 2024 Oct 12. PMID: 39396109 Review.

Supplementary info

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Review

Eur Respir Rev

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. 2025 Apr 2;34(176):240182.

doi: 10.1183/16000617.0182-2024. Print 2025 Apr.

[Con: clinical remission in asthma - not yet there](#)

[Lauren Eggert](#)¹, [Sarah Rhoads](#)², [Michael E Wechsler](#)³, [Praveen Akuthota](#)⁴

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- PMID: 40174952
- PMCID: [PMC11963205](#)
- DOI: [10.1183/16000617.0182-2024](#)

Abstract

The ideal definition of asthma remission should be practical, measurable and meaningful for both patients and physicians, while also representing true disease modification. Unfortunately, current proposals to define asthma remission fall short of this standard, not for lack of careful consideration, but due to the challenges presented by asthma, including but not limited to variability in symptom perception, intrinsic variability in lung function, seasonality and the impact of comorbidities. This article discusses obstacles and challenges to developing a widely adopted, consensus definition of asthma remission. We searched the literature for keywords including "asthma", "remission" and "super-responder" and identified interventional trials in asthma that highlight the challenges inherent in defining asthma remission.

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Conflict of interest statement

Conflict of interest: L. Eggert declares consulting fees from AstraZeneca, Sanofi and GSK, and honoraria from Sanofi. S. Rhoads has nothing to disclose. M.E. Wechsler declares consulting fees from Amgen, AstraZeneca, Avalo Therapeutics, Boehringer Ingelheim, Celldex, Cerecor, Eli Lilly, GlaxoSmithKline, Merck, Novartis, Om Pharma, Rapt Therapeutics, Regeneron, Roche/Genentech, Sanofi/Genzyme and Upstream Bio, and honoraria from Sanofi/Genzyme, Avalo Therapeutics, Cytoreason, Incyte, Regeneron and Tetherex Pharmaceuticals. P. Akuthota declares consulting fees from AstraZeneca, GlaxoSmithKline, Connect Biopharma and Sanofi/Genzyme, and honoraria from AstraZeneca and Sanofi/Genzyme.

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Thorax

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. 2025 Apr 2:thorax-2024-221825.

doi: 10.1136/thorax-2024-221825. Online ahead of print.

[Use of inhaled corticosteroids in bronchiectasis: data from the European Bronchiectasis Registry \(EMBARC\)](#)

[Jennifer Pollock](#)¹, [Eva Polverino](#)^{2,3}, [Raja Dhar](#)⁴, [Katerina Dimakou](#)⁵, [Letizia Traversi](#)⁶, [Apostolos Bossios](#)⁷, [Charles Haworth](#)⁸, [Michael R Loebinger](#)^{9,10}, [Anthony De Soyza](#)¹¹, [Montserrat Vendrell](#)¹², [Pierre Regis Burgel](#)¹³, [Pontus Mertsch](#)¹⁴, [Melissa Jane McDonnell](#)¹⁵, [Sabina Skgrat](#)¹⁶, [Luis Maiz-Carro](#)¹⁷, [Oriol Sibila](#)^{18,19}, [Menno van der Eerden](#)²⁰, [Paula Kauppi](#)²¹, [Adam T Hill](#)²², [Robert Wilson](#)²³, [Branislava Milenkovic](#)²⁴, [Rosario Menéndez](#)²⁵, [Marlene Murriss](#)²⁶, [Megan L Crichton](#)²⁷, [Sermin Borecki](#)²⁸, [Dusanka Obradovic](#)²⁹, [Muhammed Irfan](#)³⁰, [Venera Eshenkulova](#)³¹, [Adam Nowinski](#)³², [Adelina Amorim](#)^{33,34}, [Antoni Torres](#)^{35,36}, [Natalie Lorent](#)³⁷, [Tobias Welte](#)³⁸, [Francesco Blasi](#)³⁹, [Eva Van Braeckel](#)^{40,41}, [Josje Altenburg](#)⁴², [Michal Shteinberg](#)^{43,44}, [Wim Boersma](#)⁴⁵, [Joseph Stuart Elborn](#)⁴⁶, [Stefano Aliberti](#)^{47,48}, [Felix C Ringshausen](#)⁴⁹, [Pieter Goeminne](#)⁵⁰, [James D Chalmers](#)⁵¹

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Free article

Abstract

Introduction: Current bronchiectasis guidelines advise against the use of inhaled corticosteroids (ICS) except in patients with associated asthma, allergic bronchopulmonary aspergillosis (ABPA) and/or chronic obstructive pulmonary disease (COPD). This study aimed to describe the use of ICS in patients with bronchiectasis across Europe.

Methods: Patients with bronchiectasis were enrolled into the European Bronchiectasis Registry from 2015 to 2022. Patients were grouped into ICS users and non-users at baseline and clinical characteristics associated with ICS use were investigated. Patients were followed up for clinical outcomes of exacerbation, hospitalisation and mortality for up to 5 years. We evaluated if elevated blood eosinophil counts (above the laboratory upper limit of normal) modified the effect of ICS on exacerbations.

Results: 19 324 patients were included for analysis and 10 109 (52.3%) were recorded as being prescribed ICS at baseline. After exclusion of patients with a history of asthma, COPD and/or ABPA, 3174/9715 (32.7%) patients with bronchiectasis were prescribed ICS. Frequency of ICS use varied across countries, ranging from 17% to 85% of included patients. ICS users had more severe disease, with significantly worse lung function, higher Bronchiectasis Severity Index scores and more frequent exacerbations at baseline ($p < 0.0001$). Overall, ICS users did not have a reduced risk of exacerbation or hospitalisation during follow-up, but a significant reduction in exacerbation frequency was observed in the subgroup of

ICS users with elevated blood eosinophil counts (relative risk 0.70, 95% CI 0.59 to 0.84, $p < 0.001$).

Conclusion: ICS use is common in bronchiectasis, including in those not currently recommended ICS according to bronchiectasis guidelines. ICS use may be associated with reduced exacerbation frequency in patients with elevated blood eosinophils.

Keywords: bronchiectasis.

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. 2025 Apr 3:2402391.

doi: 10.1183/13993003.02391-2024. Online ahead of print.

[Phenotyping the Responses to Systemic Corticosteroids in the Management of Asthma Attacks \(PRISMA\)](#)

[Carlos Celis-Preciado](#)^{1,2}, [Simon Leclerc](#)^{1,3}, [Martine Duval](#)¹, [Dominic O Cliche](#)¹, [Lucie Brazeau](#)¹, [Félix-Antoine Vézina](#)¹, [Marylène Dussault](#)³, [Pierre Larivée](#)¹, [Samuel Lemaire-Paquette](#)³, [Simon Lévesque](#)¹, [Philippe Lachapelle](#)¹, [Simon Couillard](#)⁴

Affiliations Expand

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Free article

Abstract

Background: Asthma attacks are heterogeneous. It is not known whether the response to oral corticosteroids (OCS) in acute asthma varies according to type-2 (T2) inflammatory biomarkers, blood eosinophil count (BEC) and exhaled nitric oxide (FeNO). We aim to explore the relationship between T2 biomarkers and response to OCS in acute asthma.

Methods: We conducted a longitudinal observational study of people experiencing an asthma attack evaluated before and after a 7-day OCS course. The primary outcome was post-bronchodilator (BD) FEV₁ change according to ordinal BEC-FeNO 3-group categories (T2-Low/Low, BEC <0.15×10⁹ cells·L⁻¹ and FeNO <25 ppb; T2-High/High, BEC ≥0.30×10⁹ cells·L⁻¹ and FeNO ≥35 ppb and T2-Mid, not meeting Low/Low-High/High criteria). A key secondary outcome was the Asthma Control Questionnaire (ACQ-5) change. Exploratory outcomes included OCS-attributable adverse events.

Results: Fifty-three people were enrolled with 16 (30%) T2-Low/Low, 27 (51%) T2-Mid and 10 (19%) T2-High/High asthma attacks. Post-BD FEV₁ changes increased with combined BEC-FeNO elevation (p-for-interaction=0.007), peaking in the T2-High/High phenotype (0.390±0.512L, p-for-trend<0.0001). Conversely, T2-Low/Low attacked achieved nonsignificant FEV₁ changes (0.017±0.153L). In univariable and multivariable analyses, only ordinal BEC-FeNO stratification - not symptoms nor FEV₁ - was a predictor of subsequent post-BD FEV₁ improvement. All patients improved ACQ-5, numerically peaking in the T2-High/High phenotype (-1.58±0.60, p-for-trend=0.08). All groups experienced similar OCS-attributable adverse events, with n=33 (62%) participants reporting ≥1 event.

Conclusions: We found that objective improvement following OCS is confined to T2-High/High events. As in chronic asthma, greater T2 burden identifies a distinct clinical and therapeutic trajectory, whereas OCS-related adverse events are uniformly distributed.

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[Pre-biologic disease trajectories are associated with morbidity burden and biologic treatment response in severe asthma](#)

[Marianne Baastrup Soendergaard](#)^{1,2}, [Frederikke Hjortdahl](#)^{1,2}, [Susanne Hansen](#)¹, [Anne-Sofie Bjerrum](#)³, [Anna von Bülow](#)¹, [Ole Hilberg](#)⁴, [Barbara Bonnesen Bertelsen](#)⁵, [Claus Rikard Johnsen](#)⁶, [Sofie Lock-Johansson](#)⁷, [Roxana Viidea](#)⁸, [Linda Makowska Rasmussen](#)⁶, [Johannes Martin Schmid](#)³, [Charlotte Suppli Ulrik](#)⁹, [Celeste Porsbjerg](#)¹, [Kjell Erik Julius Håkansson](#)¹⁰

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- PMID: 39788633
- PMCID: [PMC11965958](#)
- DOI: [10.1183/13993003.01497-2024](#)

Abstract

Background: Biologics can induce remission in some patients with severe asthma; however, little is known about pre-biologic disease trajectories and their association with outcomes from biological treatment. We aimed to identify long-term trajectories of disease progression in patients initiating biologics and investigate trajectory associations with disease burden and impact on biologic therapy efficacy.

Methods: Patients in the Danish Severe Asthma Register initiating biologic therapy between 2016 and 2022 were included and followed retrospectively in prescription

databases starting 1995. We performed sequence analysis for inhaled corticosteroid treatment intensity over time combined with unsupervised trajectory clustering.

Results: In total, 755 patients were included and three pre-biologic disease trajectories were identified: "Chronic severe asthma" (26%), "Gradual onset severe asthma" (35%) and "Recent, sudden onset severe asthma" (39%). "Chronic severe asthma" patients were older, had the longest disease duration (35 years), the most impaired pulmonary function, the highest comorbidity prevalence and the lowest employment rate. "Recent, sudden onset severe asthma" patients were younger, had shorter disease duration (5 years), more tobacco exposure and the least impaired lung function. "Gradual onset severe asthma" patients had an intermediate burden of disease. The "Chronic severe asthma" cluster demonstrated the lowest prevalence of remission (17%) compared to the "Gradual onset severe asthma" (29%) and "Recent, sudden onset severe asthma" (32%) clusters.

Conclusions: Three pre-biologic disease trajectories were identified, with increased disease duration and activity associating with asthma and comorbidity burden. Early intervention may be key to prevent irreversible adverse outcomes for patients with severe asthma.

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Comment in

- [Who really responds to asthma biologics? The clue lies in the journey before treatment.](#)

Yang F, Bossios A. Eur Respir J. 2025 Apr 3;65(4):2500044. doi: 10.1183/13993003.00044-2025. Print 2025 Apr. PMID: 40180360 No abstract available.

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

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Review

Med Clin (Barc)

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. 2025 Apr 10;164(11):106916.

doi: 10.1016/j.medcli.2025.106916. Online ahead of print.

[Allergic rhinitis](#)

[Article in English, Spanish]

[Victoria Cardona](#)¹, [Arnau Salvany-Pijuan](#)², [Javier Pereira-González](#)²

Affiliations Expand

- PMID: 40215921
- DOI: [10.1016/j.medcli.2025.106916](#)

Abstract

Allergic rhinitis is an inflammation of the nasal mucosa caused by immunoglobulin E, presenting with symptoms such as sneezing, nasal itching, congestion, and rhinorrhea. It is often associated with conjunctivitis and asthma, significantly impacting quality of life. An integrated care approach is recommended, spanning from pharmacy and primary care to specialized care for severe or poorly controlled cases. Treatment includes avoiding allergens and using medications like antihistamines and intranasal corticosteroids. Combinations of these medications in a single intranasal spray have shown greater efficacy. In severe cases, immunotherapy is effective if tailored to the causing allergen. Tools like visual analogue scales and mobile applications facilitate monitoring and management of rhinitis, optimizing care and improving patient self management. In this narrative review, all these aspects will be addressed.

Keywords: Alergia; Allergen immunotherapy; Allergy; Antihistamines; Antihistamínicos; Corticosteroides intranasales; Inmunoterapia con alérgenos; Intranasal corticosteroids; Rhinitis; Rhinoconjunctivitis; Rinitis; Rinoconjuntivitis.

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doi: 10.2174/0113862073377594250407083315. Online ahead of print.

[The Role of Lipid Metabolism Disorders in Rhinitis and Asthma](#)

[Muyun Wu](#)¹, [Jieli Cheng](#)², [Yuqin Wen](#)³, [Jing Cheng](#)⁴

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- DOI: [10.2174/0113862073377594250407083315](https://doi.org/10.2174/0113862073377594250407083315)

Abstract

The current core theory of rhinitis and asthma is referred to as the antigen-antibody theory. However, the academic perspective is insufficient to explain the issues that arise in the epidemiology, pathophysiology, and clinical treatment of these diseases. So, the academic field of lipid metabolism disorders emerged. This perspective aims to explore two aspects: firstly, the overall approach and definition (starting with a new origin of the digestive tract rather than antigens from the respiratory tract; the non-digestion of various nutrients and the effects of probiotics result in a series of pathological and physiological changes in the body) and secondly, key aspects, such as 1. Dietary factors and lipid disorders that occur first, followed by airway hyperresponsiveness and asthma; 2. The prominent role of lipid droplet morphology in mast cells manifested as a bridge between lipid metabolites and lipid mediators released during allergies; and 3. Low-energy diet intervention with a significant effect on patients. This perspective offers valuable insights into new factors for the primary prevention of these diseases and exploring new avenues for the treatment of such diseases.

Keywords: Rhinitis; asthma; diet.; lipid; metabolism.

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Review

Laryngoscope

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[How Climate Change Is Impacting Allergic Rhinitis: A Scoping Review](#)

[Alisha R Pershad](#)¹, [Reethu Krishnan](#)¹, [Esther Lee](#)¹, [Lauren Gardiner](#)², [Evan Hughes](#)³, [Neelima Tummala](#)⁴

Affiliations Expand

- PMID: 40200859
- DOI: [10.1002/lary.32124](#)

Abstract

Objective: The impact of climate change on health has become an increasingly widespread global health concern. This impact is especially relevant in the field of Otolaryngology; global warming has been shown to affect inflammatory upper airway disease, specifically allergic rhinitis (AR). This study aims to characterize the effect of climate change on the epidemiology of AR in adult and pediatric populations globally.

Data sources: In accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines, a literature search was performed across four databases. Inclusion criteria were: (1) published in English, (2) published between 2000 and 2023, (3) reported on the current epidemiological state of AR, (4) described factors related to climate change, and (5) observed global warming affecting allergy season and AR symptoms.

Review methods: Two reviewers screened articles and performed full-text reviews.

Results: Of the 502 articles assessed, 30 studies were eligible for inclusion. Sixteen studies reported longer pollen seasons and/or higher pollen concentrations related to climate change, with two projecting total pollen emissions to increase by 16-40% and pollen season length to increase by 19 days in North America. Four studies reported an increase in AR-related healthcare usage; low-income residents were most impacted by increased usage. Two studies identified that healthcare professionals want more education on climate change.

Conclusion: Our scoping review highlights how climate change is altering pollen seasons and concentrations, AR disease prevalence, allergy sensitization, and AR symptom severity. Health professionals have expressed an understanding of climate change's impact on health and a desire for further education.

Level of evidence: N/A.

Keywords: allergic rhinitis; climate change; global warming.

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J Allergy Clin Immunol Pract

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. 2025 Apr 6:S2213-2198(25)00310-1.

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[Thunderstorm asthma: current perspectives and emerging trends](#)

[Francis Thien](#)¹, [Janet M Davies](#)², [Jo A Douglass](#)³, [Mark Hew](#)⁴

Affiliations Expand

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- DOI: [10.1016/j.jaip.2025.04.001](https://doi.org/10.1016/j.jaip.2025.04.001)

Abstract

Isolated episodes and epidemic outbreaks of thunderstorm asthma have now been documented for over 40 years, with global geographical reach across Europe, North America, Middle East, Asia, Oceania and Africa. This phenomenon encompasses specific environmental and meteorological factors, interacting with aeroallergen propagation and exposure in susceptible allergen-sensitized individuals and populations. There is a likely contribution from climate change with prolonged allergenic pollen seasons combined with increased pollen allergenicity, as well as heightened likelihood of extreme weather events. Differential population susceptibility to thunderstorm asthma presentations, hospitalizations and deaths with increased vulnerability of certain ethnic groups suggest a gene-environment interaction. This Clinical Commentary reviews the characteristics and updates the epidemiology of thunderstorm asthma; examines the role of aerobiology and climate change; discusses risk factors for emergency presentations, hospital admissions and deaths; considers latest research and predictors of thunderstorm asthma, and proposes strategies to manage and mitigate risk.

Keywords: Thunderstorm; allergic rhinitis; asthma; climate change; grass pollen; mold.

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Int Arch Allergy Immunol

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doi: 10.1159/000545625. Online ahead of print.

[The Association Between Allergic Diseases and Migraine: A Systematic Review and Meta-Analysis](#)

[Yuyue Jiang](#), [Xuqing Huang](#), [Yuezhong Shen](#), [Yan Wang](#), [Xi Wang](#), [Changqing Xu](#)

- PMID: 40188820
- DOI: [10.1159/000545625](#)

Abstract

Introduction: This study aims to systematically review and summarize epidemiological evidence on the relationship between allergic diseases and migraine outcomes.

Methods: This meta-analysis, which was registered with PROSPERO (CRD420250656492), employed data from PubMed, Embase, the Cochrane Library, and references from the studies included in the review. The search encompassed literature from the inception of these databases through Feb 24, 2025. We included observational studies investigating the association between allergic diseases and migraine. The risk of bias was assessed using the Newcastle-Ottawa Quality Assessment Scale (NOS). Pooled odds ratio (OR) with 95% confidence interval (CI) were calculated using a random-effects model.

Results: A total of 10 studies encompassing 14,952,953 participants were included. The overall risk for migraine in patients with allergic diseases was 1.52 (95% CI: 1.40-1.65). Specifically, the meta-analysis revealed an OR for atopic dermatitis of 1.27(1.17-1.38), 1.49 (95% CI 1.32-1.68) for asthma, 2.16 (95% CI 1.43-3.24) for allergic rhinitis, and 1.74 (95% CI 1.43-2.10) for allergic conjunctivitis.

Conclusion: The current meta-analysis suggests that allergic diseases is associated with an increased risk of developing migraines. However, further large-scale prospective cohort studies are required to validate the proposed association, considering the considerable heterogeneity observed in our analyses.

S. Karger AG, Basel.

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Int Forum Allergy Rhinol

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. 2025 Apr 4:e23577.

doi: 10.1002/alr.23577. Online ahead of print.

[3-Year Outcomes of Temperature-Controlled Radiofrequency Ablation of the Posterior Nasal Nerve in Patients With Chronic Rhinitis](#)

[J Pablo Stolovitzky](#)¹, [Randall A Ow](#)², [Stacey L Silvers](#)³, [Bobby A Tajudeen](#)⁴, [Chad M McDuffie](#)⁵, [Marc Dean](#)^{6,7,8}, [Ahmad R Sedaghat](#)⁹, [Katie Phillips](#)⁹, [Masayoshi Takashima](#)¹⁰

Affiliations Expand

- PMID: 40183781
- DOI: [10.1002/alr.23577](https://doi.org/10.1002/alr.23577)

Abstract

Background: Temperature-controlled radiofrequency (TCRF) ablation of the posterior nasal nerve has been shown to improve chronic rhinitis (CR) symptoms and quality of life (QoL). This study assesses the durability of TCRF's effectiveness and safety 3 years post-procedure in patients with perennial allergic CR and nonallergic CR.

Methodology: This prospective, multicenter, single-blinded, randomized controlled trial included a sham control arm and long-term follow-up. Analysis combined patients from the active treatment and control crossover arms. Outcomes include reflective total nasal symptom score (rTNSS), postnasal drip (PND), and cough scores, as well as QoL measured by the Mini Rhinoconjunctivitis Quality-of-Life Questionnaire (MiniRQLQ).

Results: Of 104 patients who underwent TCRF, 59 participated in the 3-year follow-up. The baseline mean rTNSS was 8.2 (95% confidence interval [95% CI, 7.9-8.6]), reduced to 3.5 (95% CI, 2.9-4.1) at 3 years, a 57.3% reduction and mean change of -4.7 (95% CI, -5.3 to -4.1; $p < 0.0001$). Most patients (79.7%) were responders. Cough scores decreased from a mean baseline of 1.5 (95% CI, 1.3-1.7) to 0.7 (95% CI, 0.5-0.9; mean change, -0.8; $p < 0.0001$). PND symptoms were also reduced from 2.5 (95% CI, 2.4 - 2.7) to 1.4 (95% CI, 1.2-1.7; mean change, -1.1; $p < 0.0001$). No severe adverse events were reported throughout the study, and no adverse events were reported between 24 months and 36 months of follow-up.

Conclusion: TCRF ablation of the posterior nasal nerve provided sustained safety and improvement in CR symptoms, cough, postnasal drip, and patient-reported QoL at 3 years, supporting its long-term safety and efficacy in CR.

Keywords: congestion; neurolysis; posterior nasal nerve; quality of life; radiofrequency ablation; rhinitis; rhinorrhea.

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. 2025 Apr 4:e23580.

doi: 10.1002/alr.23580. Online ahead of print.

[Radiofrequency Ablation of Inferior Turbinates With Laser Posterior Nasal Nerve Neurolysis for the Treatment of Chronic Rhinitis](#)

[Yi-Li Hwang](#)¹, [Jyun-Yi Liao](#)², [Ying-Shuo Hsu](#)^{3 4 5 6}, [Ming-Shao Tsai](#)⁷, [Ting-Yu Shih](#)², [Han-Lo Teng](#)², [Bor-Hwang Kang](#)⁸, [Chien-Yu Huang](#)^{2 9}

Affiliations Expand

- PMID: 40183778
- DOI: [10.1002/alr.23580](#)

No abstract available

Keywords: posterior nasal nerve neurolysis; radiofrequency; rhinitis.

- [6 references](#)

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Review

Eur Arch Otorhinolaryngol

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. 2025 Apr 2.

doi: 10.1007/s00405-025-09344-6. Online ahead of print.

[Variants of rhinitis medicamentosa treatment: a systematic review](#)

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Affiliations Expand

- PMID: 40175814
- DOI: [10.1007/s00405-025-09344-6](#)

Abstract

Purpose: Nasal breathing dysfunction resulting from uncontrolled decongestant use is an extremely urgent public health problem. This condition is referred to as rhinitis medicamentosa. Despite the high incidence of patients with this diagnosis, there is still no consensus on treatment tactics. The purpose of this study was to review the available literature on rhinitis medicamentosa treatment and summarize the findings reported in different approaches.

Methods and materials: We conducted a systematic review of PubMed (MEDLINE), The Cochrane Library, and Clinicaltrials.gov databases to identify studies that describe conservative and surgical treatments for rhinitis medicamentosa.

Results: Twelve studies, including 373 patients, met the search criteria. Out of these, seven studies used topical intranasal steroids like budesonide or fluticasone propionate sprays as a conservative treatment. One study used dexamethasone nasal drops. Five studies involved surgical treatment for patients; three of these studies used radiofrequency ablation to reduce the inferior turbinates, while the other two studies used diode laser and kinetic stimulation, respectively.

Conclusion: All studies included in this systematic review demonstrate the high efficacy of the separately presented treatment methods. However, the different design and evaluation methods do not allow us to systematize the data and develop a unified algorithm for treating rhinitis medicamentosa. We see the potential for conducting comparative evidence-based studies on a larger sample, along with the evaluation of long-term treatment results.

Keywords: Drug-induced rhinitis; Intranasal steroids; Nasal decongestants; Nasal obstruction; Nonallergic rhinitis; Rhinitis medicamentosa.

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Conflict of interest statement

Declarations. Ethical approval: Local ethics committee approval was not requested as the present study is a review of published studies. Financial interests: The authors have no relevant financial or non-financial interests to disclose. Conflict of interest: None.

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Review

Contact Dermatitis

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. 2025 Apr 2.

doi: 10.1111/cod.14794. Online ahead of print.

[Contact Urticaria and Related Conditions: Clinical Review](#)

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Affiliations Expand

- PMID: 40174899

- DOI: [10.1111/cod.14794](https://doi.org/10.1111/cod.14794)

Abstract

Contact urticaria (CoU) is an immediate contact reaction occurring within minutes to an hour after exposure to specific proteins or chemicals. CoU is categorised into non-immunologic (NI-CoU) and immunologic (I-CoU) types, with I-CoU potentially leading to anaphylaxis. Both forms of CoU can be associated with protein contact dermatitis and the CoU syndrome. Patients with I-CoU may also have other type I (immediate) allergic diseases, such as allergic conjunctivitis, rhinitis, asthma or food allergy. This review provides a detailed overview of CoU and related conditions, focusing on triggers, diagnostic methods and management strategies. NI-CoU is typically triggered by low molecular weight chemicals, while I-CoU involves IgE-mediated hypersensitivity to both high molecular weight proteins and low molecular weight chemicals. Early diagnosis is crucial, though CoU is often underrecognized. The diagnostic approach includes a thorough medical history, physical examination, evaluation of photographs, (non)invasive skin tests and in vitro assessments. Management strategies prioritise trigger avoidance and pharmacological treatments when avoidance is not fully possible. For I-CoU, second-generation H₁-antihistamines are the first-line treatment. Severe cases of I-CoU may benefit from anti-IgE therapy (omalizumab). Patients at risk of anaphylaxis should carry an adrenaline auto-injector and wear a medical alert bracelet.

Keywords: anaphylaxis; contact urticaria; inducible urticaria; occupational urticaria; protein contact dermatitis.

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- [290 references](#)

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chronic cough

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BMC Pulm Med

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. 2025 Apr 9;25(1):166.

doi: 10.1186/s12890-025-03627-8.

[Airway inflammation, bronchial hyperresponsiveness, and anti-asthma therapy responses in cough variant asthma and classic asthma with FEV₁% ≥80% predicted](#)

[Xue Zhang](#)^{#1}, [Chengjian Lv](#)^{#1}, [Huijuan Hao](#)^{#1}, [Jingwang Lin](#)¹, [Min Zhang](#)², [Xue Tian](#)³

Affiliations Expand

- PMID: 40205578
- PMCID: [PMC11980309](#)
- DOI: [10.1186/s12890-025-03627-8](#)

Abstract

Objective: To explore the differentiation of airway inflammation, bronchial hyperresponsiveness and anti-asthma therapy responses between the cough variant asthma (CVA) and classic asthma (CA) patients with FEV₁% ≥80% predicted.

Methods: In the first monocentre retrospective cross-sectional study, 402 patients with suspicion of CA and 544 patients with chronic cough were enrolled. Further prospective monocentre study was conducted and 66 patients of suspected asthma with negative bronchial dilation test (BDT) but positive bronchial challenge (BCT) test were enrolled and followed up for 4 weeks.

Results: CA patients had higher fractional exhaled nitric oxide (FENO) values than CVA patients (36.0 ppb vs. 24.0 ppb, $p < 0.0001$). The predictive value of FENO for positive BCT was significantly lower in chronic cough patients compared to those with suspicion of CA (AUC = 0.603 vs. 0.728). Following four weeks anti-asthma therapy, both the CVA and CA groups showed significant improvement in both the large and small airway function and symptom relief. There was no significant difference between the respective groups. The two most valuable spirometric variables for predicting a positive response to anti-asthma treatment were the improvements of FEV₁ (Δ FEV₁, cut-off values = 90 ml for CA and 110 ml for CVA) and FEV₁% (Δ FEV₁%, cut-off values = 3.49% for CA and 2.59% for CVA) after BDT in baseline of CA and CVA patients, respectively.

Conclusion: Patients with CVA exhibited lower levels of airway eosinophilic inflammation compared to those with mild CA. Most patients with mild CA and CVA could benefit promptly from anti-asthma treatment. Additionally, an improvement in FEV₁ and FEV₁% during BDT can potentially predict positive responses to anti-asthma therapy in both groups.

Keywords: Airway inflammation; Anti-asthma therapy; Bronchial hyperresponsiveness; Classic asthma; Cough variant asthma.

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Conflict of interest statement

Declarations. Ethics approval and consent to participate: The study was approved by the Institutional Review Board of the Shanghai General Hospital (no. [2020]30). The prospective study in PART II was registered on chictr.org.cn (No. ChiCTR2000029065). Informed consent in PART II was obtained for all subjects. As PART I in our study was a retrospective study, the requirement for obtaining informed consent from participants was waived by the ethics committee (no. 2017KY159). The research was conducted in accordance with the ethical standards of the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards. **Consent for publication:** Not applicable. **Competing interests:** The authors declare no competing interests.

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BMC Pulm Med

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. 2025 Apr 8;25(1):161.

doi: 10.1186/s12890-025-03636-7.

[The diagnostic value of combined pulmonary function test and exhaled nitric oxide monitoring in cough variant asthma with or without gastroesophageal reflux disease: a retrospective study](#)

[Sen Li¹](#), [Siyao Xu¹](#), [Yuan Yang¹](#), [Zhe Wang¹](#), [Yaru Hou²](#)

Affiliations [Expand](#)

- PMID: 40200292

- PMID: [PMC11980150](#)
- DOI: [10.1186/s12890-025-03636-7](#)

Abstract

Introduction: This study aimed to investigate the effect of fractional exhaled nitric oxide (FeNO), a marker of airway inflammation, together with small airway function tests in diagnosing cough variant asthma (CVA), particularly in patients with gastroesophageal reflux disease (GERD).

Methods: This retrospective cohort study included adult patients with chronic cough for more than eight weeks who were divided into a CVA group and a control group. Participants underwent pulmonary function tests and FeNO measurements. Statistical tests and ROC curve analysis were used to assess diagnostic accuracy.

Results: CVA patients had higher FeNO levels than controls, regardless of with or without GERD. There were no significant differences in FEV1, FVC, and FEV1/FVC ratio between the control and CVA groups, but CVA patients had significantly lower MEF25, MEF50, MEF75, and MMEF values. FeNO was negatively correlated with MEF50, MEF75, and MMEF. The AUC of FeNO in diagnosing CVA was 0.862. Combining FeNO with MMEF resulted in the highest diagnostic accuracy (AUC = 0.909). The diagnostic benefits of FeNO and FeNO + MMEF were similar in GERD patients.

Conclusion: Combining FeNO with small airway function tests, especially MMEF, can improve the diagnostic accuracy of CVA, while FeNO and FeNO + MMEF performed similar diagnostic accuracy in patients with GERD.

Clinical trial number: Not applicable.

Keywords: Asthma diagnosis; Cough variant asthma; Fractional exhaled nitric oxide; Gastroesophageal reflux disease; Pulmonary function test.

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Conflict of interest statement

Declarations. Ethics approval and consent to participate: The study was approved by the Ethical Committee of HanZhong Central Hospital. Given the retrospective nature of the study, informed consent was waived by the ethics committee, and all procedures were performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its subsequent amendments. Competing interests: The authors declare no competing interests.

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. 2025 Apr 8.

doi: 10.1007/s41030-025-00293-3. Online ahead of print.

[Trial Conduct, Baseline Characteristics, and Symptom Burden of Patients in the ARISE Study](#)

[Charles L Daley](#)¹, [James D Chalmers](#)², [Patrick A Flume](#)³, [David E Griffith](#)¹, [Naoki Hasegawa](#)⁴, [Kozo Morimoto](#)⁵, [Kevin L Winthrop](#)⁶, [Chau-Chyun Sheu](#)⁷, [Korkut Avsar](#)⁸, [Dario Andrisani](#)⁹, [Luigi Ruffo Codecasa](#)¹⁰, [Dayton W Yuen](#)¹¹, [Mariam Hassan](#)¹¹, [Marie-Laure Nevoret](#)¹², [Kevin Mange](#)¹¹

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- PMID: 40198465
- DOI: [10.1007/s41030-025-00293-3](https://doi.org/10.1007/s41030-025-00293-3)

Free article

Abstract

Introduction: ARISE was a global clinical trial designed to generate evidence demonstrating the utility of the patient-reported outcome instruments Quality of Life-Bronchiectasis (QOL-B) [Respiratory Domain (RD) only] and Patient-Reported Outcomes Measurement Information System Short Form v1.0-Fatigue 7a (PROMIS F SF-7a) in patients with newly diagnosed or recurrent *Mycobacterium avium* complex lung disease (MACLD). Here, we describe trial conduct, patient characteristics, and patient-reported symptoms at baseline among patients enrolled in ARISE.

Methods: Adult patients with newly diagnosed or recurrent non-cavitary MACLD who had not initiated antibiotic treatment for their current MAC infection were enrolled; data including comorbidities and prior MACLD history were collected

during screening. Symptom burden was assessed using QOL-B, PROMIS F SF-7a, and Functional Assessment of Chronic Illness Therapy (FACIT) questionnaires.

Results: Of 99 patients from 12 countries enrolled in ARISE, the median age was 69.0 years; most were white (80.8%) and female (77.8%). This was the first diagnosis of MACLD for 72.7% of patients. Patients frequently reported having a comorbid respiratory disorder: bronchiectasis (49.5%), asthma (21.2%), and chronic obstructive pulmonary disease (16.2%). At baseline, mean (\pm SD) and median QOL-B RD scores were 65.0 (\pm 15.3) and 66.7; PROMIS F SF-7a T-scores were 53.8 (\pm 8.2) and 55.1; and FACIT-Fatigue scores were 35.0 (\pm 9.6) and 37.0.

Conclusions: Patients in ARISE were representative of a real-world patient population with MACLD. Comorbid chronic respiratory diseases were common in patients with new or recurrent MACLD, and substantial disease burden at the time physicians initiated MACLD treatment was evidenced by impairment across measures of fatigue and QOL-B domains.

Gov identifier: [NCT04677543](#).

Keywords: Mycobacterium avium complex lung disease; Amikacin liposome inhalation suspension; Clinical trial; Nontuberculous mycobacterial lung disease; Patient-reported outcomes.

Plain language summary

People with a disease called Mycobacterium avium complex lung disease (MACLD) experience many symptoms, including cough, fatigue, and shortness of breath, which can impact their quality of life. It is not clear what symptoms people with new or repeating MACLD may have before they start antibiotic treatment for their disease. This publication describes the design of a study called ARISE, characteristics of people with MACLD who participated, and the symptoms they reported when they started the study. Overall, 99 people with a first, second, or third diagnosis of MACLD, who had not started taking antibiotics, participated in the study. People in the study were on average 69 years old and most were female (78%). This was the first diagnosis of MACLD for more than 70% of people who participated in ARISE. In addition to MACLD, many people also had other respiratory diseases, including bronchiectasis, asthma, and chronic obstructive pulmonary disease. At the start of the study, people completed three questionnaires that measured their symptoms, quality of life, and the severity and frequency of fatigue in their daily life. In these questionnaires, people with MACLD reported that, before starting treatment, they had a high burden of symptoms that impacted their daily lives and quality of life. They also reported more fatigue than people without MACLD. The results from this study were similar to those seen in people with MACLD from registries and other clinical studies. The results also showed that people with MACLD have a large symptom burden before starting treatment.

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Conflict of interest statement

Declarations. Conflict of Interest: Charles L. Daley: grant support, advisory board fees, and consulting fees from Insmmed Incorporated. Dr. Daley also reports grant support from AN2 Therapeutics, Bugworks, Paratek Pharmaceuticals, Juvabis, FDA, NIH, PCORI, Cystic Fibrosis Foundation, COPD Foundation, and Renovion; advisory

board work with AN2 Therapeutics, AstraZeneca, Cepheid, Galapagos, Hyfe, MannKind, Matinas Biopharma, NobHill, Spero Therapeutics, and Zambon; consulting with Galapagos, Genentech, and Pfizer; data monitoring committee work with Otsuka and Bill & Melinda Gates Foundation. James D. Chalmers: grant support from AstraZeneca, Boehringer Ingelheim, Genentech, Gilead Sciences, Grifols, GSK, Trudell, and Insmmed Incorporated; consulting fees from Antabio, AstraZeneca, Boehringer Ingelheim, Chiese, Genentech, GSK, Insmmed Incorporated, Pfizer, Trudell, and Zambon. Patrick A. Flume: grant support and consulting fees from Insmmed Incorporated. David E. Griffith: Consulting fees, personal fees, and advisory board fees from Insmmed Incorporated. Dr Griffith also reports consulting and advisory board fees from AN2 Therapeutics and Paratek Pharmaceuticals. Naoki Hasegawa: consulting fees, advisory board fees, and clinical trial design or participation from AN2 Therapeutics and Janssen Pharmaceuticals; consulting fees, advisory board fees, and personal fees from Insmmed Incorporated; consulting fees and clinical trial design or participation from MannKind. Kozo Morimoto: consulting fees, personal fees, and advisory board fees from Boehringer Ingelheim and Insmmed Incorporated. Kevin L. Winthrop: grant support and consulting fees from AN2 Therapeutics, Insmmed Incorporated, MannKind, Paratek Pharmaceuticals, Renovion, and Spero Therapeutics. Korkut Avsar: personal fees from Insmmed Incorporated. Luigi Ruffo Codecasa: consulting fees from Cepheid and Dia Sorin. Chau-Chyun Sheu and Dario Andrisani have nothing to report. Dayton W. Yuen, Mariam Hassan, Marie-Laure Nevoret, and Kevin Mange are employees and shareholders in Insmmed Incorporated. Charles L. Daley, James D. Chalmers, Patrick A. Flume, David E. Griffith, Naoki Hasegawa, Kozo Morimoto, Kevin L. Winthrop, Luigi Ruffo Codecasa, Chau-Chyun Sheu, Korkut Avsar, and Dario Andrisani were investigators in the ARISE trial. Ethical Approval: A data monitoring committee periodically monitored the safety of patients in the study. ARISE was approved by the Advarra Institutional Review Board under protocol reference number Pro00045468 on 12 August 2020. ARISE also received ethics approval from all study sites. Participants and/or their legally authorized representative were informed that their participation was voluntary. Participants or their legally authorized representative were required to sign a statement of informed consent that met the requirements of 21 CFR 50, local regulations, ICH guidelines, HIPAA requirements. Participants did not consent for publication as no individual patient data are included. ARISE was conducted in compliance with its protocol and the ethical principles derived from international guidelines (Declaration of Helsinki, the Council for International Organizations of Medical Sciences International Ethical Guidelines), and applicable International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use Good Clinical Practice Guidelines, as well as applicable local laws and regulatory requirements.

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Editorial

Eur Respir J

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. 2025 Apr 3;65(4):2500044.

doi: 10.1183/13993003.00044-2025. Print 2025 Apr.

[Who really responds to asthma biologics? The clue lies in the journey before treatment](#)

[Freda Yang¹, Apostolos Bossios^{2 3 4}](#)

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- PMID: 40180360
- DOI: [10.1183/13993003.00044-2025](#)

No abstract available

Conflict of interest statement

Conflict of interest: F. Yang reports payment or honoraria for lectures, presentations, manuscript writing or educational events from GSK and AstraZeneca, support for attending meetings from AstraZeneca, and is a member of the British Thoracic Society Asthma Specialist Advisory Group. A. Bossios reports grants from AstraZeneca, payment or honoraria for lectures, presentations, manuscript writing or educational events from Chiesi, GSK and AstraZeneca, and leadership roles with European Respiratory Society as Head of Assembly 5 (Airway diseases, asthma, COPD, and chronic cough), co-chair of the Nordic severe asthma network, member of the steering committee of SHARP, the ERS severe asthma Clinical Research Collaboration, and is a member of the steering committee of the Swedish National Airway Register.

Comment on

- [Pre-biologic disease trajectories are associated with morbidity burden and biologic treatment response in severe asthma.](#)

Soendergaard MB, Hjortdahl F, Hansen S, Bjerrum AS, von Bülow A, Hilberg O, Bonnesen Bertelsen B, Johnsen CR, Lock-Johansson S, Vijdea R, Rasmussen LM, Schmid JM, Ulrik CS, Porsbjerg C, Håkansson KEJ. Eur Respir J. 2025 Apr 3;65(4):2401497. doi: 10.1183/13993003.01497-2024. Print 2025 Apr. PMID: 39788633 Free PMC article.

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Respirology

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. 2025 Apr 2.

doi: 10.1111/resp.70040. Online ahead of print.

[Associations Between Occupational Exposures and Cough Subclasses Among Middle-Aged Australians](#)

[Jingwen Zhang](#)¹, [Jennifer L Perret](#)^{1,2}, [Dinh S Bui](#)¹, [Sheikh M Alif](#)^{3,4,5}, [Michael J Abramson](#)^{1,3}, [Anne B Chang](#)^{6,7}, [Hans Kromhout](#)⁸, [Garun S Hamilton](#)^{9,10}, [Paul S Thomas](#)^{11,12}, [Bircan Erbas](#)¹³, [Bruce R Thompson](#)⁵, [Melanie C Matheson](#)^{1,14}, [E Haydn Walters](#)^{1,15}, [Caroline J Lodge](#)¹, [Shyamali C Dharmage](#)¹

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- PMID: 40176264
- DOI: [10.1111/resp.70040](#)

Abstract

Background and objective: The evidence around occupation-related chronic cough is conflicting and current definitions of chronic cough cannot capture its

heterogeneity. Using our recently characterised novel cough subclasses, we aimed to identify subclass-specific occupational risks.

Methods: Using data from the Tasmanian Longitudinal Health Study (TAHS), occupational exposures up to age 53 years were coded using the ALOHA+ Job Exposure Matrix, into ever-exposure (no, only-low, ever-high) and cumulative exposure. People belonging to six previously identified cough subclasses among 2213 current coughers at age 53 years were compared to non-coughers (n = 1396). Associations with occupational exposures were assessed using multinomial logistic regression for these cough subclasses and logistic regression for standard definitions (chronic cough, chronic phlegm, and chronic bronchitis) after adjusting for potential confounders.

Results: Biological dust was associated with "cough with allergies" (cumulative: adjusted multinomial odds ratio [aMOR] = 1.06, 95% CI: 1.02-1.10, per 10 exposure-year increase). Aromatic solvents were associated with "chronic dry cough" (cumulative: aMOR = 1.15, 95% CI: 1.02-1.29). Other solvents were associated with "chronic productive cough" (ever-high: aMOR = 2.81, 95% CI: 1.26-6.2); "intermittent productive cough" (cumulative: aMOR = 1.06, 95% CI: 0.98-1.16), chronic bronchitis (ever-high: aOR = 2.48, 95% CI: 1.01-6.06); and chronic phlegm (ever-high: aOR = 2.26, 95% CI: 1.14-4.51). Herbicides (cumulative) were also associated with "intermittent productive cough" (aOR = 1.09, 95% CI: 1.00-1.77) and chronic phlegm (aOR = 1.07, 95% CI: 1.00-1.15).

Conclusion: Novel cough subclasses had distinct associations with specific occupational exposures, suggesting different pathophysiology. Aromatic solvents were associated with dry cough; biological dust with allergic cough; herbicides and other solvents with productive cough. Using novel cough subclasses was superior to standard definitions in uncovering these associations.

Keywords: COPD; Environmental & Occupational Health and Epidemiology; allergy; cough.

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Review

Eur Respir Rev

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. 2025 Apr 2;34(176):240179.

doi: 10.1183/16000617.0179-2024. Print 2025 Apr.

[Neutrophilic inflammation in bronchiectasis](#)

[James D Chalmers](#)¹, [Mark Metersky](#)², [Stefano Aliberti](#)^{3,4}, [Lucy Morgan](#)⁵, [Sebastian Fucile](#)⁶, [Melanie Lauterio](#)⁷, [Patrick P McDonald](#)⁷

Affiliations Expand

- PMID: 40174958
- PMCID: [PMC11962982](#)
- DOI: [10.1183/16000617.0179-2024](#)

Abstract

Noncystic fibrosis bronchiectasis, hereafter referred to as bronchiectasis, is a chronic, progressive lung disease that can affect people of all ages. Patients with clinically significant bronchiectasis have chronic cough and sputum production, as well as recurrent respiratory infections, fatigue and impaired health-related quality of life. The pathophysiology of bronchiectasis has been described as a vicious vortex of chronic inflammation, recurring airway infection, impaired mucociliary clearance and progressive lung damage that promotes the development and progression of the disease. This review describes the pivotal role of neutrophil-driven inflammation in the pathogenesis and progression of bronchiectasis. Delayed neutrophil apoptosis and increased necrosis enhance dysregulated inflammation in bronchiectasis and failure to resolve this contributes to chronic, sustained inflammation. The excessive release of neutrophil serine proteases, such as neutrophil elastase, cathepsin G and proteinase 3, promotes a protease-antiprotease imbalance that correlates with increased inflammation in bronchiectasis and contributes to disease progression. While there are currently no licensed therapies to treat bronchiectasis, this review will explore the evolving evidence for neutrophilic inflammation as a novel treatment target with meaningful clinical benefits.

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Conflict of interest statement

Conflict of interest: J.D. Chalmers reports receiving grants and personal fees from AstraZeneca, Boehringer Ingelheim, GSK, Insmmed Incorporated and Zambon; a grant from Gilead; and personal fees from Chiesi and Novartis. M. Metersky reports receiving consulting fees from AN2 Therapeutics, Boehringer Ingelheim, Insmmed Incorporated, Renovion, Tactile Inc. and Zambon. S. Aliberti reports receiving personal fees from AstraZeneca, Bayer Healthcare, Chiesi, GlaxoSmithKline, Grifols, Insmmed Incorporated, Menarini, Zambon and ZetaCube; and grants from Chiesi, Fisher & Paykel and Insmmed Incorporated, outside of the submitted work. L. Morgan reports receiving grants and personal fees from AstraZeneca, Boehringer Ingelheim, GSK, Insmmed Incorporated, Novartis and Zambon. S. Fucile, M. Lauterio and P.P. McDonald are employees and shareholders in Insmmed Incorporated.

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doi: 10.1136/thorax-2024-221825. Online ahead of print.

[Use of inhaled corticosteroids in bronchiectasis: data from the European Bronchiectasis Registry \(EMBARC\)](#)

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Free article

Abstract

Introduction: Current bronchiectasis guidelines advise against the use of inhaled corticosteroids (ICS) except in patients with associated asthma, allergic bronchopulmonary aspergillosis (ABPA) and/or chronic obstructive pulmonary disease (COPD). This study aimed to describe the use of ICS in patients with bronchiectasis across Europe.

Methods: Patients with bronchiectasis were enrolled into the European Bronchiectasis Registry from 2015 to 2022. Patients were grouped into ICS users and non-users at baseline and clinical characteristics associated with ICS use were investigated. Patients were followed up for clinical outcomes of exacerbation, hospitalisation and mortality for up to 5 years. We evaluated if elevated blood eosinophil counts (above the laboratory upper limit of normal) modified the effect of ICS on exacerbations.

Results: 19 324 patients were included for analysis and 10 109 (52.3%) were recorded as being prescribed ICS at baseline. After exclusion of patients with a history of asthma, COPD and/or ABPA, 3174/9715 (32.7%) patients with bronchiectasis were prescribed ICS. Frequency of ICS use varied across countries, ranging from 17% to 85% of included patients. ICS users had more severe disease, with significantly worse lung function, higher Bronchiectasis Severity Index scores and more frequent exacerbations at baseline ($p<0.0001$). Overall, ICS users did not have a reduced risk of exacerbation or hospitalisation during follow-up, but a significant reduction in exacerbation frequency was observed in the subgroup of ICS users with elevated blood eosinophil counts (relative risk 0.70, 95% CI 0.59 to 0.84, $p<0.001$).

Conclusion: ICS use is common in bronchiectasis, including in those not currently recommended ICS according to bronchiectasis guidelines. ICS use may be associated with reduced exacerbation frequency in patients with elevated blood eosinophils.

Keywords: bronchiectasis.

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Conflict of interest statement

Competing interests: SA reports grants or contracts from any entity from Insmmed, Chiesi, Fisher and Paykel and GlaxoSmithKline (GSK); royalties or licences from McGraw Hill; consulting fees from Insmmed, Insmmed Italy, Insmmed Ireland, Zambon, AstraZeneca, CSL Behring, Grifols, Fondazione Internazionale Menarini, Moderna, Chiesi, MCD Italis, Brahms, Physioassist SAS, GSK; payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing or educational events from GSK, Thermofisher Scientific, Insmmed Italy, Insmmed Ireland, Zambon, Fondazione Internazionale Menarini; participation on a Data Safety Monitoring Board or Advisory Board from Insmmed, Insmmed Italy, AstraZeneca, MSD Italia. FCR reports grants or contracts from any entity from German Center for Lung Research (DZL), German Center for Infection Research (DZIF), IMI (EU/EFPIA) and iABC Consortium (including Alaxia, Basilea, Novartis and Polyphor), Mukoviszidose Institute, Novartis, Insmmed Germany, Grifols, Bayer, InfectoPharm; consulting fees from Parion, Grifols, Zambon, Insmmed and Helmholtz-Zentrum für Infektionsforschung; payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing or educational events from I!DE Werbeagentur, Interkongress, AstraZeneca, Insmmed, Grifols, Universitätsklinikum Frankfurt am Main; payment for expert testimony from Social Court Cologne; support for attending meetings and/or travel from German Kartagener Syndrome and Primary Ciliary Dyskinesia Patient Advocacy Group Mukoviszidose; participation on a Data Safety Monitoring Board or Advisory Board—Insmmed, Grifols and Shionogi; leadership or fiduciary role in other board, society, committee or advocacy group, paid or unpaid—coordinator of the ERN-LUNG Bronchiectasis Core Network, chair of the German Bronchiectasis Registry PROGNOSIS, member of the SteerCo of the European Bronchiectasis Registry EMBARC, member of the SteerCo of the European Non-tuberculous Mycobacterial Pulmonary Disease Registry EMBARC-NTM, co-speaker of the Medical Advisory Board of the German Kartagener Syndrome and PCD Patient Advocacy Group, speaker of the Respiratory Infections and TB group of the German Respiratory Society, speaker of the Cystic Fibrosis group of German Respiratory Society (DGP), PI of the German Center for Lung Research, member of the Protocol Review Committee of the PCD-CTN, member of Physician Association of the German Cystic Fibrosis Patient Advocacy Group; other financial or non-financial interests—AstraZeneca, Boehringer Ingelheim, Celtaxsys, Corbus, Insmmed, Novartis, Parion, University of Dundee, Vertex and Zambon. RD reports payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing or educational events from LUPIN, CIPLA and Glenmark. CH reports payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing or educational events from 30 Technology, CSL Behring, Chisi, Insmmed, Janssen, LifeArc, Meiji, Mylan, Pneumagen, Shionogi, Vertex and Zambon. ML reports consulting fees from Armata, 30T, AstraZeneca, Parion, Insmmed, Chiesi, Zambon, Electromed, Recode, AN2 and Boehringer Ingelheim; payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing or educational events from Insmmed; leadership or fiduciary role in other board, society, committee or advocacy group, paid or unpaid on ERS Infection Group Chair. KD reports payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing or educational events from Novartis, Boehringer Ingelheim, GSK, Norma Hellas, Chiesi, AstraZeneca and Zambon; support for attending meetings and/or travel from Novartis, Boehringer Ingelheim, GSK, Norma Hellas, Chiesi, AstraZeneca and Menarini; participation on a Data Safety Monitoring Board or Advisory Board from Novartis, GSK and Chiesi. MLC reports consulting fees from Boxer Capital.

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

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Review

Indian J Pediatr

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. 2025 Apr 10.

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[Adenoviral Infections in Immunocompetent Children](#)

[Valsan Philip Verghese](#)¹

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- PMID: 40208384

- DOI: [10.1007/s12098-025-05483-0](https://doi.org/10.1007/s12098-025-05483-0)

Abstract

Adenoviruses are a common cause of upper and lower respiratory infections, gastroenteritis and conjunctivitis in children. Although most adenoviral infections are self-limited, those caused by certain serotypes during outbreaks have led to severe pneumonias and poorer outcomes, with sequelae of bronchiectasis and bronchiolitis obliterans in survivors. Rarer manifestations such as central nervous system and urinary infections can also lead to severe disease. Adenoviruses can be shed for prolonged periods after infection and can also lead to persistent subclinical infection with the potential for reactivation during periods of immunosuppression. Diagnosis with polymerase chain reaction (PCR) testing is highly sensitive and specific but attributing causation in PCR positive children will depend on the presence of symptomatic disease. Treatment is predominantly supportive with maintenance of hydration in gastroenteritis and respiratory support in severe pneumonia. Although antiviral drugs are used in immunocompromised and transplanted children, they are not recommended for use in immune competent children especially in the absence of efficacy data. As adenoviruses are spread by droplet transmission and can survive on surfaces for weeks, infection control measures include isolation of patients, proper disinfection and use of personal protective equipment. Because adenoviruses are known to undergo spontaneous mutations and recombinant events leading to novel viruses and have caused fatal co-infections in the past, molecular surveillance of adenovirus is needed to monitor circulating serotypes, to recognise new disease emergence and to prevent epidemic spread.

Keywords: Adenoviral conjunctivitis; Adenoviral gastroenteritis; Adenovirus infection; Epidemic serotypes; Molecular adenoviral surveillance; Severe pneumonia.

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Conflict of interest statement

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. 2025 Apr 8;7(2):dlaf053.

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[***Pseudomonas aeruginosa* chronic infections in patients with bronchiectasis: a silent reservoir of carbapenemase-producing epidemic high-risk clones**](#)

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- PMID: 40201539
- PMCID: [PMC11976719](#)
- DOI: [10.1093/jacamr/dlaf053](#)

Abstract

Objectives: *Pseudomonas aeruginosa* is one of the major drivers of morbidity and mortality in patients with chronic underlying diseases. Whereas cystic fibrosis (CF) *P. aeruginosa* strains have been well studied, non-CF bronchiectasis isolates have received less scientific attention.

Methods: We determined the antibiotic susceptibility profiles of a collection of 100 *P. aeruginosa* isolates recovered from a total of 100 non-CF bronchiectasis patients attending a Catalanian hospital. All carbapenemase-producing isolates were characterized by WGS.

Results: Twelve isolates were classified as MDR (12%) and six were found to be carbapenemase (VIM-2) producers (6%). Of note, two of the VIM-2-producing isolates were carbapenem susceptible due to the presence of inactivating mutations in MexAB-OprM efflux pump components. These isolates exhibited properties of chronic *P. aeruginosa* isolates, such as mutator or mucoid phenotypes that are associated with persistent infections despite intensive antibiotic therapies. The phylogenetic analysis evidenced that all VIM-2 isolates belonged to the high-risk clone ST235. Core-genome MLST analysis revealed 7-260 allelic differences, arguing

against recent transmission but a common source of infection or an ancient interpatient transmission event could not be ruled out.

Conclusions: Altogether, these findings suggest that *P. aeruginosa* chronic respiratory infections can be an important and silent reservoir of transferable resistance determinants and *P. aeruginosa* high-risk clones, thus contributing to their increased resistance and worldwide dissemination.

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. 2025 Apr 8.

doi: 10.1007/s41030-025-00293-3. Online ahead of print.

[Trial Conduct, Baseline Characteristics, and Symptom Burden of Patients in the ARISE Study](#)

[Charles L Daley](#)¹, [James D Chalmers](#)², [Patrick A Flume](#)³, [David E Griffith](#)¹, [Naoki Hasegawa](#)⁴, [Kozo Morimoto](#)⁵, [Kevin L Winthrop](#)⁶, [Chau-Chyun Sheu](#)⁷, [Korkut Avsar](#)⁸, [Dario Andrisani](#)⁹, [Luigi Ruffo Codecasa](#)¹⁰, [Dayton W Yuen](#)¹¹, [Mariam Hassan](#)¹¹, [Marie-Laure Nevoret](#)¹², [Kevin Mange](#)¹¹

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- DOI: [10.1007/s41030-025-00293-3](#)

Free article

Abstract

Introduction: ARISE was a global clinical trial designed to generate evidence demonstrating the utility of the patient-reported outcome instruments Quality of Life-Bronchiectasis (QOL-B) [Respiratory Domain (RD) only] and Patient-Reported Outcomes Measurement Information System Short Form v1.0-Fatigue 7a (PROMIS F SF-7a) in patients with newly diagnosed or recurrent *Mycobacterium avium* complex lung disease (MACLD). Here, we describe trial conduct, patient characteristics, and patient-reported symptoms at baseline among patients enrolled in ARISE.

Methods: Adult patients with newly diagnosed or recurrent non-cavitary MACLD who had not initiated antibiotic treatment for their current MAC infection were enrolled; data including comorbidities and prior MACLD history were collected during screening. Symptom burden was assessed using QOL-B, PROMIS F SF-7a, and Functional Assessment of Chronic Illness Therapy (FACIT) questionnaires.

Results: Of 99 patients from 12 countries enrolled in ARISE, the median age was 69.0 years; most were white (80.8%) and female (77.8%). This was the first diagnosis of MACLD for 72.7% of patients. Patients frequently reported having a comorbid respiratory disorder: bronchiectasis (49.5%), asthma (21.2%), and chronic obstructive pulmonary disease (16.2%). At baseline, mean (\pm SD) and median QOL-B RD scores were 65.0 (\pm 15.3) and 66.7; PROMIS F SF-7a T-scores were 53.8 (\pm 8.2) and 55.1; and FACIT-Fatigue scores were 35.0 (\pm 9.6) and 37.0.

Conclusions: Patients in ARISE were representative of a real-world patient population with MACLD. Comorbid chronic respiratory diseases were common in patients with new or recurrent MACLD, and substantial disease burden at the time physicians initiated MACLD treatment was evidenced by impairment across measures of fatigue and QOL-B domains.

Gov identifier: [NCT04677543](https://clinicaltrials.gov/ct2/show/study/NCT04677543).

Keywords: *Mycobacterium avium* complex lung disease; Amikacin liposome inhalation suspension; Clinical trial; Nontuberculous mycobacterial lung disease; Patient-reported outcomes.

Plain language summary

People with a disease called *Mycobacterium avium* complex lung disease (MACLD) experience many symptoms, including cough, fatigue, and shortness of breath, which can impact their quality of life. It is not clear what symptoms people with new or repeating MACLD may have before they start antibiotic treatment for their disease. This publication describes the design of a study called ARISE, characteristics of people with MACLD who participated, and the symptoms they reported when they started the study. Overall, 99 people with a first, second, or third diagnosis of MACLD, who had not started taking antibiotics, participated in the study. People in the study were on average 69 years old and most were female (78%). This was the first diagnosis of MACLD for more than 70% of people who participated in ARISE. In addition to MACLD, many people also had other respiratory diseases, including bronchiectasis, asthma, and chronic obstructive pulmonary disease. At the start of the study, people completed three questionnaires that measured their symptoms, quality of life, and the severity and frequency of

fatigue in their daily life. In these questionnaires, people with MACLD reported that, before starting treatment, they had a high burden of symptoms that impacted their daily lives and quality of life. They also reported more fatigue than people without MACLD. The results from this study were similar to those seen in people with MACLD from registries and other clinical studies. The results also showed that people with MACLD have a large symptom burden before starting treatment.

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Conflict of interest statement

Declarations. Conflict of Interest: Charles L. Daley: grant support, advisory board fees, and consulting fees from Insmmed Incorporated. Dr. Daley also reports grant support from AN2 Therapeutics, Bugworks, Paratek Pharmaceuticals, Juvabis, FDA, NIH, PCORI, Cystic Fibrosis Foundation, COPD Foundation, and Renovion; advisory board work with AN2 Therapeutics, AstraZeneca, Cepheid, Galapagos, Hyfe, MannKind, Matinas Biopharma, NobHill, Spero Therapeutics, and Zambon; consulting with Galapagos, Genentech, and Pfizer; data monitoring committee work with Otsuka and Bill & Melinda Gates Foundation. James D. Chalmers: grant support from AstraZeneca, Boehringer Ingelheim, Genentech, Gilead Sciences, Grifols, GSK, Trudell, and Insmmed Incorporated; consulting fees from Antabio, AstraZeneca, Boehringer Ingelheim, Chiese, Genentech, GSK, Insmmed Incorporated, Pfizer, Trudell, and Zambon. Patrick A. Flume: grant support and consulting fees from Insmmed Incorporated. David E. Griffith: Consulting fees, personal fees, and advisory board fees from Insmmed Incorporated. Dr Griffith also reports consulting and advisory board fees from AN2 Therapeutics and Paratek Pharmaceuticals. Naoki Hasegawa: consulting fees, advisory board fees, and clinical trial design or participation from AN2 Therapeutics and Janssen Pharmaceuticals; consulting fees, advisory board fees, and personal fees from Insmmed Incorporated; consulting fees and clinical trial design or participation from MannKind. Kozo Morimoto: consulting fees, personal fees, and advisory board fees from Boehringer Ingelheim and Insmmed Incorporated. Kevin L. Winthrop: grant support and consulting fees from AN2 Therapeutics, Insmmed Incorporated, MannKind, Paratek Pharmaceuticals, Renovion, and Spero Therapeutics. Korkut Avsar: personal fees from Insmmed Incorporated. Luigi Ruffo Codecasa: consulting fees from Cepheid and Dia Sorin. Chau-Chyun Sheu and Dario Andrisani have nothing to report. Dayton W. Yuen, Mariam Hassan, Marie-Laure Nevoret, and Kevin Mange are employees and shareholders in Insmmed Incorporated. Charles L. Daley, James D. Chalmers, Patrick A. Flume, David E. Griffith, Naoki Hasegawa, Kozo Morimoto, Kevin L. Winthrop, Luigi Ruffo Codecasa, Chau-Chyun Sheu, Korkut Avsar, and Dario Andrisani were investigators in the ARISE trial. Ethical Approval: A data monitoring committee periodically monitored the safety of patients in the study. ARISE was approved by the Advarra Institutional Review Board under protocol reference number Pro00045468 on 12 August 2020. ARISE also received ethics approval from all study sites. Participants and/or their legally authorized representative were informed that their participation was voluntary. Participants or their legally authorized representative were required to sign a statement of informed consent that met the requirements of 21 CFR 50, local regulations, ICH guidelines, HIPAA requirements. Participants did not consent for publication as no individual patient data are included. ARISE was conducted in compliance with its protocol and the ethical principles derived from international guidelines (Declaration of Helsinki, the Council for International Organizations of Medical Sciences International Ethical Guidelines), and applicable International

Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use Good Clinical Practice Guidelines, as well as applicable local laws and regulatory requirements.

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Review

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[Neutrophilic inflammation in bronchiectasis](#)

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- PMID: 40174958
- PMCID: [PMC11962982](#)
- DOI: [10.1183/16000617.0179-2024](#)

Abstract

Noncystic fibrosis bronchiectasis, hereafter referred to as bronchiectasis, is a chronic, progressive lung disease that can affect people of all ages. Patients with clinically significant bronchiectasis have chronic cough and sputum production, as well as recurrent respiratory infections, fatigue and impaired health-related quality of life. The pathophysiology of bronchiectasis has been described as a vicious vortex of chronic inflammation, recurring airway infection, impaired mucociliary clearance and progressive lung damage that promotes the development and progression of the disease. This review describes the pivotal role of neutrophil-driven inflammation in the pathogenesis and progression of bronchiectasis. Delayed neutrophil apoptosis and increased necrosis enhance dysregulated inflammation in bronchiectasis and failure to resolve this contributes to chronic, sustained inflammation. The excessive release of neutrophil serine proteases, such as neutrophil elastase, cathepsin G and proteinase 3, promotes a protease-antiprotease imbalance that correlates with increased inflammation in bronchiectasis and contributes to disease progression. While there are currently no licensed therapies to treat bronchiectasis, this review will explore the evolving evidence for neutrophilic inflammation as a novel treatment target with meaningful clinical benefits.

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Conflict of interest statement

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[Use of inhaled corticosteroids in bronchiectasis: data from the European Bronchiectasis Registry \(EMBARC\)](#)

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Free article

Abstract

Introduction: Current bronchiectasis guidelines advise against the use of inhaled corticosteroids (ICS) except in patients with associated asthma, allergic bronchopulmonary aspergillosis (ABPA) and/or chronic obstructive pulmonary disease (COPD). This study aimed to describe the use of ICS in patients with bronchiectasis across Europe.

Methods: Patients with bronchiectasis were enrolled into the European Bronchiectasis Registry from 2015 to 2022. Patients were grouped into ICS users and non-users at baseline and clinical characteristics associated with ICS use were investigated. Patients were followed up for clinical outcomes of exacerbation, hospitalisation and mortality for up to 5 years. We evaluated if elevated blood eosinophil counts (above the laboratory upper limit of normal) modified the effect of ICS on exacerbations.

Results: 19 324 patients were included for analysis and 10 109 (52.3%) were recorded as being prescribed ICS at baseline. After exclusion of patients with a history of asthma, COPD and/or ABPA, 3174/9715 (32.7%) patients with bronchiectasis were prescribed ICS. Frequency of ICS use varied across countries, ranging from 17% to 85% of included patients. ICS users had more severe disease, with significantly worse lung function, higher Bronchiectasis Severity Index scores and more frequent exacerbations at baseline ($p<0.0001$). Overall, ICS users did not have a reduced risk of exacerbation or hospitalisation during follow-up, but a significant reduction in exacerbation frequency was observed in the subgroup of ICS users with elevated blood eosinophil counts (relative risk 0.70, 95% CI 0.59 to 0.84, $p<0.001$).

Conclusion: ICS use is common in bronchiectasis, including in those not currently recommended ICS according to bronchiectasis guidelines. ICS use may be associated with reduced exacerbation frequency in patients with elevated blood eosinophils.

Keywords: bronchiectasis.

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