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

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. 2025 Mar 25;51(5):102478.

doi: 10.1016/j.semerg.2025.102478. Online ahead of print.

[Effect of triple inhaled therapy on cardiovascular and all-cause mortality compared with dual inhaled therapy in COPD: A systematic review and meta-analysis](#)

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Affiliations Expand

- PMID: 40139054
- DOI: [10.1016/j.semerg.2025.102478](#)

Abstract

Background: There is uncertainty about the role of triple inhaled therapy with LAMA/LABA/ICS (long-acting muscarinic antagonist/long-acting β 2-agonist/inhaled glucocorticoids) in chronic obstructive pulmonary disease (COPD) on

cardiovascular mortality. We estimated the effect of triple inhaled therapy (TT) compared with dual inhaled therapy (DT, including either LAMA/LABA or LABA/ICS) on all-cause and cardiovascular mortality in an evidence synthesis, METHODS: Following prospective registration (<https://osf.io/gtfvm>), a comprehensive search strategy of PubMed, Scopus, and Embase was performed, without language or time restrictions until September 30, 2024. All randomized clinical trials (RCTs) evaluating TT vs. DT and reporting cardiovascular or all-cause mortality were included. We assessed risk of bias and conducted a random effect meta-analysis estimating summary relative risk (RR) with 95% confidence intervals (CI), evaluating heterogeneity using I^2 . A network meta-analysis (NMA) was undertaken to hierarchically rank the therapies using P-score.

Results: From 781 citations, 5 RCTs were selected. There were 3 three-arm RCTs comparing TT vs. LABA/ICS vs. LAMA/LABA, 1 two-arm RCT comparing TT vs. LABA/ICS, and 1 two-arm RCT comparing TT vs. LAMA/LABA (total of 7855 patients receiving TT, 7003 LABA/ICS and 5059 LAMA/LABA). The risk of bias was moderate in 2 (40%), and low in 3 (60%) RCTs. TT reduced cardiovascular mortality by 48% vs. LAMA/LABA (RR 0.52, 95% CI 0.32-0.86, 3 RCTs, $I^2=0\%$) and by a non-significant 11% vs. LABA/ICS (RR 0.89, 95% CI 0.57-1.37, 3 RCTs, $I^2=0\%$). TT reduced all-cause mortality by 34% vs. LAMA/LABA (RR 0.66, 95% CI 0.48-0.90, 4 RCTs, $I^2=23.7\%$) and by 10% vs. LABA/ICS (RR 0.90, 95% CI 0.71-1.13, 4 RCTs, $I^2=0\%$). For both cardiovascular and all-cause mortality, NMA P-score showed that TT ranked first (81%/91%), LABA/ICS ranked second (58%/57%) and LAMA/LABA ranked last (11%/<1%) in effectiveness.

Conclusions: In patients with moderate to very severe COPD and previous exacerbations, TT inhaled significantly reduces cardiovascular and all-cause mortality compared to LAMA/LABA dual therapy, but not when compared to LABA/ICS.

Keywords: COPD; Cardiovascular mortality; Doble terapia inhalada; Dual inhaled therapy; EPOC; Meta-analysis; Metaanálisis; Mortalidad cardiovascular; Triple inhaled therapy; Triple terapia inhalada.

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doi: 10.1164/rccm.202502-0431ED. Online ahead of print.

[Using Symptoms Together with Peak Flow Measurement to Identify Patients Who Require Spirometry to Confirm COPD](#)

[Paul W Jones](#)¹

Affiliations Expand

- PMID: 40132173
- DOI: [10.1164/rccm.202502-0431ED](#)

No abstract available

Keywords: COPD, case finding, SGRQ.

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Ann Am Thorac Soc

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[When Incidence Leads to Precedence: A Call for Early Detection Protocols for Pulmonary Hypertension in Heart Failure and COPD](#)

[Stephen C Mathai](#)¹, [Monica Mukherjee](#)²

Affiliations Expand

- PMID: 40132150

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Review

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[Multimodal interventions for cachexia management](#)

[Joanne Reid](#)¹, [Carolyn Blair](#)¹, [Martin Dempster](#)², [Clare McKeaveney](#)¹, [Adrian Slee](#)³, [Donna Fitzsimons](#)¹

Affiliations Expand

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- PMCID: PMC11934851 (available on 2026-03-25)
- DOI: [10.1002/14651858.CD015749.pub2](https://doi.org/10.1002/14651858.CD015749.pub2)

Abstract

Background: Cachexia (disease-related wasting) is a complex metabolic syndrome which occurs in people with chronic illnesses, including cancer, HIV/AIDS, kidney disease, heart disease, and chronic obstructive pulmonary disease (COPD). People with cachexia experience unintentional weight loss, muscle loss, fatigue, loss of appetite, and reduced quality of life. Multimodal interventions which work synergistically to treat the syndrome could lead to benefits.

Objectives: To assess the benefits and harms of multimodal interventions aimed at alleviating or stabilising cachexia in people with a chronic illness.

Search methods: We searched CENTRAL, MEDLINE, Embase, PsycINFO, and two trials registers in July 2024, together with reference checking, citation searching, and contact with study authors to identify studies.

Selection criteria: We included randomised controlled trials (RCTs) in adults with or at risk of cachexia, comparing multimodal interventions combining two or more modalities (of pharmacology, nutrition, exercise) to treatment as usual, variation of the intervention, or unimodal intervention.

Data collection and analysis: Two review authors independently screened potentially eligible studies, extracted data, and assessed risk of bias (RoB 1). Primary outcomes were physical function, strength, and adverse events. Secondary outcomes were body composition and weight, quality of life (QoL), appetite, fatigue, and biochemical markers. We assessed the certainty of evidence with GRADE.

Main results: We included nine studies with 926 adults (mean age: 63 years). Study sample sizes ranged from 20 to 332 participants. Six studies were conducted in Europe, and one each in Turkey, New Zealand, and the USA. There were six studies in people with cancer, and one each in people with COPD, chronic kidney disease, and HIV/AIDS. We judged four studies to be at an overall high risk of bias, and five at an overall unclear risk. All outcomes in all comparisons had very low-certainty evidence, downgraded once for risk of bias and/or indirectness and twice for imprecision. Multimodal intervention (pharmacological, nutritional, and/or exercise) compared to treatment as usual One cancer study randomised 46 participants, with 41 included in all analyses except adverse events. The study assessed outcomes immediately after treatment, lasting six weeks. Compared to treatment as usual, there is no clear evidence for an effect of a multimodal intervention on: physical function (mean difference (MD) -16.10 m, 95% confidence interval (CI) -79.06 to 46.86; 41 participants); strength (MD 3.80 kg, 95% CI -3.21 to 10.81; 41 participants); adverse events (risk ratio (RR) 1.36, 95% CI 0.70 to 2.65; 46 participants); body composition (MD 7.89 cm², 95% CI -10.43 to 26.21; 41 participants); weight (MD 5.89 kg, 95% CI -1.45 to 13.23; 41 participants); appetite (MD 0.68 points, 95% CI -0.60 to 1.96; 41 participants); fatigue (MD 0.12, 95% CI -1.05 to 1.29; 41 participants); and biochemical markers (MD 2%, 95% CI 0.99 to 3.01; 41 participants), but the evidence was very uncertain; QoL was not reported. Multimodal intervention compared to variation of the intervention Three cancer studies and one HIV/AIDS study randomised 192 participants. We could not use the available data, nor obtain additional data, from two studies (one in cancer, one in HIV/AIDS). The studies assessed outcomes immediately after treatment, ranging from three to seven months. Compared to a variation of the intervention, there is no clear evidence for an effect of a multimodal intervention on: physical function (MD 10.0 m, 95% CI -36.27 to 56.27; 1 study, 56 participants); strength (MD 0.7 kg, 95% CI -3.75 to 5.15; 1 study, 56 participants); adverse events (RR 0.87, 95% CI 0.38 to 2.02; P = 0.75, I² =

0%; 2 studies, 95 participants); body composition (MD -2.67 kg, 95% CI -5.89 to 0.54; P = 0.10, I² = 0%; 2 studies, 95 participants); weight (MD -2.47 kg, 95% CI -7.11 to 2.16; P = 0.30, I² = 0%; 2 studies, 95 participants); QoL (standardised mean difference (SMD) -0.15, 95% CI -0.55 to 0.26; P = 0.47, I² = 0%; 2 studies, 95 participants); appetite (SMD -0.34, 95% CI -1.27 to 0.59; P = 0.48, I² = 79%; 2 studies, 95 participants); fatigue (MD 6.40 points, 95% CI -1.10 to 13.90; 1 study, 56 participants); or biochemical markers (MD 9.80 pg/mL, 95% CI -6.25 to 25.85; P = 0.23, I² = 73%; 2 studies, 95 participants), but the evidence is very uncertain.

Multimodal intervention compared to unimodal intervention We included six studies (802 participants) in this comparison: three cancer studies, and one each in people with COPD, chronic kidney disease, and HIV/AIDS. The studies assessed outcomes immediately after treatment, ranging from three to seven months. We could not use the available data, nor obtain additional data, from the HIV/AIDS study. Compared to a unimodal intervention, there is no clear evidence for an effect of a multimodal intervention on: physical function (SMD 0.02, 95% CI -0.22 to 0.26; P = 0.86, I² = 0%; 2 studies, 348 participants); strength (SMD 0.23, 95% CI -0.81 to 1.27; P = 0.66, I² = 0%; 2 studies, 348 participants); adverse events (RR 0.87, 95% CI -0.43 to 1.73; P = 0.68, I² = 45%; 2 studies, 395 participants); body composition (SMD 0.11, 95% CI -0.28 to 0.50; P = 0.58, I² = 74%; 5 studies, 742 participants); body weight (SMD -0.02, 95% CI -0.38 to 0.33; P = 0.90, I² = 49%; 4 studies, 431 participants); QoL (SMD 0.22, 95% CI -0.29 to 0.73; P = 0.39, I² = 61%; 3 studies, 411 participants); appetite (SMD -0.09, 95% CI -0.58 to 0.40; P = 0.72, I² = 58%; 2 studies, 395 participants); fatigue (MD -6.80 points, 95% CI -12.44 to -1.17; 1 study, 244 participants); and biochemical markers (SMD 0.11, 95% CI -0.59 to 0.80; P = 0.76, I² = 79%; 3 studies, 411 participants), but the evidence is very uncertain.

Authors' conclusions: The review found insufficient evidence to support or refute the use of multimodal interventions in managing cachexia. The certainty of the evidence was very low. Methodologically rigorous, well-powered RCTs with adequate interaction times are needed to assess the effectiveness of multimodal interventions in managing cachexia across chronic illnesses.

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Conflict of interest statement

JR: none known

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. 2025 Mar 24;11(2):00716-2024.

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[Pulmonary hypertension associated with COPD: a phenotype analysis](#)

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Affiliations Expand

- PMID: 40129550
- PMCID: [PMC11931555](#)
- DOI: [10.1183/23120541.00716-2024](#)

Abstract

Background: Pulmonary hypertension (PH) associated with COPD (PH-COPD) exhibits diverse phenotypes, challenging therapeutic management. This study aimed to describe the characteristics of COPD patients with distinct phenotypes, namely end-stage COPD with or without PH (group 1), other COPD patients with mild-to-moderate pre-capillary PH-COPD (group 2) and COPD patients with a pulmonary vascular phenotype (PVP) (group 3).

Methods: We performed a retrospective analysis of COPD patients who underwent right heart catheterisation from 2015 to 2022.

Results: 81 patients were included in group 1, 37 in group 2 and 35 in group 3. The groups differed in terms of clinical, functional, haemodynamic and imaging characteristics. Group 1 had significantly marked lung hyperinflation with increased total lung capacity and residual volume, a feature not observed in group 3. These results were confirmed by analysis of chest CT scans, which confirmed varying degrees of emphysema, as follows: severe in group 1, moderate in group 2 and mild in group 3, with median total emphysema indices of 55% (48-62), 32% (16-49) and 16% (3.4-31), respectively, $p < 0.0001$.

Conclusions: Our results highlight the broad spectrum of PH in COPD, from PH associated with end-stage COPD (phenotype/group 1), characterised by predominant alveolar wall damage with severe emphysema, to PVP (phenotype/group 3), mainly due to pulmonary vascular changes. Phenotype/group 2 represents an intermediate state combining features of both. In the current debate on how to distinguish PH-COPD phenotypes, it might be of interest to include quantitative thresholds for emphysema in future diagnostic and management algorithms.

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Conflict of interest statement

Conflict of interest: M. Riou discloses honoraria for presentations from Boehringer Ingelheim, Chiesi, Menarini and MSD. **Conflict of interest:** M. Canuet discloses honoraria for presentations from Menarini and MSD. **Conflict of interest:** G. Martin discloses honoraria for presentations from GlaxoSmithKline. **Conflict of interest:** I. Enache discloses honoraria for presentations from Chiesi and payment for expert testimony from AstraZeneca. **Conflict of interest:** A. Chaouat discloses consulting fees from Chiesi and France Oxygène, and honoraria for presentations from AstraZeneca and MSD. **Conflict of interest:** R. Kessler discloses honoraria for presentations from GlaxoSmithKline. **Conflict of interest:** D. Montani discloses grants or contracts to his institution from Acceleron, Janssen and Merck MSD; consulting fees from Acceleron, Merck MSD, Janssen and Ferrer; and honoraria for presentations from Bayer, Actelion/Janssen, Boehringer Ingelheim, Chiesi, GlaxoSmithKline, Ferrer and Merck MSD; and is an associate editor of this journal. **Conflict of interest:** The other authors declare no conflict of interest.

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. 2025 Mar 24;11(2):00308-2024.

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[Cough in pulmonary rehabilitation: a retrospective analysis of responders and nonresponders](#)

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Affiliations Expand

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- PMCID: [PMC11931550](#)
- DOI: [10.1183/23120541.00308-2024](#)

Abstract

Background: Pulmonary rehabilitation (PR) is essential for people with chronic respiratory diseases (CRDs), yet its impact on cough-related quality of life (CR-QoL) remains unexplored. We assessed the effects of PR on CR-QoL, described the characteristics of responders and nonresponders to PR, and explored determinants of responsiveness in this health domain in individuals with CRDs.

Methods: A retrospective study was conducted. We assessed CR-QoL using the Leicester Cough Questionnaire (LCQ) and the impact of the disease with the COPD Assessment Test (CAT), before and after PR. Cut-offs of <17.05 in LCQ total score and ≥ 10 in CAT were used to detect low CR-QoL and medium impact of the disease. Responders were defined as achieving a minimal clinically important difference (MCID) of ≥ 1.3 on the LCQ total score. Pre- versus post-PR analysis involved the t-test, Wilcoxon test or McNemar test and comparisons between groups included the independent t-test, Mann-Whitney U-test or Fisher's exact test. Logistic regression was employed to investigate factors influencing MCID achievement.

Results: 135 participants with CRDs (39% females; age 68 ± 10 years; 61% COPD; forced expiratory volume in 1 s (FEV₁) % pred $62.6 \pm 23.0\%$) were included. After PR, significant improvements were observed in all LCQ domains and CAT. 31% of participants were identified as responders in the LCQ (36% females; age 66 ± 10 years; 62% COPD; FEV₁ % pred $60.0 \pm 22.3\%$), showcasing significant differences in the LCQ and CAT compared to nonresponders. People with low CR-QoL and medium/high impact of the disease at baseline were 11 and 4 times more likely to respond to PR in CR-QoL, respectively.

Conclusion: PR enhances CR-QoL. Identification of CR-QoL and disease impact traits at baseline offers insights to optimise this outcome responsiveness to PR.

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Conflict of interest statement

Conflict of interest: A.S. Grave reports receiving “Research fellow in the project “CENTR(AR): Pulmões em andamento”, através do Programa de Parcerias para o Impacto, Portugal Inovação Social, mediante o Programa Operacional Inclusão Social e Emprego (POISE-03-4639-FSE-000597) e do Programa Operacional Competitividade e Internacionalização (COMPETE 2020 – POCI-01-0145-FEDER-007628; UIDB/04501/2020)” and PhD Grant 2023.01387.BDANA, outside the submitted work. C. Paixão reports receiving a PhD grant attributed by Fundação para a Ciência e Tecnologia (SFRH/BD/148741/2019 and COVID/BD/153477/2023), outside the submitted work. A. Oliveira is an associate editor of this journal. The remaining authors have nothing to disclose.

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. 2025 Mar 24;11(2):00806-2024.

doi: 10.1183/23120541.00806-2024. eCollection 2025 Mar.

[**Assessing the impact of different types of masks on COPD patients: a randomised controlled trial**](#)

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Affiliations Expand

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- PMID: [PMC11931569](#)
- DOI: [10.1183/23120541.00806-2024](#)

Abstract

Background: Wearing masks imposes an additional respiratory burden on COPD patients. This study aimed to investigate the impact of various mask types on physiological parameters and subjective feelings in COPD patients.

Methods: This randomised, open-label, parallel-controlled trial randomly assigned 129 COPD patients from two Chinese hospitals to the N95 mask group, the surgical mask group and the no mask group, who were required to complete a 6-min rest (6MR) and a 6-min walking test (6MWT) while wearing their designated masks, and were assessed for blood pressure, oxygen saturation, pulse rate, Borg score, rating of perceived exertion (RPE) score, 6-min walk distance (6MWD) and subjective feeling score. Data were analysed using intention-to-treat analysis and per-protocol analysis.

Results: No significant differences were observed in blood pressure, oxygen saturation, pulse rate or the 6MWD among the three groups following a 6MR or 6MWT. Wearing N95 masks and surgical masks during the 6MWT significantly elevated perceived dyspnoea ($p < 0.001$) and exertion scores ($p < 0.001$) in COPD patients. The differences in the two scores between the highest and lowest groups were 2 and 4 points, respectively.

Conclusion: Wearing surgical masks or N95 masks for 6MR or 6MWT did not adversely affect physiological parameters in COPD patients. However, it significantly increased perceived dyspnoea and exertion.

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Conflict of interest statement

Conflict of interest: The authors have no conflicts of interest to declare.

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. 2025 Mar 25.

doi: 10.4046/trd.2025.0009. Online ahead of print.

[Challenges and the Future of Pulmonary Function Testing in COPD: Toward Earlier Diagnosis of COPD](#)

[Sang Hyuk Kim](#)¹, [MeiLan K Han](#)²

Affiliations Expand

- PMID: 40129308
- DOI: [10.4046/trd.2025.0009](#)

Free article

Abstract

In the field of chronic obstructive pulmonary disease (COPD), there is growing interest in methods for early detection with the goal of altering disease progression. At the same time, pulmonary function testing (PFT) remains central to the diagnosis and management of COPD. Yet, spirometry remains underused, particularly in primary care, contributing to the underdiagnosis and misdiagnosis of COPD. Challenges hindering more active use of spirometry include a lack of access in primary care clinics or public venues, the complexity of performing spirometry and a lack of comfort with interpretation. Enhancing PFT utilization will require new approaches including broadening availability and adopting different approaches to interpretation.

Keywords: Chronic Obstructive Pulmonary Disease; Pulmonary Function Tests; Spirometry; Underdiagnosis.

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Am J Respir Crit Care Med

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[The Use of CT Densitometry for the Assessment of Emphysema in Clinical Trials: A Position Paper from the Fleischner Society](#)

[Raúl San José Estépar](#)¹, [R Graham Barr](#)², [Sean B Fain](#)³, [Philippe A Grenier](#)⁴, [Eric A Hoffman](#)⁵, [Stephen M Humphries](#)⁶, [Miranda Kirby](#)⁷, [Nancy Obuchowski](#)⁸, [Christopher J Ryerson](#)⁹, [Joon Beom Seo](#)¹⁰, [Ruth Tal-Singer](#)¹¹, [Samuel Y Ash](#)¹², [Alexander A Bankier](#)¹³, [James Crapo](#)¹⁴, [MeiLan Han](#)¹⁵, [Liz Kellermeyer](#)¹⁶, [Jonathan Goldin](#)¹⁷, [Cynthia H McCollough](#)¹⁸, [John D Newell Jr](#)¹⁹, [Bruce E Miller](#)²⁰, [Lars H Nordenmark](#)²¹, [Martine Remy-Jardin](#)²², [Mathias Prokop](#)²³, [Yoshiharu Ohno](#)²⁴, [Edwin K Silverman](#)²⁵, [Charlie Strange](#)²⁶, [George R Washko](#)²⁷, [David A Lynch](#)⁶

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- PMID: [40126404](https://pubmed.ncbi.nlm.nih.gov/40126404/)
- DOI: [10.1164/rccm.202410-2012SO](https://doi.org/10.1164/rccm.202410-2012SO)

Abstract

Emphysema's significant morbidity and mortality underscore the need for reliable outcome metrics in clinical trials. However, commonly accepted COPD outcome measures do not adequately capture emphysema severity or progression. Computed tomography (CT) metrics have been validated as accurate indicators of pathological emphysema and predictors of COPD progression, exacerbations, and mortality. This Position Paper reviews the evidence supporting CT densitometry as a biomarker for emphysema, establishes implementation standards, and highlights areas for future research. A systematic literature review addressed three key questions: whether CT densitometry can be used as a diagnostic biomarker of emphysema, whether CT densitometry can be used as prognostic biomarker, and whether longitudinal change in densitometry can be used as a disease progression monitoring biomarker. Emphysema metrics, such as the percentage of low attenuation areas (LAA₉₅₀), are validated, highly reproducible diagnostic and prognostic biomarkers. Volume-adjusted lung density is recommended for disease monitoring. Both metrics demonstrate a scan-rescan intra-class correlation coefficient of 0.99 with proper technique. The paper also discusses relevant CT physics, techniques, and sources of variation, including technical factors, physiological changes, and software analysis. Key recommendations for clinical trials include using standardized CT techniques, proper subject selection, and longitudinal evaluation with volume-adjusted lung density.

Keywords: Clinical Trials; Computed tomography (CT); Emphysema; Lung Densitometry.

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doi: 10.1080/21645515.2025.2479334. Epub 2025 Mar 24.

[Demographics and clinical burden of disease among RSV-hospitalized older adults in Italy: A retrospective cohort study](#)

[Anna Puggina](#)¹, [Melania Dovizio](#)², [Alexander Domnich](#)³, [Alen Marijam](#)⁴, [Chiara Veronesi](#)², [Caterina Rizzo](#)⁵, [Marta Vicentini](#)¹, [Luca Degli Esposti](#)², [Giovanna Elisa Calabrò](#)^{6,7}, [Maria João Fonseca](#)⁸

Affiliations Expand

- PMID: 40126050
- PMCID: [PMC11934162](#)
- DOI: [10.1080/21645515.2025.2479334](#)

Abstract

Respiratory syncytial virus (RSV) is a leading cause of acute respiratory infection and can lead to severe disease in older adults or those with comorbidities. This analysis aims to evaluate the demographic and clinical burden of RSV hospitalizations among older adults in Italy and inform potential preventative strategies. Adults aged ≥ 50 years with ≥ 1 hospitalization discharge diagnosis for RSV from 2010 to 2021 were included. Demographic characteristics before the first RSV hospitalization and clinical outcomes during this hospitalization and the 12 months following are described. Of the 243 patients, mean (SD) age was 73.7 (13.1) years, 40.7% were male, and the most common comorbidities were chronic obstructive pulmonary disease (37.9%), diabetes (21.8%), and heart failure (15.2%). Mean length of index hospitalization was 17.0 days, during which 9.1% of patients

died. At index or during the 12-month follow-up, 5.8% had an intensive care unit admission, 61.3% were prescribed antibiotics, 8.2% had a stroke, and 3.3% had an acute myocardial infarction. During the 12-month follow-up, approximately, half of patients experienced worsening of preexisting comorbidities, with notable rates of re-hospitalization and mortality (44.4% and 29.6%). This study shows a high clinical burden of RSV among older adults in Italy, emphasizing a need for improved RSV surveillance, and may guide policymakers and healthcare providers in making informed recommendations for, and implementation of, RSV vaccination in Italy.

Keywords: Respiratory syncytial virus (RSV); burden of disease; high risk; hospitalizations; older adults.

Conflict of interest statement

AP, AM and MV: employees of and hold financial equities in GSK; MD and CV: employees of CliCon S.r.l; LDE: no conflicts of interest to declare; AD: received consulting fees from CSL Seqirus and VIHTALI, and payment or honoraria from SD Biosensor and CSL Seqirus; CR: received payment or honoraria from AstraZeneca, GSK, MSD, CSL Seqirus, and Sanofi; GEC: received grants or contracts, consulting fees, and payment or honoraria from GSK; participated on a Data Safety Monitoring Board or Advisory Board for GSK; Director of VIHTALI, a spin-off of Università Cattolica del Sacro Cuore, Rome, Italy; MJF: employee of, holds financial equities in GSK and has received support for attending meetings and/or travel from GSK as an employee.

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Review

Physiol Rev

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. 2025 Mar 24.

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[Extracellular vesicles and lung disease: from pathogenesis to biomarkers and treatments](#)

[Kyong-Su Park](#)¹, [Cecilia Lässer](#)¹, [Jan Lötvall](#)¹

Affiliations Expand

- PMID: 40125970
- DOI: [10.1152/physrev.00032.2024](https://doi.org/10.1152/physrev.00032.2024)

Abstract

Nanosized extracellular vesicles (EVs) are released by all cells to convey cell-to-cell communication. EVs, including exosomes and microvesicles, carry an array of bioactive molecules, such as proteins and RNAs, encapsulated by a membrane lipid bilayer. Epithelial cells, endothelial cells, and various immune cells in the lung contribute to the pool of EVs in the lung microenvironment and carry molecules reflecting their cellular origin. EVs can maintain lung health by regulating immune responses, inducing tissue repair, and maintaining lung homeostasis. They can be detected in lung tissues and biofluids such as bronchoalveolar lavage fluid and blood, offering information about disease processes and can function as disease biomarkers. Here, we discuss the role of EVs in lung homeostasis and pulmonary diseases such as asthma, chronic obstructive pulmonary disease, cystic fibrosis, idiopathic pulmonary fibrosis, and lung injury. The mechanistic involvement of EVs in pathogenesis and their potential as disease biomarkers are discussed. Lastly, the pulmonary field benefits from EVs as clinical therapeutics in severe pulmonary inflammatory disease, as EVs from mesenchymal stem cells attenuate severe respiratory inflammation in multiple clinical trials. Further, EVs can be engineered to carry therapeutic molecules for enhanced and broadened therapeutic opportunities, such as the anti-inflammatory molecule CD24. Finally, we discuss the emerging opportunity of using different types of EVs for treating severe respiratory conditions.

Keywords: Airways; Exosomes; Microparticles; Microvesicles; Pulmonary.

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Review

Pulm Ther

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. 2025 Mar 23.

doi: [10.1007/s41030-025-00291-5](https://doi.org/10.1007/s41030-025-00291-5). Online ahead of print.

[Monoclonal Antibodies for the Treatment of Chronic Obstructive Pulmonary Disease](#)

[Dimitrios Toumpanakis](#)¹, [Konstantinos Bartziokas](#)², [Agamemnon Bakakos](#)³, [Evangelia Fouka](#)⁴, [Petros Bakakos](#)³, [Stelios Loukides](#)², [Paschalis Steiropoulos](#)⁵, [Andriana I Papaioannou](#)³

Affiliations Expand

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Free article

Abstract

Chronic obstructive pulmonary disease (COPD) is a common and complex disease characterized by persistent airflow limitation and the presence of exacerbations, resulting in significant morbidity and mortality. Although the pathogenesis of COPD is multifactorial, airway inflammation plays a significant role in disease progression. Despite the advantages of non-pharmaceutical and pharmaceutical interventions that have significantly improved the symptom burden and exacerbation frequency in COPD, there is a lack of disease-modifying therapies that target the underlying disease mechanisms. Monoclonal antibodies (mAbs), a drug class that has improved treatment in severe asthma by blocking mediators of the type 2 (Th2) and allergic inflammatory cascades, are currently under investigation for their efficacy in COPD. Our review summarizes the evidence for the use of monoclonal antibodies in COPD and discusses current limitations and promising advances. Although targeting Th1 inflammation has failed to improve COPD outcomes, recent clinical trials have shown beneficial effects of monoclonal antibodies targeting Th2 inflammation, providing evidence for a personalized approach in COPD treatment.

Keywords: Biomarkers; COPD; Cytokines; Eosinophils; Monoclonal antibodies.

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Conflict of interest statement

Declarations. Conflict of Interest: Paschalis Steiropoulos is an Editorial Board member of Pulmonary Therapy. Paschalis Steiropoulos was not involved in the selection of peer reviewers for the manuscript nor any of the subsequent editorial decisions. Dimitrios Toumpanakis, Konstantinos Bartziokas, Agamemnon Bakakos, Evangelia Fouka, Petros Bakakos, Stelios Loukides and Andriana I Papaioannou have no conflict of interest to disclose. **Ethical Approval:** This article is based on previously conducted studies and does not contain any new studies with human participants or animals performed by any of the authors.

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Editorial

Respirology

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. 2025 Mar 23.

doi: 10.1111/resp.70031. Online ahead of print.

[Enhancing COPD Care for Women: A Predictive Tool for Palliative Needs](#)

[Syed Ahmar Shah](#)¹

Affiliations [Expand](#)

- PMID: 40122681

- DOI: [10.1111/resp.70031](https://doi.org/10.1111/resp.70031)

No abstract available

Keywords: COPD; artificial intelligence; statistics.

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Thorax

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. 2025 Mar 23: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 \(EMBARC\)](#)

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- DOI: [10.1136/thorax-2024-221825](https://doi.org/10.1136/thorax-2024-221825)

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

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Br J Gen Pract

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. 2025 Mar 24:BJGP.2024.0466.

doi: 10.3399/BJGP.2024.0466. Online ahead of print.

[General practice chest X-ray rate is associated with earlier lung cancer diagnosis and reduced all-cause mortality: a retrospective observational study](#)

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Affiliations Expand

- PMID: 39740925
- DOI: [10.3399/BJGP.2024.0466](https://doi.org/10.3399/BJGP.2024.0466)

Abstract

Background: Evidence is equivocal on whether general practice rates of investigation in symptomatic patients using chest X-ray (CXR) affect outcomes.

Aim: To determine whether there is an association between rates of CXR requested in general practice and lung cancer outcomes.

Design and setting: Observational study using data on English general practices.

Method: Cancer registry data for patients diagnosed with lung cancer in 2014-2018 were linked to data on general practice CXRs from 2013 until 2017. Cancer stage at diagnosis (I/II versus III/IV) and 1-year and 5-year survival rates (conditional on survival to 1 year) post-diagnosis were reported by general practice quintile of CXR rate, with adjustment for population differences (age, smoking, prevalence of chronic obstructive pulmonary disease and heart failure, ethnicity, and deprivation) and by unadjusted category (low, medium, and high).

Results: In total, 192 631 patient records and CXR rates for 7409 practices were obtained. Practices in the highest quintile of CXR rate had fewer cancers diagnosed at stage III/IV compared with those in the lowest quintile (odds ratio [OR] 0.87, 95% confidence interval [CI] = 0.83 to 0.92, $P < 0.001$). The association was weaker for the high unadjusted CXR category (OR 0.94, 95% CI = 0.91 to 0.97). For the highest adjusted quintile, hazard ratios (HRs) for death within 1 year and 5 years were 0.92 (95% CI = 0.90 to 0.95, $P < 0.001$) and 0.95 (95% CI = 0.91 to 0.99, $P = 0.023$), respectively. For the high unadjusted CXR category, the HR for 1-year survival was 0.98 (95% CI = 0.96 to 0.99, $P = 0.004$), with no association demonstrated for 5-year survival.

Conclusion: Patients registered at general practices with higher CXR use have a favourable stage distribution and slightly better survival. This supports the use of CXR in promoting earlier diagnosis of symptomatic lung cancer in general practice.

Keywords: chest X-ray; early detection of cancer; general practice; lung cancer.

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Am J Respir Crit Care Med

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. 2025 Mar 28.

doi: 10.1164/rccm.202501-0084LE. Online ahead of print.

[Refining the Concept of Disease Stability in COPD: Bridging Complexity and Clinical Practice](#)

[Yi-Han Hsiao](#)¹, [Yen-Fu Chen](#)²

Affiliations Expand

- PMID: 40153803

- DOI: [10.1164/rccm.202501-0084LE](https://doi.org/10.1164/rccm.202501-0084LE)

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Am J Respir Crit Care Med

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. 2025 Mar 28.

doi: 10.1164/rccm.202501-0290LE. Online ahead of print.

[Reply to Hsiao and Chen: Refining the Concept of Disease Stability in COPD: Bridging Complexity and Clinical Practice](#)

[Dave Singh](#)¹

Affiliations Expand

- PMID: 40153800
- DOI: [10.1164/rccm.202501-0290LE](https://doi.org/10.1164/rccm.202501-0290LE)

No abstract available

Keywords: COPD; Disease Management; Treatment Outcome.

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Monaldi Arch Chest Dis

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. 2025 Mar 27.

doi: 10.4081/monaldi.2025.3298. Online ahead of print.

[Prognostic role of blood eosinophils in acute exacerbations of chronic obstructive pulmonary disease: systematic review and meta-analysis](#)

[Ombretta Para](#)¹, [Giuliano Cassataro](#)², [Chiara Fantoni](#)³, [Lorenza Bertù](#)⁴, [Claudia Tieri](#)⁵, [Lorenzo Caruso](#)⁶, [Sara Rotunno](#)⁷, [Francesco Dentali](#)⁴

Affiliations Expand

- PMID: 40152975
- DOI: [10.4081/monaldi.2025.3298](#)

Abstract

Acute exacerbation of chronic obstructive pulmonary disease (AECOPD) is a major cause of hospitalization and mortality worldwide. While blood eosinophils have been suggested as a prognostic biomarker of COPD, their predictive value in AECOPD remains uncertain. This meta-analysis aims to evaluate the prognostic role of blood eosinophil counts in predicting mortality and hospital readmission in these patients. A systematic review and meta-analysis were conducted according to PRISMA guidelines. We included studies that evaluated the prognostic role of blood eosinophils in AECOPD, with predefined cut-offs. Data on mortality and readmission rates were extracted, and statistical analyses were performed to assess sensitivity, specificity, and likelihood ratios. A total of 14 studies with 23,625 patients were included. High blood eosinophil counts during AECOPD hospitalization had low sensitivity (28.1%) and specificity (66.2%) in predicting 12-month mortality and readmission. Positive and negative likelihood ratios were also suboptimal, with values of 0.8 and 1.1, respectively. Sensitivity analyses, including only high-quality studies, confirmed these findings. The results suggest that blood eosinophil counts have limited prognostic value in predicting mortality and readmission in AECOPD patients. The variability in eosinophil cut-offs and lack of consistent data across studies contribute to this limitation. Further large-scale prospective studies are needed to clarify the role of eosinophils as a prognostic marker in AECOPD. Consequently, routine measurement of blood eosinophils during acute exacerbations may not be warranted for prognostic purposes.

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Chronic Obstr Pulm Dis

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. 2025 Mar 27;12(2):158-174.

doi: 10.15326/jcopdf.2024.0560.

[Variation in Prevalence and Burden of Chronic Obstructive Pulmonary Disease by State and Insurance Type in the United States](#)

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- PMID: 40147474
- DOI: [10.15326/jcopdf.2024.0560](#)

Free article

Abstract

Introduction: Chronic obstructive pulmonary disease (COPD) poses a substantial burden on individuals and the U.S. health care system. Up-to-date information describing individuals with COPD and their acute hospital-based health care utilization at the state level and by insurance type is lacking.

Methods: Individuals with COPD aged 40 and older were identified from large databases of Medicare fee-for-service, Medicaid, and commercial health insurance claims, and counts were extrapolated to the U.S. health insurance market. Demographics and outcome metrics were quantified between January 1 and December 31, 2021, and summarized by state and insurance type.

Results: Approximately 11.7 million insured individuals had COPD in 2021. The largest share were covered by Medicare (79.4%), followed by commercial insurance (11.3%) and Medicaid (9.3%). COPD prevalence varied among states, ranging from 44 (Utah) to 143 (West Virginia) per 1000 insured individuals. Nationwide, annual all-cause mortality for individuals with COPD covered by Medicare (11.5%) was more than double that of Medicaid (5.1%). There were 1.8 million COPD-related acute inpatient hospitalizations nationwide, with the largest share among individuals covered by Medicare (86.4%), followed by Medicaid (9.0%) and commercial insurance (4.6%). COPD-related hospitalization rates also varied among states, ranging from 97 (Idaho) to 200 (District of Columbia) per 1000 individuals with COPD. There were 1.4 million COPD-related emergency department/observation encounters not resulting in acute inpatient admissions nationwide.

Conclusion: There is substantial state and payer variation in COPD prevalence and burden. Understanding this variation provides valuable insights into populations with unmet needs that can inform public health strategies to address gaps.

Keywords: COPD; demographics; health insurance; healthcare utilization; hospitalizations; prevalence.

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Respir Res

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. 2025 Mar 26;26(1):115.

doi: 10.1186/s12931-025-03185-x.

[Molecular mechanisms and therapeutic targets of acute exacerbations of chronic obstructive pulmonary disease with *Pseudomonas aeruginosa* infection](#)

[Zhiwei Lin](#)^{1,2}, [Shuang Liu](#)², [Ke Zhang](#)¹, [Tianyu Feng](#)¹, [Yewei Luo](#)³, [Yu Liu](#)³, [Baoping Sun](#)⁴, [Lugian Zhou](#)⁵

Affiliations Expand

- PMID: 40140846
- PMCID: [PMC11948814](#)
- DOI: [10.1186/s12931-025-03185-x](#)

Abstract

Background: Chronic Obstructive Pulmonary Disease (COPD) is a leading cause of global mortality, with acute exacerbations of COPD (AECOPD) significantly increasing the disease's morbidity and mortality. Among the pathogens implicated in AECOPD, *Pseudomonas aeruginosa* (*P. aeruginosa*) is increasingly recognized as a major co-infecting bacterium. Despite its clinical importance, the molecular mechanisms and therapeutic targets underlying AECOPD with *P. aeruginosa* infection remain inadequately understood.

Methods: We employed a multi-omics approach, integrating proteomic analyses of bronchoalveolar lavage fluid (BALF) and plasma with transcriptomic analysis of peripheral blood. A discovery cohort of 40 AECOPD with *P. aeruginosa* infection patients and 20 healthy controls was analyzed, followed by validation in an independent cohort of 20 patients and 10 controls. Differentially expressed proteins (DEPs) and genes (DEGs) were identified and subjected to protein-protein interaction (PPI) network analysis, weighted gene co-expression network analysis (WGCNA), and immune infiltration analysis. Molecular docking simulations were conducted to explore potential therapeutic agents.

Results: Our integrative analysis identified key biomarkers, which played critical roles in oxidative stress and neutrophil extracellular trap (NET) formation, both of which were pivotal in the pathogenesis of AECOPD with *P. aeruginosa* infection. The combined analysis of BALF, plasma, and peripheral blood underscored the interplay between local lung changes and systemic immune responses. Functional enrichment analyses highlighted significant pathways related to bacterial defense, inflammation, and immune activation. Validation in an independent cohort confirmed the diagnostic value of three key proteins (AZU1, MPO, and RETN), with high area under the curve (AUC) values in ROC analyses. Molecular docking indicated strong binding affinities of these proteins with Pioglitazone and Rosiglitazone, suggesting potential therapeutic utility.

Conclusions: This study provides a comprehensive understanding of the molecular mechanisms underlying AECOPD with *P. aeruginosa* infection, highlighting the pivotal roles of oxidative stress and NET formation in disease progression. The identified biomarkers offer promising diagnostic and therapeutic targets. Our findings pave the way for novel strategies to improve outcomes for AECOPD patients with *P. aeruginosa* infection. While the study design limits our ability to establish causality, these results provide important insights that warrant further investigation, particularly through longitudinal studies, to confirm the specific contributions of *P. aeruginosa* in exacerbations.

Clinical trial number: Not applicable.

Keywords: *Pseudomonas aeruginosa*; AECOPD; Biomarker; Multi-Omics; Neutrophil extracellular traps; Oxidative stress; Therapeutic targets.

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Conflict of interest statement

Declarations. Ethics approval and consent to participate: Ethical approval for the inclusion of human subjects was granted by the Ethics Committee of The First Affiliated Hospital of Guangzhou Medical University, with approval codes 2022 No.121 and 2024 No. G-007. Written informed consent was secured from all study

participants prior to their inclusion in the research. Consent for publication: Not applicable. Competing interests: The authors declare no competing interests.

- [48 references](#)
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Supplementary info

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. 2025 Mar 26;15(1):10447.

doi: [10.1038/s41598-025-93359-w](https://doi.org/10.1038/s41598-025-93359-w).

[Nomogram to predict progression from preserved ratio impaired spirometry to chronic obstructive pulmonary disease](#)

[Jiaxuan Wu](#) ^{#1234}, [Guoqing Wang](#) ^{#5}, [Jiadi Gan](#) ¹²³⁴, [Lan Yang](#) ¹²³⁴, [Huohuo Zhang](#) ¹²³⁴, [Jinghong Xian](#) ¹²³⁴, [Yalun Li](#) ⁶⁷, [Weimin Li](#) ⁸⁹¹⁰¹¹¹²

Affiliations Expand

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- DOI: [10.1038/s41598-025-93359-w](https://doi.org/10.1038/s41598-025-93359-w)

Abstract

Preserved Ratio Impaired Spirometry (PRISm) is a specific subtype of pre-chronic obstructive pulmonary disease (pre-COPD). People with PRISm are at risk of progression to chronic obstructive pulmonary disease (COPD). We developed a model to predict progression in subjects with PRISm. We screened 188 patients whose lung function transitioned from PRISm to COPD and 173 patients with PRISm who remained stable over two years. After excluding 78 patients due to incomplete clinical or laboratory data, a total of 283 patients were included in the final analysis. These patients were randomly divided into a training cohort (227 patients) and a validation cohort (56 patients) at a 8:2 ratio. LASSO regression and multivariate logistic regression were used to identify factors influencing progression. Among the 283 patients, 134 progressed to COPD. The model developed using six variables showed good performance, with areas under the receiver operating characteristic (ROC) curves of 0.87 in the training cohort and 0.79 in the validation cohort. The model demonstrated excellent calibration and was clinically meaningful, as shown by decision curve analysis (DCA) and clinical impact curve (CIC). We developed China's first prediction model for the progression of lung function from PRISm to COPD in a real-world population. This model is conducive to early identification of high-risk groups of pulmonary function deterioration, so as to provide timely intervention and delay the occurrence and progression of the disease.

Keywords: Chronic obstructive pulmonary disease (COPD); Prediction model; Preserved ratio impaired spirometry (PRISm); Progression.

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Conflict of interest statement

Declarations. Ethics approval and consent to participate: The West China Hospital Research Ethics Committee and ethics committees approved the study (2023(1856)), which did not interfere with clinical management. Informed consent (oral or written) was obtained from study participants according to local requirements, except for cases in which a local committee granted a waiver or exemption. We adhered to the Declaration of Helsinki and Good Clinical Practice guidelines. Consent for publication: Not applicable. Competing interests: The authors declare no competing interests.

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. 2025 Mar 26.

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[The potential of antidiabetic medications in the prevention of acute exacerbations of chronic obstructive pulmonary disease in subjects with type 2 diabetes mellitus](#)

[Theodoros Panou](#)¹, [Evanthia Gouveri](#)¹, [Fotios Drakopanagiotakis](#)², [Dimitrios Papazoglou](#)³, [Paschalis Steiropoulos](#)¹, [Nikolaos Papanas](#)⁴

Affiliations Expand

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Abstract

Type 2 diabetes mellitus (T2DM) is often recognised as a major comorbidity of chronic obstructive pulmonary disease (COPD) and is being increasingly linked to elevated risk of acute exacerbation of chronic obstructive pulmonary disease (AECOPD). Accordingly the potential utility of antidiabetic medication, mostly in subjects suffering from both AECOPD and T2DM, has been investigated. The most widely studied medication is metformin. Although some studies showed no particular benefit, others assessed a diminished risk of AECOPD by 37% and reductions in hospitalisations, re-admissions, or the use of antibiotics/and corticosteroids. The same holds true for sulfonylureas and thiazolidinediones. Conversely, dipeptidyl-peptidase 4 inhibitors (DPP-4is) were not associated with any benefit. Data on insulin use are scarce, but insulin in AECOPD management has been linked with adverse outcomes. The strongest effect has been shown with glucagon-like peptide 1 receptor agonists (GLP-1RAs) and sodium sodium-glucose cotransporter 2 inhibitors (SGLT-2is): the former limited severe exacerbations by 30% and the latter by 32-36%. With SGLT-2is, the incidence diminished by 46%, while approximately 3 out of 4 emergency visits or hospitalisations were prevented. In conclusion, existing evidence suggests a benefit of antidiabetic medication in AECOPD-related outcomes, suggesting that this effect merits further investigation.

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Conflict of interest statement

Disclosures: Theodoros Panou has nothing to disclose. Evanthia Gouveri has attended conferences sponsored by Berlin-Chemie, Sanofi, AstraZeneca, Novo Nordisk, Lilly, Boehringer Ingelheim; received speaker honoraria by Boehringer-

Ingelheim, Sanofi-Aventis and Menarini. Fotios Drakopanagiotakis has attended conferences sponsored by Boehringer Ingelheim and Elpen. Paschalis Steiropoulos has been an advisory board member, has received honoraria as a speaker and has attended conferences sponsored by Astra-Zeneca, Boehringer Ingelheim, Chiesi, GSK, Elpen, Guidotti, Menarini, ResMed, Specialty Therapeutics and Vivisol. Dimitrios Papazoglou declares associations: with Menarini, Novo Nordisk, Astra-Zeneca, Boehringer Ingelheim and Sanofi-Aventis. Nikolaos Papanas has been an advisory board member of Astra-Zeneca, Bayer, Boehringer Ingelheim, Menarini, MSD, Novo Nordisk, Pfizer, Takeda and TrigoCare International; has participated in sponsored studies by Astra-Zeneca, Eli-Lilly, GSK, MSD, Novo Nordisk, Novartis and Sanofi-Aventis; has received honoraria as a speaker for Astra-Zeneca, Bayer, Boehringer Ingelheim, Eli-Lilly, Elpen, GSK, Menarini, MSD, Mylan, Novo Nordisk, Pfizer, Sanofi-Aventis and Vianex; and has attended conferences sponsored by TrigoCare International, Eli-Lilly, Galenica, GSK, Novo Nordisk, Pfizer and Sanofi-Aventis.

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. 2025 Mar 27;12(2):184-189.

doi: 10.15326/jcopdf.2024.0572.

[Outcomes of Virtual Pulmonary Rehabilitation in Oxygen-Dependent COPD Patients](#)

[Hector Filizola](#)¹, [Anirudh Kumar](#)², [Russell G Buhr](#)^{2,3,4}, [Kristin Schwab Jensen](#)²

Affiliations Expand

- PMID: 40037281
- DOI: [10.15326/jcopdf.2024.0572](#)

Free article

Abstract

Virtual pulmonary rehabilitation (PR) is a proven yet underutilized intervention in chronic obstructive pulmonary disease (COPD) patients. However, neither the safety nor the effectiveness of virtual PR is established for patients with advanced disease and higher disease severity, particularly those requiring supplemental oxygen. We performed a retrospective review of 167 patients to evaluate the feasibility, safety, and effectiveness of virtual PR in oxygen-dependent versus nonoxygen-dependent COPD patients. Our primary outcome, attendance, was high (88% of sessions were attended by both groups). Adverse events occurred in only 2 (1%) participants, one in each group. Both groups showed significant postintervention improvements in dyspnea and depression scores (COPD Assessment Test [CAT], modified Medical Research Council [mMRC], Patient Health Questionnaire-9 [PHQ-9]) and functional exercise capacity (1-minute sit-to-stand [1MSTS]), with the improvements approaching or exceeding the established minimal clinically important difference values. When comparing the oxygen-dependent and nonoxygen groups, there were no significant differences in the degree of improvement for CAT, PHQ-9, and 1MSTS. For mMRC, those on oxygen did improve by 0.3 less than those not on oxygen ($P=0.052$). These findings suggest virtual PR is safe and effective for COPD patients requiring oxygen. To our knowledge, this is the first study to compare outcomes of virtual PR in patients on and off oxygen. Future research should explore patient-specific factors that can further individualize care.

Keywords: chronic bronchitis; electronic health records; real-world evidence.

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. 2025 Mar 27;12(2):127-136.

doi: 10.15326/jcopdf.2024.0565.

[Disease Onset and Burden in Patients With Chronic Bronchitis and COPD: A Real-World Evidence Study](#)

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Affiliations Expand

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Free article

Abstract

Background: Chronic bronchitis (CB), classically defined as having cough and sputum production for at least 3 months per year for 2 consecutive years, is frequently associated with chronic obstructive pulmonary disease (COPD).

Methods: This retrospective cohort study using the Optum[®] de-identified electronic health record data set (Optum[®] EHR) aimed to identify patients with CB, COPD, and both CB and COPD through the application of the classical definition of CB, and to compare the characteristics of these populations, and the timing of diagnosis as well as their health care resource utilization (HCRU). Scanning of the EHRs was performed electronically using a specially developed algorithm.

Results: Of 104,633,876 patients in the study period between January 2007 and September 2020, 628,545 patients had CB only (i.e., nonobstructive disease), 129,084 had COPD only (COPD cohort), and 77,749 had both COPD and CB (COPD-CB cohort). A total of 75.9% of patients (59,009 of 77,749) fulfilled the criteria for a CB diagnosis before their first diagnosis with COPD, compared with 24.1% who had COPD before being diagnosed with CB. HCRU over 5 years was highest in the COPD-CB cohort, whereas the COPD cohort and CB cohorts had similar HCRU over 5 years. The COPD-CB cohort had a greater percentage of common COPD comorbidities and exposure to more drug classes than the other cohorts.

Conclusions: These results highlight the importance of increased attention to CB. CB often precedes the diagnosis of COPD and subsequently leads to high HCRU. Interventions to better manage CB and prevent the progression of CB to COPD could improve morbidity in this population.

Keywords: chronic bronchitis; electronic health records; real-world evidence.

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. 2025 Mar 27;65(3):2402264.

doi: 10.1183/13993003.02264-2024. Print 2025 Mar.

[What can lockdowns tell us about the underlying causes of asthma exacerbations?
A retrospective cohort study](#)

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Affiliations Expand

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No abstract available

Conflict of interest statement

Conflict of interest: No specific funding was received for the present study. A. Bourdin declares receiving grants or contracts, consulting fees, or support for lectures, presentations, meeting and travel from Boehringer Ingelheim, Novartis, AstraZeneca, Sanofi, Regeneron, GSK, Chiesi, AB Science and Celltrion. J. Krishnan declares receiving grants or contracts, consulting fees, support for lectures, presentations, meeting and travel, or payment for testimony from NIH, PCORI, COPD Foundation, American Lung Association, AstraZeneca, CereVu Medical, BData Inc., Verona Pharmaceuticals, American Board of Medicine, DynaMed, CarePath, Inogen, Genentech, Goodwin Law, LLP and Teva, as well as participation on a data safety monitoring board or advisory board for the National Heart, Lung, and Blood Institute, and Cambridge University Hospitals NHS Foundation trust, and providing leadership or a fiduciary role in other board, society, committee or advocacy group for the Respiratory Health association, Global Initiative for Asthma, and the COPD Foundation. N. Molinari declares receiving grants or contracts,

consulting fees, meeting and travel support from GSK, AB Sciences, Sanofi, Chiesi, Nomics, MSD and BMS. The remaining authors have no conflicts of interest to declare.

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. 2025 Mar 27;12(2):146-157.

doi: 10.15326/jcopdf.2024.0568.

[Hospitalized Non-Tuberculous Mycobacterial Pulmonary Disease Patients and Their Outcomes in the United States: A Retrospective Study Using National Inpatient Sample Data](#)

[Saqib H Baig¹](#), [Shruti Sirapu¹](#), [Jesse Johnson¹](#)

Affiliations Expand

- PMID: 39933561
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Abstract

Background: Nontuberculous mycobacteria pulmonary disease (NTM-PD) is an emerging public health concern with increasing incidence and prevalence. Despite its chronic and progressive nature, there is a notable gap in research on the factors influencing hospital outcomes in this patient population.

Materials and methods: We conducted a retrospective cohort study using data from the National Inpatient Sample (NIS) to analyze hospitalizations of adult patients diagnosed with NTM-PD. We examined patient demographics, comorbidities, and hospital characteristics to identify predictors of hospital length of stay (LOS) and discharge disposition. Multivariate negative binomial regression and logistic regression models were employed to assess the impact of these variables.

Results: The study included 1167 hospitalized NTM-PD patients, with a mean age of 66.9 years. The overall mean LOS was 7.4 days, with an average hospital cost of \$15,606. Discharge to a nursing home was associated with a 78% longer LOS (incidence rate ratio=1.78, $p<0.0001$). Key predictors of extended LOS included male gender, private insurance status, higher comorbidity burden, and increased number of procedures. Patients discharged to nursing homes were more likely to be older males with complex medical profiles. Interestingly, conditions such as malignancy and COPD, while linked to longer LOS, were associated with a decreased likelihood of discharge to a nursing home.

Conclusion: Our study highlights significant predictors of LOS and discharge outcomes in NTM-PD patients, emphasizing the need for personalized and proactive management. These findings underscore the importance of targeted interventions in the outpatient setting to reduce hospital admissions and improve patient outcomes.

Keywords: NTM-PD; comorbidities; discharge disposition; healthcare utilization; hospital length of stay; retrospective study.

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. 2025 Mar 27;12(2):109-116.

doi: 10.15326/jcopdf.2024.0511.

[Proposal and Validation of the Minimum Clinically Important Difference in Emphysema Progression](#)

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Affiliations Expand

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Abstract

Objective: The severity of emphysema may be measured by lung density on computed tomography (CT) scanning, and in alpha-1 antitrypsin deficiency (AATD) this measure has been used as the primary outcome in trials of disease-modifying therapy, namely augmentation. However, the minimum clinically important difference (MCID) in lung density change is not known; this study aimed to derive and validate MCIDs for density values in AATD.

Methods: The distribution method and anchoring density against forced expiratory volume in 1 second (FEV₁) were used to derive mean and 95% confidence intervals for the MCID. Data from systematic reviews of CT density measurement and therapy for AATD obtained both absolute and annual changes in lung density. Using the range of potential MCID generated by these methods, a value was chosen for validation against mortality, lung function, and health status in the Birmingham, United Kingdom AATD cohort, using regression to adjust for confounders.

Results: Anchor and distribution methods generated a probable MCID of -1.87 g/L/year (range -1.53 to -2.20). The greatest differences between groups were found at the -2.2g/L/year with a greater FEV₁ decline in individuals with greater lung loss. Absolute lung density change had a probable MCID of -2.04g/L (range -1.83 to -2.30), and there was a difference in lung function ($p<0.001$) and mortality; where individuals whose absolute lung loss of more than -2.04g/L had a greater risk of death ($p<0.05$).

Interpretation: From initial evidence, we have shown absolute lung density change as a potential outcome for emphysema modifying therapies in AATD rather than annual density change, with an MCID of -2.04g/L.

Keywords: alpha-1 antitrypsin deficiency; emphysema; lung density; minimum clinically important difference.

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. 2025 Mar 27;12(2):137-145.

doi: 10.15326/jcopdf.2024.0582.

[Clinical Implications of *Pseudomonas Aeruginosa* Colonization in Chronic Obstructive Pulmonary Disease Patients](#)

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Affiliations Expand

- PMID: 39912873
- DOI: [10.15326/jcopdf.2024.0582](#)

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Abstract

Background: *Pseudomonas aeruginosa* is an important pathogen in patients with chronic respiratory diseases. It can colonize the airways and could have prognostic value in bronchiectasis and cystic fibrosis. Its role in chronic obstructive pulmonary disease (COPD) is less well-defined.

Methods: A prospective study was conducted in Hong Kong to investigate the possible association between *Pseudomonas aeruginosa* colonization and acute exacerbation of COPD (AECOPD) risks.

Results: Among 327 Chinese patients with COPD, 33 (10.1%) of the patients had *Pseudomonas aeruginosa* colonization. Patients with or without *Pseudomonas aeruginosa* colonization had similar background characteristics. Patients with *Pseudomonas aeruginosa* colonization had increased risks of moderate to severe AECOPD, severe AECOPD, and pneumonia with an adjusted odds ratio (aOR) of 3.15 (95% CI 1.05-9.48, $p=0.042$), 2.59 (95% CI 1.01-6.64, $p=0.048$), and 4.19 (95% CI 1.40-12.54, $p=0.011$) respectively. Patients with *Pseudomonas aeruginosa* colonization also had increased annual frequency of moderate to severe

AECOPDs, median 0 (0_0.93) in the non-*Pseudomonas aeruginosa* colonization group and 1.35 (0_3.39) in the *Pseudomonas aeruginosa* colonization group, with a *p*-value of 0.005 in multivariate linear regression.

Conclusion: *Pseudomonas aeruginosa* colonization is a potential independent risk factor for moderate to severe AECOPD and pneumonia among patients with COPD without coexisting bronchiectasis.

Keywords: COPD; COPD exacerbation; *Pseudomonas aeruginosa*; pneumonia.

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. 2025 Mar 27;12(2):117-126.

doi: 10.15326/jcopdf.2024.0562.

[A Novel Nomogram for Predicting the Risk of Acute Heart Failure in Intensive Care Unit Patients with COPD](#)

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Affiliations Expand

- PMID: 39912871
- DOI: [10.15326/jcopdf.2024.0562](#)

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Abstract

Background: The objective of this study was to construct a prediction model to assess the onset of acute heart failure (AHF) in patients with chronic obstructive

pulmonary disease (COPD) without a history of heart failure and to evaluate the predictive value of the nomogram.

Methods: This study involved 3730 patients with COPD and no history of heart failure. Clinical and laboratory data were collected from the Medical Information Mart for Intensive Care IV database. The patients were divided into a training set (2611 cases) and a validation set (1119 cases) in a 7:3 ratio. Least absolute shrinkage and selection operator (LASSO) regression was used to identify potential risk factors for AHF in patients with COPD. These factors were then subjected to multivariate logistic regression analysis to develop a prediction model for the risk of AHF. The model's differentiation, consistency, and clinical applicability were evaluated using receiver operating characteristic analysis, a calibration curve, and decision curve analysis (DCA), respectively.

Results: LASSO regression identified 10 potential predictors. The concordance index was 0.820. The areas under the curves for the training and validation sets were 0.8195 and 0.8035, respectively. The calibration curve demonstrated strong concordance between the nomogram's predictions and the actual outcomes. DCA confirmed the clinical applicability of the nomogram.

Conclusion: Our nomogram is a reliable and convenient tool for predicting acute heart failure in patients with COPD.

Keywords: COPD; Medical Information Mart for Intensive Care; acute heart failure; nomogram.

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. 2025 Mar 27;12(2):190-202.

doi: 10.15326/jcopdf.2024.0577.

[Validation of Acute Exacerbation of Chronic Obstructive Pulmonary Disease Recording in Electronic Health Records: A Systematic Review](#)

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Affiliations Expand

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- DOI: [10.15326/jcopdf.2024.0577](#)

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Abstract

Objective: Acute exacerbations of COPD(AECOPD) can have severe impacts on patients with the disease and a heavy burden on health care resources. Electronic health records (EHRs) are a valuable resource for identifying cases of AECOPD and research. Studies have attempted to validate case definitions of AECOPD and this review aims to summarize validated AECOPD definitions in EHRs and to provide guidance on the best algorithms to use to ensure accurate cohorts of AECOPD cases are available for researchers using EHRs.

Methods: MEDLINE and Embase were searched and studies that met the inclusion criteria were reviewed by ≥2 reviewers. Data extracted included the algorithms used to identify AECOPD, the reference standards used to compare against the algorithm, and measures of validity. The risk of bias was assessed using QUADAS-2 adapted for this review.

Results: Out of 2784 studies found by the search strategy, 12 met the inclusion criteria. The clinical terminology used to build algorithms to detect AECOPD included codes from the International Classification of Diseases (ICD) Ninth Revision, Clinical Modification and Tenth Revision (ICD-9-CM and ICD-10), along with the Read codes from United Kingdom general practices. AECOPD can be identified within EHRs using validated definitions, however, the validity of AECOPD definitions varies considerably depending on the algorithm used and the settings to which they are applied.

Conclusion: Although there are validated definitions that can be used to identify AECOPD, there is no clear consensus on which provides the highest validity or the most sensitive and specific definition to use.

Keywords: AECOPD; COPD; acute exacerbation of COPD; electronic health records.

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. 2025 Mar 27;12(2):175-183.

doi: 10.15326/jcopdf.2024.0542.

[Comparison of Chart Review and Administrative Data in Developing Predictive Models for Readmissions in Chronic Obstructive Pulmonary Disease](#)

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Affiliations Expand

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Abstract

This study aimed to evaluate the performance of machine learning models for predicting readmission of patients with chronic obstructive pulmonary disease (COPD) based on administrative data and chart review data. The study analyzed 4327 patient encounters from the University of Chicago Medicine to assess the risk of readmission within 90 days after an acute exacerbation of COPD. Two random forest prediction models were compared. One was derived from chart review data, while the other was derived using administrative data. The data were randomly partitioned into training and internal validation sets using a 70% to 30% split. The 2 models had comparable accuracy (administrative data area under the curve [AUC]=0.67, chart review AUC=0.64). These results suggest that despite its limitations in precisely identifying COPD admissions, administrative data may be useful for developing effective predictive tools and offer a less labor-intensive alternative to chart reviews.

Keywords: COPD; machine learning; prediction; readmissions.

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. 2025 Mar 27;65(3):2400691.

doi: 10.1183/13993003.00691-2024. Print 2025 Mar.

[Patient-centred composite scores as tools for assessment of response to biological therapy for paediatric and adult severe asthma](#)

[Ekaterina Khaleva](#)^{1 2}, [Chris Brightling](#)³, [Thomas Eiwegger](#)^{4 5 6 7}, [Alan Altraja](#)⁸, [Philippe Bégin](#)^{9 10}, [Katharina Blumchen](#)¹¹, [Apostolos Bossios](#)^{12 13}, [Arnaud Bourdin](#)¹⁴, [Anneke Ten Brinke](#)¹⁵, [Guy Brusselle](#)¹⁶, [Roxana Silvia Bumbacea](#)^{17 18}, [Andrew Bush](#)¹⁹, [Thomas B Casale](#)²⁰, [Graham W Clarke](#)^{21 22}, [Rekha Chaudhuri](#)²³, [Kian Fan Chung](#)²⁴, [Courtney Coleman](#)²⁵, [Jonathan Corren](#)²⁶, [Sven-Erik Dahlén](#)^{27 28}, [Antoine Deschildre](#)^{29 30}, [Ratko Djukanovic](#)^{2 31}, [Katrien Eger](#)³², [Andrew Exley](#)³³, [Louise Fleming](#)²⁴, [Stephen J Fowler](#)^{34 35}, [Erol A Gaillard](#)³⁶, [Monika Gappa](#)³⁷, [Atul Gupta](#)³⁸, [Hans Michael Haitchi](#)^{2 31 39 40}, [Simone Hashimoto](#)^{32 41}, [Liam G Heaney](#)⁴², [Gunilla Hedlin](#)⁴³, [Markaya Henderson](#)⁴⁴, [Wen Hua](#)⁴⁵, [David J Jackson](#)^{46 47}, [Bülent Karadag](#)⁴⁸, [Constance Helen Katelaris](#)⁴⁹, [Mariko S Koh](#)^{50 51}, [Matthias Volkmar Kopp](#)^{52 53}, [Gerard H Koppelman](#)^{54 55}, [Inger Kull](#)⁵⁶, [Ramesh J Kurukulaaratchy](#)^{2 31 57}, [Ji-Hyangu Lee](#)⁵⁸, [Vera Mahler](#)⁵⁹, [Mika Mäkelä](#)⁶⁰, [Matthew Masoli](#)⁶¹, [Alexander G Mathioudakis](#)^{62 63}, [Angel Mazon](#)⁶⁴, [Erik Melén](#)⁵⁶, [Katrin Milger](#)^{65 66}, [Alexander Moeller](#)⁶⁷, [Clare S Murray](#)^{34 35}, [Prasad Nagakumar](#)^{68 69}, [Parameswaran Nair](#)⁷⁰, [Jenny Negus](#)⁷¹, [Antonio Nieto](#)⁷², [Nikolaos G Papadopoulos](#)^{73 74}, [James Paton](#)⁷⁵, [Mariëlle W Pijnenburg](#)⁷⁶, [Katharine C Pike](#)⁷⁷, [Celeste Porsbjerg](#)⁷⁸, [Anna Rattu](#)¹, [Hitasha Rupani](#)³⁹, [Franca Rusconi](#)⁷⁹, [Niels W Rutjes](#)⁴¹, [Sejal Saglani](#)²⁴, [Paul Seddon](#)⁸⁰, [Salman Siddiqui](#)⁸¹, [Florian Singer](#)^{67 82}, [Tomoko Tajiri](#)⁸³, [Steve Turner](#)^{84 85}, [John W Upham](#)^{86 87}, [Susanne J H Vijverberg](#)^{32 41}, [Peter A B Wark](#)⁸⁸, [Michael E Wechsler](#)⁸⁹, [Valentyna](#)

[Yasinska²⁷](#), [Graham Roberts⁹¹](#); [3TR Asthma Definition of Response Working Group](#)

Affiliations Expand

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- PMCID: [PMC11948419](#)
- DOI: [10.1183/13993003.00691-2024](#)

Abstract

Background: We have previously developed Core Outcome Measures sets for Severe Asthma (COMSA) by multi-stakeholder consensus. There are no patient-centred tools to quantify response to biological therapies for severe asthma. We aimed to develop paediatric and adult Composite iNdexes For Response in asthMa (CONFiRM) incorporating clinical parameters and patient-reported quality of life.

Methods: International expert healthcare professionals and patients with severe asthma were invited to 1) develop consensus levels of clinically relevant changes for each outcome measure within COMSA, 2) use multicriteria decision analysis to develop the CONFiRM scores and 3) assess their internal validity. A separate group of healthcare professionals evaluated CONFiRM's external validity.

Results: Five levels of change for each COMSA outcome were agreed. Severe exacerbations and maintenance oral corticosteroid use were rated as the most important in determining both paediatric and adult CONFiRM scores. There was strong agreement between healthcare professionals and patients, although patients assigned greater importance to quality of life. The CONFiRM score quantified response to a biologic from -31 (deterioration) to 69 (best possible response). Paediatric and adult CONFiRMs had good discriminative ability for a sufficient (area under the curve ≥ 0.92) and a substantial (area under the curve ≥ 0.95) response to biologics. Both CONFiRMs demonstrated excellent external validity (Spearman correlation coefficients 0.9 and 0.8 for paediatric and adult, respectively; $p < 0.0001$).

Conclusions: We have developed novel patient-centred paediatric and adult CONFiRMs that include quality of life measures. CONFiRMs should allow a more holistic understanding of response for the patient and a standardised assessment of the effectiveness of biologics between studies. Further research is needed to prospectively validate CONFiRM scores.

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Conflict of interest statement

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Regeneron, Roche, Genentech, Novartis, Chiesi and Mologic. T. Eiwegger reports grants from ALK and Greer Stallergen; consultancy fees from ALK; payment or honoraria for lectures, presentations, manuscript writing or educational events from Aimune, ThermoFisher, Nutricia/Danone, ALK and Novartis; payment for expert testimony from Aimune; participation on a data safety monitoring board or advisory board with ALK, Aimune and Nutricia/Danone; leadership roles with EAACI (Chair WG Biologicals and Board Immunology Section) and Allergy – European Journal of Allergy and Clinical Immunology (Associate Editor); and receipt of equipment, materials, drugs, medical writing, gifts or other services from MADX and Novartis. A. Altraja reports consultancy fees from AstraZeneca, Boehringer Ingelheim, GSK and Sanofi; payment or honoraria for lectures, presentations, manuscript writing or educational events from AstraZeneca, Berlin-Chemie Menarini, Boehringer Ingelheim, Norameda, GSK, Sanofi and Zentiva; payment for expert testimony from AstraZeneca, Boehringer Ingelheim, GSK and Sanofi; support for attending meetings from AstraZeneca, Berlin-Chemie Menarini, Boehringer Ingelheim and Norameda; participation on a data safety monitoring board or advisory board with AstraZeneca, Boehringer Ingelheim, GSK and Sanofi; and receipt of equipment, materials, drugs, medical writing, gifts or other services from Berlin-Chemie and Menarini. P. Bégin reports grants from Novartis, DBV Technologies, Sanofi and Regeneron; consultancy fees from Pfizer, Sanofi and DBV Technologies; and payment or honoraria for lectures, presentations, manuscript writing or educational events from ALK, Sanofi, Pfizer, AstraZeneca and Bausch Health. K. Blumchen reports grants from Novartis Pharma GmbH, Allergy Therapeutics, Aimmune Therapeutics, DBV Technologies and Hipp GmbH; consultancy fees from Novartis Pharma GmbH, Allergy Therapeutics, Aimmune Therapeutics and DBV Technologies; payment or honoraria for lectures, presentations, manuscript writing or educational events from Novartis Pharma GmbH, Allergy Therapeutics, Aimmune Therapeutics, DBV Technologies, ALK Bausch, Lomb, Allergopharma and ThermoFisher; support for attending meetings from DBV Technologies and Aimmune Therapeutics; participation on a data safety monitoring board or advisory board with Novartis Pharma GmbH, DBV Technologies and Aimmune Therapeutics; and a leadership role with West German Working Group for Pediatric Pneumology and Allergology (Board member). A. Bossios reports grants from AstraZeneca; payment or honoraria for lectures, presentations, manuscript writing or educational events from AstraZeneca, GSK, Novartis and Teva; support for attending meetings from Novartis; participation on a data safety monitoring board or advisory board with AstraZeneca, GSK, Novartis, Teva and Sanofi; and leadership roles with Severe Heterogeneous Asthma Research collaboration, Patient-centred (SHARP) (member of steering committee), Swedish National Airway Register (steering committee member), Nordic Severe Asthma Network (NSAN) (vice-chair), and ERS (Head of Assembly 5). A. Bourdin reports grants from AstraZeneca and Boehringer Ingelheim; consultancy fees from AstraZeneca, Boehringer Ingelheim, GSK, Novartis, Amgen, Regeneron, Sanofi, Chiesi and AB Science; payment or honoraria for lectures, presentations, manuscript writing or educational events from AstraZeneca, Boehringer Ingelheim, GSK, Novartis, Amgen, Regeneron, Sanofi, Chiesi and AB Science; support for attending meetings from AstraZeneca, Boehringer Ingelheim, GSK, Novartis, Amgen, Regeneron, Sanofi, Chiesi and AB Science; participation on a data safety monitoring board or advisory board with AB Science; and is a member of the GINA scientific committee. A. Ten Brinke reports grants from GSK, TEVA and AstraZeneca; payment or honoraria for lectures, presentations, manuscript writing or educational events from GSK, TEVA,

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immunology (Vice Chair) and German Asthma Net eV (Scientific Advisory Board). A. Moeller reports grants from Vertex Inc.; consultancy fees from Vertex Inc.; payment or honoraria for lectures, presentations, manuscript writing or educational events from Vertex Inc.; participation on a data safety monitoring board or advisory board with Vertex Inc.; and a leadership role with ERS (Head of Assembly 7). C.S. Murray reports grants from NIHR, Asthma UK and MRC; payment or honoraria for lectures, presentations, manuscript writing or educational events from GSK, Novartis and ThermoFisher; and support for attending meetings from Sanofi. P. Nagakumar reports grants from NIHR; consultancy fees from Sanofi and AstraZeneca; and payment or honoraria for lectures, presentations, manuscript writing or educational events from GSK and Novartis. P. Nair reports grants from AstraZeneca, Teva, Sanofi, Foresee and Cyclomedica; consultancy fees from Arrowhead Pharma; payment or honoraria for lectures, presentations, manuscript writing or educational events from AstraZeneca, Teva and GSK; and participation on a data safety monitoring board or advisory board with Sanofi, Equillium and GSK. A. Nieto reports consultancy fees from ASAC Pharma; payment or honoraria for lectures, presentations, manuscript writing or educational events from Novartis, Immunotek and Uriach; and support for attending meetings from Immunotex. N.G. Papadopoulos reports grants from Capricare, Nestle, Numil and Vianex; and consultancy fees from Abbott, Abbvie, AstraZeneca, GSK, HAL, Medscape, Menarini/Faes Farma, Mylan, Novartis, Nutricia, OM Pharma and Regeneron/Sanofi. M.W. Pijnenburg reports consultancy fees from Sanofi; payment or honoraria for lectures, presentations, manuscript writing or educational events from Novartis and Abbvie; support for attending meetings from ERS; and a leadership role with ERS (Head of Assembly 7). K.C. Pike reports consultancy fees from Respi and Adherium; payment or honoraria for lectures, presentations, manuscript writing or educational events from Sanofi; and support for attending meetings from GSK. C. Porsbjerg reports grants from AstraZeneca, GSK, Novartis, TEVA, Sanofi, Chiesi and ALK; consultancy fees from AstraZeneca, GSK, Novartis, TEVA, Sanofi, Chiesi and ALK; payment or honoraria for lectures, presentations, manuscript writing or educational events from AstraZeneca, GSK, Novartis, TEVA, Sanofi, Chiesi and ALK; and participation on a data safety monitoring board or advisory board with AstraZeneca, Novartis, TEVA, Sanofi and ALK. A. Rattu reports support for the present study from 3TR European Union IMI 2. H. Rupani reports grants from GSK and AstraZeneca; payment or honoraria for lectures, presentations, manuscript writing or educational events from GSK, AstraZeneca and Chiesi; and support for attending meetings from AstraZeneca. P. Seddon reports grants from NIHR; participation on a data safety monitoring board or advisory board with WAVE Study (sponsor and funder Inspiration Healthcare Limited); and receipt of equipment, materials, drugs, medical writing, gifts or other services from Vapotherm Inc. S. Siddiqui reports payment or honoraria for lectures, presentations, manuscript writing or educational events from AstraZeneca, GSK, Chiesi, WebMD, Areteia Therapeutics; participation on a data safety monitoring board or advisory board with AstraZeneca, GSK, Chiesi, WebMD, Areteia Therapeutics and MRC; leadership role with ERS Science Council; and stock (or stock options) with Eupnoos Ltd (co-founder and holds a 5% equity stake). F. Singer reports grants from Medical University of Graz and LungenLiga Bern; payment or honoraria for lectures, presentations, manuscript writing or educational events from Novartis Pharma Switzerland, Vertex Pharmaceuticals Switzerland and Vertex Pharmaceuticals Austria; and support for attending meetings from Chiesi Pharmaceuticals Austria. J.W. Upham reports payment or honoraria for lectures, presentations, manuscript

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Comment in

- [Advancing patient-centred care in measuring response to biologics in severe asthma.](#)

Bellou V. Eur Respir J. 2025 Mar 27;65(3):2402113. doi: 10.1183/13993003.02113-2024. Print 2025 Mar. PMID: 40147860 No abstract available.

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**"Multimorbidity"[Mesh Terms] OR
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NPJ Prim Care Respir Med

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[Multimorbidity incidence following hospitalization for SARS-CoV-1 infection or influenza over two decades: a territory-wide retrospective cohort study](#)

[Cuiling Wei¹](#), [Chor Wing Sing¹](#), [Eric Yuk Fai Wan^{1 2 3 4}](#), [Ching Lung Cheung^{1 2 4}](#), [Ian Chi Kei Wong^{1 4 5}](#), [Francisco Tsz Tsun Lai^{6 7 8 9}](#)

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Free article

Abstract

An infection of SARS-CoV-1, the causative agent of Severe Acute Respiratory Syndrome (SARS), may be followed by long-term clinical sequela. We hypothesized a greater 20-year multimorbidity incidence in people hospitalized for SARS-CoV-1 infection than those for influenza during similar periods. We conducted a retrospective cohort study using a territory-wide public healthcare database in Hong Kong. All patients aged ≥ 15 hospitalized for SARS in 2003 or influenza in 2002 or 2004 with no more than one of 30 listed chronic disease were included. Demographics, clinical history, and medication use were adjusted for in the inverse-probability-of-treatment-weighted Poisson regression analyses. We identified 1255 hospitalizations for SARS-CoV-1 infection and 687 hospitalizations for influenza. Overall crude multimorbidity incident rates were 1.5 per 100 person-years among SARS patients and 5.6 among influenza patients. Adjusted multimorbidity incidence rate ratio (IRR) was estimated at 0.78 [95% confidence interval (CI), 0.70-0.86) for SARS patients compared with influenza patients. Analysis by follow-up period shows a potentially greater risk among SARS patients in the first year of follow-up (IRR 1.33, 95% CI 0.97-1.84), with the risk in influenza patients increasing in subsequent years. Subgroup analyses by age and sex showed consistent results with the main analysis that SARS-CoV-1 infection was not followed by a higher incidence of multimorbidity than influenza. Notable differences in the patterns of multimorbidity were identified between the two arms. To conclude, we found no evidence of a higher multimorbidity incidence after hospitalization for SARS than for influenza over the long-term.

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Conflict of interest statement

Competing interests: EYFW has received research grants from the Health Bureau of the Government of the Hong Kong Special Administrative Region, the National Natural Science Foundation of China, the Hong Kong Security Bureau, and the Hong Kong Research Grants Council, outside the submitted work. ICKW reports research funding outside the submitted work from Amgen, Bristol-Myers Squibb, Pfizer, Janssen, Bayer, GSK, Novartis, the Hong Kong Research Grants Council, the Health Bureau of the Government of the Hong Kong Special Administrative Region, National Institute for Health Research in England, European Commission, and the National Health and Medical Research Council in Australia; has received speaker fees from Janssen and Medice in the previous 3 years; and is an independent non-executive director of Jacobson Medical in Hong Kong. FTTL has been supported by the RGC Postdoctoral Fellowship under the Hong Kong Research Grants Council and has received research grants from the Health Bureau of the Government of the Hong Kong Special Administrative Region, outside the submitted work. The remaining authors declare no competing interests. Ethics approval: This study was approved by the institutional review boards of the University of Hong Kong and HA (UW 20-172). As only anonymized medical records were analyzed no informed consent was required or feasible.

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. 2025 Mar 25;83(1):77.

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[Association of possible Sarcopenia, Sarcopenia and sarcopenic obesity with multimorbidity among middle-aged and older adults: findings from the China health and retirement longitudinal study](#)

[Kaixin Zhang](#)¹, [Xiaowei Zheng](#)^{2,3}, [Tao Ma](#)⁴

Affiliations Expand

- PMID: 40128908
- PMCID: [PMC11934486](#)
- DOI: [10.1186/s13690-025-01538-y](#)

Abstract

Background and objectives: The association between possible sarcopenia, sarcopenia and sarcopenic obesity on multimorbidity risk remains poorly investigating. We aimed to evaluate the associations between possible sarcopenia, sarcopenia and sarcopenic obesity on multimorbidity prevalence and incidence among middle-aged and older Chinese population.

Methods: A total of 13,036 participants from the China Health and Retirement Longitudinal Study 2011 were included in cross-sectional analyses. 5771 participants were including in longitudinal analyses and were followed up in 2018. Sarcopenia status was defined according to the Asian Working Group for Sarcopenia 2019 (AWGS 2019) criteria. Obesity was defined according to body mass index.

Results: In cross-sectional analyses, possible sarcopenia, sarcopenia and sarcopenic obesity were significantly associated with higher multimorbidity prevalence. During the 7 years of follow-up, 2295(39.77%) participants with new-onset multimorbidity were identified. Compared with participants without sarcopenia or obesity, a greater increase in the risk of multimorbidity incidence was found among participants with obesity only (OR = 1.39, 1.21-1.59), sarcopenia only (OR = 1.45, 1.35-1.58) and sarcopenic obesity (OR = 2.42, 2.03-2.89). Both pre-sarcopenia, sarcopenia and sarcopenic obesity were positively related to an increased number of morbidities.

Conclusion: Pre-sarcopenia, sarcopenia and sarcopenic obesity were associated with higher multimorbidity prevalence and incidence. Our findings provide important implications for screening and preventing possible sarcopenia, sarcopenia and obesity, which may be beneficial in reducing chronic disease burden.

Keywords: Multimorbidity; Possible sarcopenia; Sarcopenia; Sarcopenic obesity.

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Conflict of interest statement

Declarations. Ethics approval and consent to participate: The ethics application for collecting data on human subjects in CHARLS was approved by the Biomedical Ethics Review Committee of Peking University (IRB00001052-11015), and all CHARLS participants provided written informed consent. The details of the CHARLS data are available at its website (<http://charls.pku.edu.cn/en>). Consent for

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

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. 2025 Mar 23:glaf062.

doi: [10.1093/gerona/glaf062](https://doi.org/10.1093/gerona/glaf062). Online ahead of print.

[Longitudinal association between multimorbidity, participating activity and cognitive function: cross-lagged mediation analysis](#)

[Shuojia Wang](#)^{1,2,3}, [Zikuan Yang](#)⁴, [Yilin Chen](#)¹, [Jing Zhu](#)¹, [Lin Kang](#)^{1,3}, [Lixin Cheng](#)^{1,5}

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- PMID: 40126938
- DOI: [10.1093/gerona/glaf062](https://doi.org/10.1093/gerona/glaf062)

Abstract

Background: Previous studies have reported an association between multimorbidity and cognitive function, however, the specific direction and underlying mechanism remain unclear. The study aimed to explore the direction of this association and to examine the role of physical activity and leisure activity among older adults.

Methods: Data from 5,546 dementia-free Americans aged 60 or above of 2008 (T1) and 2016 (T2) of the Health and Retirement Study were used. Multimorbidity was measured by the multimorbidity weight index. Cognitive functioning was measured by the Telephone Interview of Cognitive Status. We used cross-lagged panel models to determine the associations between multimorbidity and cognitive function and examine the mediation effect of physical and leisure activity.

Results: There was a bidirectional association between multimorbidity and cognitive function. More severe multimorbidity predicted worse cognitive function ($\beta = -0.064$, SE = 0.016) and vice versa ($\beta = -0.024$, SE = 0.009). Paths from multimorbidity to cognitive function were stronger than those from cognitive function to multimorbidity. Physical and leisure activity mediated the association between multimorbidity (T1) and cognitive function (T2), and the association between cognitive function (T1) and multimorbidity (T2). The bidirectional association between multimorbidity and cognitive function was only observed in APOE $\epsilon 4$ noncarriers.

Conclusions: A negative bidirectional association was observed between multimorbidity and cognitive function. Additionally, the association is mediated by physical and leisure activity.

Keywords: Cognitive function; Leisure activity; Multimorbidity; Physical activity; bidirectional association.

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. 2025 Mar 24:1-18.

doi: 10.1080/08959420.2025.2475267. Online ahead of print.

[Prevalence of Chronic Diseases and Patterns of Multimorbidity Among Older Adults in Zhejiang, China: A Cross-Sectional Analysis Utilizing Electronic Health Records](#)

[Yanrong Zhao](#)¹, [Tianxiang Lin](#)¹, [Xuewen Jiang](#)¹, [Qing Yang](#)¹, [Wei Wang](#)¹, [Le Xu](#)¹, [Xinyi Wang](#)¹, [Yinwei Qiu](#)¹

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- PMID: 40125896
- DOI: [10.1080/08959420.2025.2475267](https://doi.org/10.1080/08959420.2025.2475267)

Abstract

China has implemented national essential public health services (NEPHS) to strengthen its primary health care system. These services are continuously adjusted in accordance with factors such as public health service requirements. Previous research has indicated significant variability in the prevalence and patterns of multimorbidity. This study utilizes the Electronic Health Records in 2021 ($N = 4,045,684$) to describe the prevalence of major chronic diseases and explore common patterns of multimorbidity among older adults in Zhejiang, China. Results show that the prevalence of multimorbidity was 36.04%, with the most common pattern of multimorbidity being hypertension and dyslipidemia (12.66%), followed by hypertension and diabetes (5.46%), and hypertension, dyslipidemia, and diabetes (3.95%). The NEPHS should consider embracing the strategic management framework of the Guided Care Model, shifting the focus from a purely disease-oriented to a more holistic patient-oriented model.

Keywords: Electronic health record; multimorbidity; older adults; prevalence.

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. 2025 Mar 22;15(1):9885.

doi: 10.1038/s41598-025-94338-x.

[Exploring patterns of multimorbidity in South Korea using exploratory factor analysis and non negative matrix factorization](#)

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Affiliations Expand

- PMID: 40121350
- PMCID: [PMC11929802](#)
- DOI: [10.1038/s41598-025-94338-x](#)

Abstract

The increasing prevalence of multimorbidity and the co-occurrence of multiple chronic diseases presents a measurable challenge to public health, impacting healthcare strategies and planning. This study aimed to explore disease patterns and temporal clustering using data from South Korea's National Health Insurance Service, spanning 2002-2019. The dataset included approximately 1 million individuals, focusing on those with at least two chronic diseases while excluding individuals who died within five years of follow-up. We analyzed 126 non-communicable diseases, considering only those with a prevalence above 1%, and applied a wash-out period to determine incidence. Exploratory factor analysis (EFA) and non-negative matrix factorization (NMF) were used to identify disease clustering over time. Participants were divided into four groups: men and women in their 50 s and 60 s. EFA identified five patterns in men in their 50 s and seven in their 60 s, while four patterns emerged in women in their 50 s and five in their 60 s. NMF identified 10 clusters for men in their 50 s, 15 in their 60 s, and 16 clusters for women in both age groups. Our study confirms established comorbidity patterns and reveals previously unrecognized clusters, providing data-driven insights into multimorbidity mechanisms and supporting evidence-based healthcare strategies.

Keywords: Chronic disease; EFA; Longitudinal; Multimorbidity; NMF.

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Conflict of interest statement

Declarations. Competing interest: The authors declare no competing interests.
Ethical approval: The Institutional Review Board of Chung-Ang University waived the requirement for ethical approval for this study, which is a retrospective study and used anonymized data in accordance with the Bioethics and Safety Act (1041078–202112-HR-336–01). The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2000.

- [81 references](#)

- [4 figures](#)

Supplementary info

MeSH terms, Grants and fundingExpand

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nature portfolio

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Qual Health Res

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. 2025 Mar 28:10497323241311508.

doi: 10.1177/10497323241311508. Online ahead of print.

[How and Why Do Multimorbid Patients Decide to Follow Their Multiple Medication Prescriptions? Looking Beyond the Risk-Benefit Scale](#)

[Juliette Artignan](#)^{1,2}, [Kevin Diter](#)³, [Pascal Clerc](#)^{4,5}, [Perrine Capmas](#)^{1,2,6}, [Nathalie Pelletier-Fleury](#)^{1,2}

Affiliations Expand

- PMID: 40153541
- DOI: [10.1177/10497323241311508](#)

Abstract

Current public health guidelines emphasize the necessity to optimize medication prescriptions for multimorbid patients with multiple medications to ensure patient adherence while minimizing harm and waste. Nevertheless, there is limited understanding of how these patients choose to follow their medication regimen. This study aimed to describe the variations in the way patients account for their adherence (and non-adherence) to multiple medications and to draw links between these variations and patients' socioeconomic status. Twenty semi-structured interviews were conducted with patients aged 47-82 years with cardiovascular disease and multiple medically treated chronic conditions. They were transcribed and analyzed using reflexive thematic analysis. We first describe shared concerns about multiple medication taking and situations of medical uncertainty which arose when patients encounter conflicting medical instructions. We then highlight two overarching approaches through which patients conceptualized following their medical prescriptions. Some patients predominantly deferred the choice of medication to their physicians, while others steered the decision-making process

and closely monitored what they were prescribed. These styles reflected different ways of engaging with doctors, dealing with side effects, and evaluating prescriptions and were linked to patients' socioeconomic status. We discuss our results by borrowing from Hirschman's theory of voice, exit, and loyalty. Findings argue in favor of better coordinated care to reduce prescription ambiguities and highlight the importance of patients with multimorbidity being given sufficient time and space to voice their concerns.

Keywords: chronic illness; medication adherence; multimorbidity; patient decision-making; polypharmacy; socioeconomic status.

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J Am Heart Assoc

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. 2025 Mar 27:e034124.

doi: 10.1161/JAHA.124.034124. Online ahead of print.

[Multimorbidity Patterns and In-Hospital Outcomes in Chinese Young Women \(Aged <55 Years\) Presenting with ST-Segment-Elevation Myocardial Infarction](#)

[Geru A](#)¹, [Liang Zhao](#)¹, [Wennan Liu](#)¹, [Pengfei Sun](#)¹, [Linjie Li](#)¹, [Bin Sun](#)¹, [Piao Li](#)¹, [Yongle Li](#)¹, [Xin Zhou](#)¹, [Qing Yang](#)¹

Affiliations Expand

- PMID: 40150926
- DOI: [10.1161/JAHA.124.034124](#)

Abstract

Background: Recent evidence highlights an increasing incidence of myocardial infarction in young women. Identifying clinical multimorbidity patterns in this population may improve therapeutic strategies and clinical care.

Methods and results: We identified multimorbidity patterns in 9570 young women with ST-segment-elevation myocardial infarction (median age, 50 years [range, 47.0-53.0 years]) admitted to the China Chest Pain Center Database between 2016 and 2021. Hierarchical clustering of 15 medical conditions was performed to derive

multimorbidity patterns. The primary outcome was a composite of in-hospital adverse events. Associations between multimorbidity patterns and outcomes were evaluated using multivariable-adjusted logistic regression models. Among 9570 patients, 50% (n=4789) had multimorbidity. Six multimorbidity patterns were identified, including 4 specific patterns: (1) pattern 1, cerebrovascular cluster (histories of cerebrovascular disease and hypertension); (2) pattern 2, traditional cardiovascular disease risk factors cluster (histories of hyperlipidemia, obesity, and diabetes, and family history of cardiovascular disease and smoking); (3) pattern 3, coronary-heart failure cluster (histories of heart failure, coronary artery disease, peripheral arterial disease, and thyroid dysfunction); and (4) pattern 4, anemia-renal dysfunction cluster (histories of atrial fibrillation, anemia, chronic kidney disease, and peptic ulcer). Compared with patients without multimorbidity, those with pattern 1 (odds ratio [OR], 2.29 [95% CI, 1.49-3.52]), pattern 2 (OR, 1.52 [95% CI, 1.24-1.86]), and pattern 4 (OR, 2.25 [95% CI, 1.10-4.61]) exhibited higher risks for composite outcomes.

Conclusions: Specific multimorbidity patterns in young women with ST-segment-elevation myocardial infarction were associated with distinct in-hospital outcomes in a nationwide registry, providing proof-of-concept evidence to guide future therapeutic approaches.

Keywords: Chinese; ST-segment–elevation myocardial infarction; cardiovascular events; female; multimorbidity.

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Editorial

J Am Heart Assoc

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. 2025 Mar 27:e041397.

doi: 10.1161/JAHA.125.041397. Online ahead of print.

[Burden of Multimorbidity in Young Women With ST-Segment-Elevation Myocardial Infarction](#)

[Linh Tran](#)¹, [Anum Minhas](#)^{1 2 3}

Affiliations [Expand](#)

- PMID: 40145284

- DOI: [10.1161/JAHA.125.041397](https://doi.org/10.1161/JAHA.125.041397)

Free article

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Keywords: Editorials; ST-segment–elevation myocardial infarction; multimorbidity.

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Editorial

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. 2025 Mar 26:e012877.

doi: [10.1161/CIRCHEARTFAILURE.125.012877](https://doi.org/10.1161/CIRCHEARTFAILURE.125.012877). Online ahead of print.

[Transfusions in Heart Failure and Acute Myocardial Infarction: Novel Data Begets New Questions](#)

[Claudio Montalto](#)^{1,2}, [Stefano Savonitto](#)³

Affiliations Expand

- PMID: 40135328

- DOI: [10.1161/CIRCHEARTFAILURE.125.012877](https://doi.org/10.1161/CIRCHEARTFAILURE.125.012877)

No abstract available

Keywords: Editorials; heart failure; ischemia; multimorbidity; stroke volume.

Supplementary info

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

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Respir Med

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. 2025 Mar 25:108054.

doi: 10.1016/j.rmed.2025.108054. Online ahead of print.

[A Real-world Study on Tezepelumab Effectiveness in Severe Asthma Focusing on Small Airway Dysfunction](#)

[Francesco Menzella](#)¹, [Marcello Cottini](#)², [Carlo Lombardi](#)³, [Gianenrico Senna](#)⁴, [Rory Chan](#)⁵, [Annamaria Bosi](#)⁶, [Michela Bortoli](#)⁷, [Silvia Tonin](#)⁶, [Lorenzo Corsi](#)⁶, [Andrea Rastelli](#)⁷, [Maria Rita Marchi](#)⁷

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- PMID: 40147569
- DOI: [10.1016/j.rmed.2025.108054](https://doi.org/10.1016/j.rmed.2025.108054)

Abstract

Background: Severe asthma (SA) is a complex condition often involving small airway dysfunction (SAD). Tezepelumab has demonstrated efficacy in clinical trials, but real-world evidence is scarce, and its impact on SAD remains unexplored.

Objective: This prospective study evaluated the effectiveness of tezepelumab in patients with SA, stratified by the SAD presence and asthma phenotype (type 2-high vs type 2-low).

Methods: Seventeen SA patients received tezepelumab. A range of clinical and laboratory outcomes were assessed, including annualized asthma exacerbation rate

(AAER), lung function, and oral corticosteroids (OCS) use. Respiratory parameters were assessed using spirometry, body plethysmography, and forced oscillation technique (FOT).

Results: After 6 months of treatment, tezepelumab significantly reduced median AAER (from 5.0 to 0.0, $p=0.001$) and OCS dose (from 14.6 mg/day to 0.0 mg/day, $p<0.001$), alongside a marked reduction in median blood eosinophil count (from 130 to 60 cells/mm³, $p=0.032$). Among respiratory parameters, total resistance, measured by body plethysmography, improved significantly in the overall population (median values from 0.49 to 0.37 KPa·L·s⁻¹, $p=0.005$). Spirometry and FOT measures, including total reactance ($p=0.018$) and tidal expiratory flow limitation ($p=0.043$), improved only in patients with SAD.

Conclusion: Tezepelumab significantly reduced exacerbations and improved asthma control, positively impacting respiratory parameters and small airway function in patients with SAD. These findings support SAD as a treatable trait, highlighting the importance of integrating advanced diagnostic tools, such as body plethysmography and FOT, into routine clinical practice.

Keywords: Severe asthma; forced oscillation technique; small airway disease; tezepelumab; type 2 inflammation.

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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: Francesco Menzella reports a relationship with AstraZeneca Pharmaceuticals LP that includes: consulting or advisory. Francesco Menzella reports a relationship with Chiesi Pharmaceuticals Inc that includes: consulting or advisory. Francesco Menzella reports a relationship with GlaxoSmithKline Inc that includes: consulting or advisory. Francesco Menzella reports a relationship with Sanofi that includes: consulting or advisory. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Lancet Respir Med

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. 2025 Mar 24:S2213-2600(25)00003-7.

doi: 10.1016/S2213-2600(25)00003-7. Online ahead of print.

[Global, regional, and national burden of asthma and atopic dermatitis, 1990-2021, and projections to 2050: a systematic analysis of the Global Burden of Disease Study 2021](#)

[GBD 2021 Asthma and Allergic Diseases Collaborators](#)

Collaborators Expand

- PMID: 40147466
- DOI: [10.1016/S2213-2600\(25\)00003-7](#)

Abstract

Background: Asthma and atopic dermatitis are common allergic conditions that contribute to substantial health loss, economic burden, and pain across individuals of all ages worldwide. Therefore, as a component of the Global Burden of Diseases, Injuries, and Risk Factors Study (GBD) 2021, we present updated estimates of the prevalence, disability-adjusted life-years (DALYs), incidence, and deaths due to asthma and atopic dermatitis and the burden attributable to modifiable risk factors, with forecasted prevalence up to 2050.

Methods: Asthma and atopic dermatitis prevalence, incidence, DALYs, and mortality, with corresponding 95% uncertainty intervals (UIs), were estimated for 204 countries and territories from 1990 to 2021. A systematic review identified data from 389 sources for asthma and 316 for atopic dermatitis, which were further pooled using the Bayesian meta-regression tool. We also described the age-standardised DALY rates of asthma attributable to four modifiable risk factors: high BMI, occupational asthmagens, smoking, and nitrogen dioxide pollution. Furthermore, as a secondary analysis, prevalence was forecasted to 2050 using the Socio-demographic Index (SDI), air pollution, and smoking as predictors for asthma and atopic dermatitis. To assess trends in the burden of asthma and atopic dermatitis before (2010-19) and during (2019-21) the COVID-19 pandemic, we compared their average annual percentage changes (AAPCs).

Findings: In 2021, there were an estimated 260 million (95% UI 227-298) individuals with asthma and 129 million (124-134) individuals with atopic dermatitis worldwide. Asthma cases declined from 287 million (250-331) in 1990 to 238 million (209-272) in 2005 but increased to 260 million in 2021. Atopic dermatitis cases consistently rose from 107 million (103-112) in 1990 to 129 million (124-134) in 2021. However, age-standardised prevalence rates decreased-by 40·0% (from 5568·3 per 100 000 to 3340·1 per 100 000) for asthma and 8·3% (from 1885·4 per 100 000 to 1728·5 per 100 000) for atopic dermatitis. In 2021, there were substantial variations in the burden of asthma and atopic dermatitis across different SDI groups, with the highest age-standardised DALY rate found in south Asia for asthma (465·0 [357·2-648·9] per 100

000) and the high-income super-region for atopic dermatitis (3552.5 [3407.2-3706.1] per 100 000). During the COVID-19 pandemic, the decline in asthma prevalence had stagnated (AAPC pre-pandemic -1.39% [-2.07 to -0.71] and during the pandemic 0.47% [-1.86 to 2.79]; $p=0.020$); however, there was no significant difference in atopic dermatitis prevalence in the same period (pre-pandemic -0.28% [-0.33 to -0.22] and during the pandemic -0.35% [-0.78 to 0.08]; $p=0.20$). Modifiable risk factors were responsible for 29.9% of the global asthma DALY burden; among them, high BMI was the greatest contributor (39.4 [19.6-60.2] per 100 000), followed by occupational asthmagens (20.8 [16.7-26.5] per 100 000) across all regions. The age-standardised DALY rate of asthma attributable to high BMI was highest in high-SDI settings, whereas the contribution of occupational asthmagens was highest in low-SDI settings. According to our forecasting models, we expect 275 million (224-330) asthma cases and 148 million (140-158) atopic dermatitis cases in 2050, with population growth driving this increase. However, age-standardised prevalence rates are expected to remain stable (-23.2% [-44.4 to 5.3] for asthma and -1.4% [-9.1 to 7.0] for atopic dermatitis) from 2021 to 2050.

Interpretation: Although the increases in the total number of asthma and atopic dermatitis cases will probably continue until 2050, age-standardised prevalence rates are expected to remain stable. A considerable portion of the global burden could be managed through efforts to address modifiable risk factors. Additionally, the contribution of risk factors to the burden substantially varied by SDI, which suggests the need for tailored initiatives for specific SDI settings. The growing number of individuals expected to be affected by asthma and atopic dermatitis in the future suggests that it is essential to improve our understanding of risk factors for asthma and atopic dermatitis and collect disease prevalence data that are globally generalisable.

Funding: Gates Foundation.

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Conflict of interest statement

Declaration of interests M L Bell reports grants or contracts from US EPA, National Institutes of Health (NIH), Hutchinson Postdoctoral Fellowship, Health Effects Institute, Yale Women Faculty Forum, Robert Wood Johnson Foundation, Yale Institute for Biospheric Studies, and Wellcome Trust Foundation; consulting fees from Clinique and ToxiMap; payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing or educational events from Colorado School of Public Health, Duke University, University of Texas, Data4Justice, Korea University, University of Pennsylvania, Brown University, Northeastern University, IOP Publishing, NIH, Health Canada, EHS, PAC-10, UKRI, AXA Research Fund Fellowship, Harvard University, University of Montana, and SciQuest; support for attending meetings or travel from Colorado School of Public Health, University of Texas, Duke University, Harvard University, American Journal of Public Health, Columbia University, Harvard University, CMAS Conference, and Nature Conference; leadership or fiduciary role in other board, society, committee or advocacy group, paid or unpaid with Fifth National Climate Assessment, Lancet Countdown, US EPA Clean Air Scientific Advisory Committee (CASAC), Johns Hopkins EHE Advisory Board, Harvard external advisory committee for training grant, WHO Global Air Pollution and Health Technical Advisory Group, and the

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method to transform cow dung into the wall paint by using natural materials and composition thereof (filed); leadership or fiduciary role in other board, society, committee or advocacy group, paid or unpaid as the Executive Council Member, Indian Meteorological Society, Jaipur Chapter (India) and as Member Secretary of DSTPURSE Program, outside the submitted work. M Zielińska reports other financial or non-financial interests as an Alexion employee, outside the submitted work. All other authors declare no competing interests.

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Review

J Allergy Clin Immunol

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. 2025 Mar 24:S0091-6749(25)00327-6.

doi: 10.1016/j.jaci.2025.03.012. Online ahead of print.

[Update on the genetics of allergic diseases](#)

[Lucinda P Lawson](#)¹, [Sreeja Parameswaran](#)¹, [Ronald A Panganiban](#)², [Gregory M Constantine](#)³, [Matthew T Weirauch](#)⁴, [Leah C Kottyan](#)⁵

Affiliations Expand

- PMID: 40139464
- DOI: [10.1016/j.jaci.2025.03.012](https://doi.org/10.1016/j.jaci.2025.03.012)

Abstract

The field of genetic etiology of allergic diseases has advanced significantly in recent years. Shared risk loci reflect the contribution of genetic factors to the sequential development of allergic conditions across the atopic march, while unique risk loci provide opportunities to understand tissue specific manifestations of

allergic disease. Most identified risk variants are non-coding, indicating that they likely influence gene expression through gene regulatory mechanisms. Despite recent advances, challenges persist, particularly regarding the need for increased ancestral diversity in research populations. Further, while polygenic risk scores show promise for identifying individuals at higher genetic risk for allergic diseases, their predictive accuracy varies across different ancestries and can be difficult to translate to an individual's absolute risk of developing a disease. Methodologies, including "nearest gene", 3D chromatin interaction analysis, expression quantitative trait locus analysis, experimental screens, and integrative bioinformatic models have established connection between genetic variants and their regulatory targets, enhancing our understanding of disease risk and phenotypic variability. In this review, we focus on the state of knowledge of allergic sensitization and five allergic diseases: asthma, atopic dermatitis, allergic rhinitis, food allergy, and eosinophilic esophagitis. We summarize recent progress and highlight opportunities for advancing our understanding of their genetic etiology.

Keywords: GWAS; Genetics of allergic diseases; allelic mechanisms; diversity; functional genomics; polygenic risk scores.

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Ann Allergy Asthma Immunol

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. 2025 Mar 24:S1081-1206(25)00150-4.

doi: 10.1016/j.anai.2025.03.013. Online ahead of print.

[Worse airflow obstruction but not type 2 biomarkers identifies super-responders to tezepelumab in real-life](#)

[Robert Greig](#)¹, [Rory Chan](#)², [Brian J Lipworth](#)²

Affiliations Expand

- PMID: 40139437
- DOI: [10.1016/j.anai.2025.03.013](https://doi.org/10.1016/j.anai.2025.03.013)

No abstract available

Keywords: Asthma; spirometry; super-responder; tezepelumab.

Conflict of interest statement

Declaration of competing interest Dr Greig reports personal fees (talks) from AstraZeneca. Dr Chan reports personal fees (talks) and support attending ERS from AstraZeneca, personal fees (consulting) from Vitalograph, and personal fees (talks) from Thorasys. Dr Lipworth reports non-financial support (equipment) from GSK; grants, personal fees (consulting, talks and advisory board), other support (attending ATS and ERS) and from AstraZeneca; personal fees (talks and consulting) from Sanofi, personal fees (consulting, talks and advisory board) from Circassia in relation to the submitted work; grants, personal fees (consulting, talks, advisory board), other support (attending ERS) from Teva, personal fees (talks and consulting), grants and other support (attending ERS and BTS) from Chiesi, personal fees (consulting) from Lupin, personal fees (consulting) from Glenmark, personal fees (consulting) from Dr Reddy, personal fees (consulting) from Sandoz; grants, personal fees (consulting, talks, advisory board), other support (attending BTS) from Boehringer Ingelheim, grants and personal fees (advisory board and talks) from Mylan outside of the submitted work; and the son of BJL is presently an employee of AstraZeneca.

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Am J Respir Crit Care Med

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. 2025 Mar 25.

doi: 10.1164/rccm.202502-0365ED. Online ahead of print.

[The Role of Basement Membrane Thickening in Airway Physiology and Immunopathology of Severe Asthma](#)

[Matthew H Liu¹](#), [Teal S Hallstrand²](#)

Affiliations Expand

- PMID: 40132174
- DOI: [10.1164/rccm.202502-0365ED](#)

No abstract available

Keywords: asthma; bronchodilator; inflammation; mast cell; remodeling.

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JCI Insight

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. 2025 Mar 25:e191098.

doi: [10.1172/jci.insight.191098](#). Online ahead of print.

[CFTR negatively reprograms Th2 cell responses and CFTR potentiation restrains allergic airway inflammation](#)

[Mark Rusznak¹](#), [Christopher M Thomas¹](#), [Jian Zhang¹](#), [Shinji Toki¹](#), [Weisong Zhou¹](#), [Masako Abney¹](#), [Danielle M Yanda²](#), [Allison E Norlander³](#), [Craig A Hodges⁴](#), [Dawn C Newcomb¹](#), [Mark H Kaplan⁵](#), [R Stokes Peebles Jr¹](#), [Daniel P Cook¹](#)

Affiliations Expand

- PMID: 40131363
- DOI: [10.1172/jci.insight.191098](#)

Free article

Abstract

Type 2 inflammatory diseases are common in cystic fibrosis (CF) including asthma, sinusitis, and allergic bronchopulmonary aspergillosis. CD4+ T helper 2 (Th2) cells promote these diseases through secretion of IL-4, IL-5, and IL-13. Whether the cystic fibrosis transmembrane conductance regulator (CFTR), the mutated protein in CF, has a direct effect on Th2 development is unknown. Using murine models of CFTR deficiency and human CD4+ T cells, we show CD4+ T cells expressed Cfr transcript and CFTR protein following activation. Loss of T cell CFTR expression increased Th2 cytokine production compared to control cells. Mice with CFTR-deficient T cells developed increased allergic airway disease to *Alternaria alternata* extract compared to control mice. Culture of CFTR-deficient Th2 cells demonstrated increased IL-4R α expression and increased sensitivity to IL-4 with greater induction of GATA3 and IL-13 compared to control Th2 cell cultures. The CFTR potentiator ivacaftor reduced allergic inflammation and type 2 cytokine secretion in bronchoalveolar lavage of "humanized" CFTR mice following *Alternaria alternata* extract challenge and decreased Th2 development in human T cell culture. Together, these data support a direct role of CFTR in regulating T cell sensitivity to IL-4 and demonstrate a potential CFTR-specific therapeutic strategy for Th2 cell-mediated allergic disease.

Keywords: Adaptive immunity; Immunology; Inflammation; Pulmonology; T cell development; Th2 response.

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Am J Physiol Cell Physiol

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. 2025 Mar 25.

doi: 10.1152/ajpcell.00149.2025. Online ahead of print.

[The molecular circadian clock of eosinophils: A potential therapeutic target for asthma](#)

[Julia Teppan](#)¹, [Thomas Bärnthaler](#)¹, [Aitak Farzi](#)¹, [Hannah Durrington](#)^{2,3}, [Gael Gioan-Tavernier](#)³, [Hazel Platt](#)³, [Peter Wolf](#)⁴, [Akos Heinemann](#)¹, [Eva Maria Böhm](#)¹

Affiliations Expand

- PMID: 40131242
- DOI: [10.1152/ajpcell.00149.2025](https://doi.org/10.1152/ajpcell.00149.2025)

Abstract

Asthma is a chronic inflammatory airway disease exhibiting time-of-day variability in symptoms and severity. Eosinophils, pivotal players and biomarkers in asthma, are regulated by the molecular circadian clock. This study aimed to investigate the impact of the molecular circadian clock on eosinophil effector function and its potential as a diagnostic biomarker and therapeutic target. We monitored clock proteins by flow cytometry in peripheral blood eosinophils from mild asthmatics over a 24-hour period. The observed decreased protein levels were confirmed in a cohort of patients with moderate asthma. To assess the interaction between inflammation and the molecular circadian clock, eosinophils were stimulated with patients' sera, inflammatory mediators, and clock-modulating ligands. The therapeutic potential of the inverse ROR agonist SR1001 was evaluated in vitro and in a murine model of allergen-induced airway inflammation. Altered protein levels of CLOCK, BMAL1, REV-ERBs, and RORs in eosinophils from asthmatics reflected the disease severity and allergy status of the patients. Mimicking an inflammatory environment in vitro resulted in similar changes. Blocking CCR3/ERK and EGFR signaling with an inverse ROR agonist SR1001 reset the molecular circadian clock in eosinophils and exhibited anti-inflammatory effects by inhibiting eosinophil migration in vitro. Additionally, we confirmed the therapeutic potential of the clock-modulating SR1001, bronchoprotective effects in two in vivo models. This study suggests that clock proteins could serve as therapeutic targets in asthma. Pharmacological inhibition of ROR signaling demonstrated significant anti-inflammatory and bronchoprotective properties, indicating its potential as a novel treatment strategy for asthma and other eosinophilic diseases.

Keywords: asthma; asthma treatment; eosinophils; molecular circadian clock; retinoic acid receptor-related orphan receptor.

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. 2025 Apr;4(4):EVIDoa2400229.

doi: 10.1056/EVIDoa2400229. Epub 2025 Mar 25.

[Associations between Class I, II, or III Obesity and Health Outcomes](#)

[Zhiqi Yao¹](#), [Beverly G Tchang²](#), [Michael Albert³](#), [Roger S Blumenthal¹](#), [Khurram Nasir⁴](#), [Michael J Blaha¹](#)

Affiliations Expand

- PMID: 40130972
- DOI: [10.1056/EVIDoa2400229](#)

Abstract

Background: The burden of obesity-related health conditions remains incompletely explored. Previous studies have been underpowered to study severe obesity, focused on a limited set of health outcomes, and lacked diversity in study populations.

Methods: We studied 270,657 participants from the All of Us research program with linked electronic health records and body mass index (the weight in kilograms divided by the square of the height in meters) greater than or equal to 18.5. We investigated the prevalence and incidence of 16 a priori-identified outcomes covering cardiovascular-kidney-metabolic syndrome and others: hypertension, type 2 diabetes mellitus, hyperlipidemia/dyslipidemia, heart failure, atrial fibrillation, atherosclerotic cardiovascular disease, chronic kidney disease, pulmonary embolism, deep vein thrombosis, gout, metabolic dysfunction-associated steatotic liver disease, biliary calculus, obstructive sleep apnea, asthma, gastroesophageal reflux disease, and osteoarthritis. Adjusted hazard ratios were calculated for each BMI category and compared with normal weight. The population-attributable fraction was calculated for different obesity classifications.

Results: The included population was 62.0% women and 22.0% Black. Class I, II, and III obesity was observed in 21.2%, 11.3%, and 9.8% of participants, respectively. Obesity was strongly associated with all incident outcomes, with graded associations across higher classes of obesity. Class III obesity was most strongly associated with obstructive sleep apnea, type 2 diabetes mellitus, and metabolic dysfunction-associated steatotic liver disease (hazard ratio [95% confidence interval {CI}], 10.94 [9.97 to 12.00], 7.74 [7.03 to 8.53], and 6.72 [6.01 to 7.50], respectively), with weaker associations for asthma, osteoarthritis, and atherosclerotic cardiovascular disease (hazard ratio [95% CI], 2.14 [1.95 to 2.35], 2.06 [1.94 to 2.19],

and 1.96 [1.70 to 2.25], respectively). Associations were consistent across sex and race. The obesity-related population-attributed fraction ranged from 14.0% (osteoarthritis) to 51.5% (obstructive sleep apnea) in this population.

Conclusions: Obesity, particularly severe obesity, was strongly associated with the incidence of 16 common health outcomes.

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. 2025 Mar 24;11(2):00625-2024.

doi: 10.1183/23120541.00625-2024. eCollection 2025 Mar.

[Effectiveness of anti-IL-5/5R \$\alpha\$ biologics in severe asthma in real-world studies: a systematic review and meta-analysis](#)

[Christos Kyriakopoulos](#)¹, [Efthymia Papadopoulou](#)², [Dimitrios Potonos](#)¹, [Konstantinos Exarchos](#)¹, [Evangelos Beris](#)¹, [Christina Aggelopoulou](#)¹, [Stavros Tryfon](#)², [Athena Gogali](#)¹, [Konstantinos Kostikas](#)¹

Affiliations Expand

- PMID: 40129552
- PMCID: [PMC11931541](#)
- DOI: [10.1183/23120541.00625-2024](#)

Abstract

Background: Three biologics targeting interleukin 5 (anti-IL-5) or its receptor- α (anti-IL-5R α) are approved for patients with severe asthma.

Methods: We systematically searched the literature published in Medline and Embase up to 1 May 2023 to identify observational studies and nonrandomised trials that assess the response to anti-IL-5/5R α in real-life patients with severe eosinophilic asthma. We also performed random-effects meta-analyses.

Results: We identified 6401 studies, of which 92 with 9546 patients were analysed. Biologics use was associated with a 62% reduction in severe exacerbations (risk ratio 0.38, 95% CI 0.29-0.50) and a 54% reduction in hospitalisations (risk ratio 0.46, 95% CI 0.35-0.61) at 12 months of treatment, compared to pre-treatment. Biologics improved asthma control (decrease in asthma control questionnaire score by 1.11 points (95% CI -1.29--0.94) and increase in asthma control test score by 6.41 points (95% CI 5.66-7.16)) and increased the asthma quality of life questionnaire score by 1.08 points (95% CI 0.88-1.28) and forced expiratory volume in 1 s by 0.21 L (95% CI 0.15-0.27) at 12 months. There was a significant reduction in oral corticosteroids use of 51% (risk ratio 0.49, 95% CI 0.42-0.56), with a mean dose reduction of 6.01 mg·day⁻¹ (95% CI -7.55--4.48) at 12 months of treatment. Similar findings were observed at 3-4, 6 and 24 months. A biomarker-related response to treatment was also noted.

Conclusions: This comprehensive meta-analysis summarises the significant clinical response to anti-IL-5/5R α biologics in real-life studies, providing important insights for their use in clinical practice.

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Conflict of interest statement

Conflict of interest: S. Tryfon has received payment or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from GSK, AstraZeneca, ELPEN and Chiesi, and support for attending meetings and/or travel from AstraZeneca, ELPEN and Menarini. **Conflict of interest:** A. Gogali has received consulting fees from Boehringer Ingelheim and Chiesi, and payment or honoraria for lectures, presentations or educational events from AstraZeneca, Boehringer Ingelheim, Chiesi, ELPEN, GSK and Novartis. **Conflict of interest:** K. Kostikas has received grants from AstraZeneca, Boehringer Ingelheim, Chiesi, Innovis, ELPEN, GSK, Menarini, Novartis and NuvoAir; consulting fees from AstraZeneca, Boehringer Ingelheim, Chiesi, CSL Behring, ELPEN, GSK, Menarini, Novartis, Pfizer and Sanofi Genzyme; payment or honoraria for lectures, presentations or educational events from Alector Pharmaceuticals, AstraZeneca, Boehringer Ingelheim, Chiesi, CSL Behring, ELPEN, Gilead, GSK, Menarini, MSD, Novartis, Pfizer, Sanofi Genzyme and WebMD; and a leadership role with GOLD Assembly. **Conflict of interest:** The other authors declare no competing interests.

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. 2025 Mar 22.

doi: 10.2169/internalmedicine.4825-24. Online ahead of print.

[Investigation of the Number of Oral Bacteria in Patients with Chronic Obstructive Pulmonary Disease, Asthma, and Asthma and Chronic Obstructive Pulmonary Disease Overlap](#)

[Toshiya Inui](#)^{1,2,3,4}, [Maya Tsuchiya](#)¹, [Takayasu Watanabe](#)^{1,2}, [Mitsuru Sada](#)^{1,2}, [Atsuto Mouri](#)¹, [Shinkichi Iwanari](#)⁵, [Mitsuhiro Kamimura](#)¹

Affiliations Expand

- PMID: 40128989
- DOI: [10.2169/internalmedicine.4825-24](https://doi.org/10.2169/internalmedicine.4825-24)

Free article

Abstract

Objective Bacteria in the airways are reportedly involved in the pathogenesis of chronic obstructive pulmonary disease (COPD) and asthma. In addition, oral bacteria are thought to contribute to respiratory diseases by migrating to the airway. Therefore, we investigated whether or not the number of oral bacteria influences COPD, asthma, and asthma and COPD overlap (ACO). **Methods** We analyzed the correlations between the number of oral bacteria and clinical variables, such as pulmonary function tests, in patients with COPD, asthma, and ACO whose condition was stable and who visited our center from August 2019 to December 2020. The number of oral bacteria was assessed using the dielectrophoretic impedance measurement method. **Results** In patients with COPD (n = 50), the number of oral bacteria was significantly negatively correlated with the percentage predicted forced expiratory volume in one second (%FEV₁), percentage peak expiratory flow, and percentage forced vital capacity but was not correlated with the COPD Assessment Test. In patients with asthma (n = 32), it was significantly negatively correlated with the FEV₁ percentage and with the increase in FEV₁ in the reversibility test but not with fractional exhaled nitric oxide. In patients with ACO (n = 39), we found no significant correlation between the number of oral bacteria and

any clinical variable. **Conclusion** The results suggest that the number of oral bacteria is associated with both lung capacity and airflow obstruction in patients with COPD and with airflow obstruction in patients with asthma.

Keywords: Chronic obstructive pulmonary disease (COPD); airway inflammation; asthma; asthma and COPD overlap (ACO); oral bacteria; respiratory function test.

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. 2025 Mar 24:99228251321597.

doi: 10.1177/00099228251321597. Online ahead of print.

[The Link Between Respiratory Syncytial Virus-Induced Lower Respiratory Tract Infection and Type 2 Inflammation in Asthma](#)

[Bei Ye¹](#), [Shu Teng¹](#), [Lu Zhan²](#)

Affiliations Expand

- PMID: 40126358
- DOI: [10.1177/00099228251321597](#)

Abstract

Objective: To investigate the relationship between the type 2 inflammatory response associated with asthma and lower respiratory tract infection (LRTI) caused by respiratory syncytial virus (RSV).

Methods: Sixty-seven children with RSV infection hospitalized in our hospital from October 2023 to December 2023 and 27 healthy children undergoing medical examination were included. The study population was divided into the RSV LRTI group ($n = 67$) and the control group ($n = 27$). Interleukin-13 (IL-13), serum total immunoglobulin E (IgE), mucin 5AC (MUC5AC), and blood eosinophil count (EOS)

were tested and compared between the two groups. The presence or absence of specificity between the two groups was analyzed using the rank sum test and subject operating characteristic curves (Receiver Operating Characteristic curves, ROC curves).

Results: The levels of IL-13, IgE, MUC5AC, and EOS were higher in children with RSV LRTI compared to healthy children. These differences were statistically significant ($P < .05$). The ROC curve analysis results showed that IL-13, IgE, MUC5AC, and EOS predicted type 2 inflammation with areas under the curve of 0.687, 0.762, 0.764, and 0.646, respectively.

Conclusion: A type 2 inflammatory response associated with asthma may be observed after RSV-induced LRTIs.

Keywords: IL-13; IgE; MUC5AC; eosinophils (EOS); respiratory syncytial virus (RSV); type 2 asthma (T2 asthma).

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Review

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. 2025 Mar 23.

doi: 10.1007/s41030-025-00291-5. Online ahead of print.

[Monoclonal Antibodies for the Treatment of Chronic Obstructive Pulmonary Disease](#)

[Dimitrios Toumpanakis](#)¹, [Konstantinos Bartzioakas](#)², [Agamemnon Bakakos](#)³, [Evangelia Fouka](#)⁴, [Petros Bakakos](#)³, [Stelios Loukides](#)², [Paschalis Steiropoulos](#)⁵, [Andriana I Papaioannou](#)³

Affiliations Expand

- PMID: 40123030

- DOI: [10.1007/s41030-025-00291-5](https://doi.org/10.1007/s41030-025-00291-5)

Free article

Abstract

Chronic obstructive pulmonary disease (COPD) is a common and complex disease characterized by persistent airflow limitation and the presence of exacerbations, resulting in significant morbidity and mortality. Although the pathogenesis of COPD is multifactorial, airway inflammation plays a significant role in disease progression. Despite the advantages of non-pharmaceutical and pharmaceutical interventions that have significantly improved the symptom burden and exacerbation frequency in COPD, there is a lack of disease-modifying therapies that target the underlying disease mechanisms. Monoclonal antibodies (mAbs), a drug class that has improved treatment in severe asthma by blocking mediators of the type 2 (Th2) and allergic inflammatory cascades, are currently under investigation for their efficacy in COPD. Our review summarizes the evidence for the use of monoclonal antibodies in COPD and discusses current limitations and promising advances. Although targeting Th1 inflammation has failed to improve COPD outcomes, recent clinical trials have shown beneficial effects of monoclonal antibodies targeting Th2 inflammation, providing evidence for a personalized approach in COPD treatment.

Keywords: Biomarkers; COPD; Cytokines; Eosinophils; Monoclonal antibodies.

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Conflict of interest statement

Declarations. Conflict of Interest: Paschalis Steiropoulos is an Editorial Board member of Pulmonary Therapy. Paschalis Steiropoulos was not involved in the selection of peer reviewers for the manuscript nor any of the subsequent editorial decisions. Dimitrios Toumpanakis, Konstantinos Bartziokas, Agamemnon Bakakos, Evangelia Fouka, Petros Bakakos, Stelios Loukides and Andriana I Papaioannou have no conflict of interest to disclose. **Ethical Approval:** This article is based on previously conducted studies and does not contain any new studies with human participants or animals performed by any of the authors.

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. 2025 Mar 23:thorax-2024-222819.

doi: 10.1136/thorax-2024-222819. Online ahead of print.

[Association between asthma and type 2 diabetes in a Swedish adult population: a register-based cross-sectional study](#)

[Mwenya Mubanga](#)^{1,2}, [Tong Gong](#)¹, [Awad I Smew](#)¹, [Amanda Wikström](#)¹, [Emma Caffrey Osvald](#)^{1,3}, [Katarina Eeg-Olofsson](#)^{4,5}, [Christer Janson](#)⁶, [Cecilia Lundholm](#)¹, [Catarina Almqvist](#)^{7,3}

Affiliations Expand

- PMID: 40122610
- DOI: [10.1136/thorax-2024-222819](https://doi.org/10.1136/thorax-2024-222819)

Abstract

Objective: Asthma and type 2 diabetes are two important causes of morbidity globally. We examined both the association of type 2 diabetes with asthma in Swedish adults and the familial co-aggregation of the diseases.

Methods: We conducted a cross-sectional study of all adults aged 25-85 in Sweden between 2009 and 2013. Asthma and type 2 diabetes status were ascertained from the health registers. Models were adjusted for sex, age, education level, income and country of birth and in a subset, for body mass index (BMI). We further conducted a familial coaggregation analysis to determine if shared familial factors could explain any observed findings.

Results: The study included 5 299 245 participants, 25 292 (0.5%) had both asthma and type 2 diabetes. In the total population, the OR for the association between type 2 diabetes and asthma was 1.47 (95% CI 1.45 to 1.49); in the population of men (1.30 (95% CI 1.27 to 1.32)) and women (1.63 (95% CI 1.60 to 1.66)). The ORs were slightly higher among men (1.51 (95% CI 1.45 to 1.56)) and women (2.04 (95% CI 1.96 to 2.11)) for whom BMI measurements were available but attenuated with adjustment for BMI (1.45 (95% CI 1.40 to 1.51)) and (1.76 (95% CI 1.68 to 1.84)). Diabetes was more likely if a full sibling had asthma than if the sibling did not (1.13 (95% CI 1.10 to 1.15)).

Conclusions: We found an association between asthma and type 2 diabetes that was sustained after adjusting for BMI, indicating that BMI alone does not explain

this relationship. We also found that the two conditions coaggregate in siblings, indicating that the association is partly due to shared familial genetic and environmental risk factors.

Keywords: Asthma; Asthma Epidemiology.

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Conflict of interest statement

Competing interests: None declared.

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J Asthma

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. 2025 Mar 23:1-7.

doi: 10.1080/02770903.2025.2478512. Online ahead of print.

[Venous thromboembolism associated with severe dyspnea and asthma in 21,205 adults from the Danish population](#)

[Kristin Felicia Nilausen](#)¹, [Delia-Ioana Radutiu](#)¹, [Eskild Morten Landt](#)¹, [Suzan Al-Shuweli](#)¹, [Børge G Nordestgaard](#)^{2,3}, [Uffe Bødtger](#)^{4,5}, [Morten Salling Olesen](#)⁶, [Christina Ellervik](#)¹, [Morten Dahl](#)^{1,3}

Affiliations Expand

- PMID: 40065505
- DOI: [10.1080/02770903.2025.2478512](#)

Abstract

Background: Long-term consequences after a pulmonary embolism include lung function deficits, dyspnea, and chronic thromboembolic pulmonary hypertension.

Recent studies suggest patients who experience pulmonary embolism may also be at increased risk of asthma.

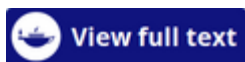
Methods: We tested the hypothesis that individuals with pulmonary embolism or deep vein thrombosis (venous thromboembolism) have lower lung function, or higher risks of dyspnea and asthma using data from 21,205 random adults from the Danish General Suburban Population Study.

Results: Prevalences of pulmonary embolism, deep vein thrombosis, and venous thromboembolism were 0.60%, 1.7%, and 1.9%, respectively. Individuals with pulmonary embolism or deep vein thrombosis had FEV₁% predicted of 86% and 89% compared with 95% in individuals without venous thromboembolism (t -test: $p < .001$). Corresponding values for FVC% predicted were 92% and 94% versus 99% ($p < .001$). Individuals with versus without venous thromboembolism had adjusted odds ratios for light, moderate, and severe dyspnea of 1.6 (95% CI: 1.1-2.2), 1.8 (1.2-2.6), and 2.6 (1.8-3.8), respectively. Individuals with versus without venous thromboembolism had adjusted odds ratios for asthma and use of asthma medication of 1.6 (1.2-2.2) and 1.9 (1.4-2.6), respectively. The adjusted odds ratio for asthma in individuals with versus without venous thromboembolism was increased among individuals who received no treatment with anticoagulants (2.0, 1.4-3.0) compared to those who received treatment (1.0, 0.6-1.6) (p for interaction = .02).

Conclusions: Individuals with venous thromboembolism have lower lung function, 2.6-fold higher risk of severe dyspnea, and 1.6-fold higher risk of asthma in the Danish population.

Keywords: Deep vein thrombosis; genetics; prognosis; pulmonary embolism; pulmonary function; sequelae.

Full text links



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Pediatr Crit Care Med

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. 2025 Mar 28.

doi: 10.1097/PCC.0000000000003724. Online ahead of print.

[Azithromycin for Critically Ill Children With Bronchiolitis: A U.S. Pediatric Health Information Systems Registry Study, 2013-2022](#)

[Alexa R Roberts](#)¹, [Nikhil Vallabhaneni](#)², [Brett W Russi](#)¹, [Kayla M Delaney](#)¹, [Jennifer W Leiding](#)³, [Anthony A Sochet](#)^{1,4}

Affiliations Expand

- PMID: 40152650
- DOI: [10.1097/PCC.00000000000003724](https://doi.org/10.1097/PCC.00000000000003724)

Abstract

Objectives: To estimate prescribing rates for azithromycin as immunomodulation among critically ill children hospitalized for acute bronchiolitis and identify institutional and chronological prescribing variation.

Design: Multicenter, observational, retrospective cohort study using the Pediatric Health Information Systems registry from 2013 to 2022.

Setting: Forty-seven PICUs in the United States.

Patients: Critically ill children 0-3 years old hospitalized for acute viral bronchiolitis excluding those prescribed azithromycin with alternative indication (i.e., concurrent *Bordetella pertussis* infection, urethritis, atypical pneumonia, acute upper respiratory infections, and asthma-related diagnoses).

Interventions: Azithromycin prescription during hospitalization.

Measurements and main results: A total of 82,677 children met study criteria of which 3,161 (3.8%) were prescribed azithromycin. Mean (\pm sd) center-specific azithromycin prescribing rates exhibited a multilinear decreasing trend (joinpoint breakpoint noted in 2017) going from 4.0% \pm 4.6% in 2013 to 2.2% \pm 0.8% in 2022 (-0.7%/yr). The median institutional azithromycin prescribing rate was 2.8% (interquartile range [IQR], 1.8-3.9%; total range, 1.2-24.3%). Compared with those not prescribed azithromycin, receipt of azithromycin was associated with the following: older age (median, 10 mo [IQR, 3.2-20.3 mo] vs. 7.8 mo [IQR, 2.9-15.2 mo]; $p < 0.001$); receiving corticosteroids (57.1% vs. 38.1%; $p < 0.001$) or continuous albuterol (35.9% vs. 22.4%; $p < 0.001$); use of noninvasive respiratory support (13.4% vs. 9.7%; $p < 0.001$) or invasive ventilation (35.9% vs. 22.4%; $p < 0.001$); and extracorporeal life support (0.5% vs. 0.1%; $p < 0.001$).

Conclusions: In this 2013-2022, U.S. multicenter registry-based cohort study, the azithromycin prescribing rate for critically ill children with bronchiolitis was 3.8%. Exposure varied by institution, patient age, and revealed a decreasing trend over the last decade.

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Conflict of interest statement

Dr. Leiding received support for article research from the National Institutes of Health. The remaining authors have disclosed that they do not have any potential conflicts of interest.

- [35 references](#)

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Review

Otolaryngol Clin North Am

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. 2025 Mar 26:S0030-6665(25)00004-0.

doi: 10.1016/j.otc.2025.01.004. Online ahead of print.

[Chronic Cough and Pulmonary Manifestations of Laryngopharyngeal Reflux Disease](#)

[Aaron J Jaworek](#)¹, [Thomas L Carroll](#)²

Affiliations Expand

- PMID: 40148169
- DOI: [10.1016/j.otc.2025.01.004](#)

Abstract

Laryngopharyngeal reflux plays an important role in respiratory diseases such as chronic cough, asthma, chronic obstructive pulmonary disease, interstitial lung disease, and lung transplantation, among others. In cases of refractory chronic cough, reflux testing (hypopharyngeal-esophageal multichannel intraluminal impedance with dual-PH sensor and high-resolution esophageal manometry) will assist the clinician in determining whether additional reflux treatment steps should be undertaken. It is important to consider all mechanisms of reflux pathophysiology to yield the optimal result in the management of a patient with chronic respiratory disease.

Keywords: Chronic cough; Gastroesophageal reflux disease; Laryngopharyngeal reflux; Pulmonary; Refractory chronic cough; Respiratory.

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Conflict of interest statement

Disclosures T.L. Carroll is a consultant for Pentax Medical, Ambu and GSK. He has received stock options from and is on the scientific advisory board for Sofregen

Medical and N-Zyme Biomedical. He receives royalties from Plural Publishing. A.J. Jaworek is a consultant for Smith + Nephew.

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. 2025 Mar 27:thorax-2024-222444.

doi: 10.1136/thorax-2024-222444. Online ahead of print.

[Computational fluid dynamics model predictions of inhaled corticosteroid deposition in patients with severe asthma](#)

[Nandhitha Ragunayakam](#)^{1,2}, [Ashutosh Thakar](#)^{1,2}, [Hosein Sadafi](#)³, [Carmen Venegas Garrido](#)^{1,2}, [Yonni Friedlander](#)^{1,4}, [Melanie Kjarsgaard](#)^{1,2}, [Kayla Zhang](#)^{1,2}, [Anna Dvorkin-Gheva](#)^{1,2}, [Manali Mukherjee](#)^{1,2}, [Myrna B Dolovich](#)^{1,2}, [Ben R Lavon](#)³, [Mark Inman](#)^{1,2}, [Parameswaran Nair](#)^{1,2}, [Sarah Svenningsen](#)^{5,2,4}

Affiliations Expand

- PMID: 40147931
- DOI: [10.1136/thorax-2024-222444](https://doi.org/10.1136/thorax-2024-222444)

Abstract

Background: Some patients with severe asthma have persistent type-2 inflammation despite being treated with high-dose inhaled corticosteroids (ICS). The variability in ICS deposition between patients with severe asthma is not well-understood and could contribute to this persistence.

Objectives: To characterise and compare model-predicted deposition of fine-particle and extrafine-particle ICS in patients with severe asthma based on biomarkers of type-2 inflammation, airway morphology and airway function.

Methods: Twenty-eight patients with severe asthma performed full-inspiration and full-expiration chest CT on the same day that biomarkers of type-2 inflammation were measured. Functional respiratory imaging and computational fluid dynamics were used to simulate and predict intrathoracic, central and peripheral airway deposition, and central-to-peripheral airway deposition (C:P) ratio of fine-particle ICS (fluticasone-propionate HFA) (ICS_{FP}) and extrafine-particle ICS (beclomethasone-dipropionate HFA) (ICS_{EFP}). CT-derived wall area percent (WA%), lumen area (LA) and mucus burden were quantified to characterise airway morphology.

Results: Simulated deposition of ICS_{EFP} was higher than ICS_{FP} in the intrathoracic, central and peripheral airways (all $p < 0.0001$). Greater WA% and smaller LA were correlated with greater C:P ratio of ICS_{FP} ($r = 0.60$, $p = 0.0068$; $r = -0.60$, $p = 0.0072$) and ICS_{EFP} ($r = 0.54$, $p = 0.028$; $r = -0.54$, $p = 0.026$). Participants with elevated sputum eosinophils had a greater C:P ratio, irrespective of particle size (ICS_{FP} , $p = 0.045$; ICS_{EFP} , $p = 0.021$).

Conclusions: In severe asthma patients with thicker airway walls, narrower airway lumens and elevated biomarkers of type-2 inflammation, a smaller ratio of ICS_{FP} reached the peripheral airways. ICS_{EFP} did not fully mitigate this. Patient-specific airway morphology may impact regional ICS deposition and contribute to persistent inflammation.

Keywords: Asthma; Imaging/CT MRI etc.

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Conflict of interest statement

Competing interests: HS and BRL are employees of FLUIDDA Inc, a company that develops and markets part of the technology described in this paper and who provided in-kind support for this project. CVG reports personnel fees from AstraZeneca, Sanofi, and GlaxoSmithKline, outside the submitted work. MM reports grants from Canadian Institutes of Health Research, grants from Methapharm Speciality Pharmaceuticals, personal fees from AstraZeneca, GlaxoSmithKline, consultant fees from AstraZeneca, Sanofi, and Respiplus, outside the submitted work. PN reports grants and personal fees from AstraZeneca, GlaxoSmithKline, and Teva, grants from Sanofi, Foresee, and Cyclomedica, and personal fees from Equilium, Arrowhead Pharma, outside the submitted work. SS reports grants and personal fees from Cyclomedica, personal fees from GlaxoSmithKline, grants from Genentech, and personal fees from Polarean Imaging, outside the submitted work. The remaining authors have no competing interests to declare.

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Editorial

Eur Respir J

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. 2025 Mar 27;65(3):2402113.

doi: 10.1183/13993003.02113-2024. Print 2025 Mar.

[Advancing patient-centred care in measuring response to biologics in severe asthma](#)

[Vanessa Bellou](#)¹

Affiliations Expand

- PMID: 40147860
- DOI: [10.1183/13993003.02113-2024](#)

No abstract available

Conflict of interest statement

Conflict of interest: V. Bellou is participating in the ERJ early career editorial mentoring programme as an early career associate editor.

Comment on

- [Patient-centred composite scores as tools for assessment of response to biological therapy for paediatric and adult severe asthma.](#)

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J Autoimmun

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. 2025 Mar 26:153:103398.

doi: 10.1016/j.jaut.2025.103398. Online ahead of print.

[Mepolizumab versus benralizumab for eosinophilic granulomatosis with polyangiitis \(EGPA\): A European real-life retrospective comparative study](#)

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Collaborators, Affiliations Expand

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Abstract

Background: Following the results of the MANDARA trial, this real-life study aimed at comparing the effectiveness and safety profile of mepolizumab versus benralizumab in a European EGPA cohort.

Methods: We conducted a retrospective observational comparative study including EGPA patients, who received mepolizumab or benralizumab at the asthma dose. Patients were matched 1:1 by sex, age, BVAS and oral corticosteroid (OCS) dosage at the treatment initiation (T0). Complete response (CR) and partial response (PR), disease activity, OCS, pulmonary parameters, eosinophil count, relapses, and safety outcomes were also compared at 3, 6 and 12 months.

Results: Patients treated with mepolizumab or benralizumab (n = 88 each) were matched: 57 % were females, median age was 54 years (IQR 45-60), median OCS dose 10 (7.5-12.5) and 10 (7-13) mg/day, median BVAS 4 (2-7) and 3 (2-8), respectively. 45.4 % of patients in the mepolizumab group and 51.1 % in the benralizumab group achieved CR or PR at T3, with CR steadily increasing during follow-up for both treatments. At T12, a higher CR rate was found in the benralizumab group (48.1 % vs 32.4 %, p = 0.005). No differences in BVAS, OCS, and respiratory parameters were observed between groups at the different timepoints. Throughout the follow-up, both treatments reduced eosinophil count, although a deeper reduction was found in the benralizumab group at all timepoints (p < 0.0001). Safety profile was comparable between patient groups.

Conclusion: Mepolizumab and benralizumab showed comparable overall effectiveness and safety in EGPA. However, benralizumab achieved a higher CR rate at T12, and a deeper peripheral eosinophil reduction.

Keywords: ANCA-associated vasculitis; Benralizumab; Biologicals; Eosinophilic granulomatosis with polyangiitis (EGPA); Epidemiology; Interleukin-5; Mepolizumab.

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Conflict of interest statement

Declaration of interests The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: David Jayne reports a relationship with GSK that includes: consulting or advisory. Giacomo Emmi reports a relationship with GSK that includes: consulting or advisory. Matthieu Groh reports a relationship with GSK that includes: consulting or advisory. Augusto Vaglio reports a relationship with GSK that includes: consulting or advisory. Roberto Padoan reports a relationship with GSK that

includes: consulting or advisory. Vincent Cottin reports a relationship with GSK that includes: consulting or advisory. David Jayne reports a relationship with AstraZeneca that includes: consulting or advisory. Matthieu Groh reports a relationship with AstraZeneca that includes: consulting or advisory. Roberto Padoan reports a relationship with AstraZeneca that includes: consulting or advisory. Augusto Vaglio reports a relationship with AstraZeneca that includes: consulting or advisory. Giacomo Emmi reports a relationship with AstraZeneca that includes: consulting or advisory. Vincent Cottin reports a relationship with AstraZeneca that includes: consulting or advisory. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. Alberto Lo Gullo by National Specialist Hospital Garibaldi, Alessandra Bettiol by University of Florence, Allyson Egan by Tallaght University Hospital, Alvisè Berti by University of Trento, Angelo Coppola by Saint Camillus International University of Health and Medical Sciences, Angelo Vacca by University Hospital Polyclinic of Bari, Anna Kernder by Heinrich Heine University Düsseldorf, Carlo Lombardi by Poliambulanza Foundation Hospital Institute, Charlene Desaintjean by Civil Hospices of Lyon, Chiara Baldini by University of Pisa, Chiara Marvisi by University of Modena e Reggio Emilia, Claudia Crimi by G. Rodolico - San Marco" University Hospital, Dario Roccatello by, Pascal Cathébras By CHU, Saint-Etienne, France, Marco Caminati by University of Verona, Verona, Paolo Cameli by University of Siena, Alvisè Berti by University of Trento, Chiara Baldini by University of Pisa, Carlo Salvarani by Università di Modena e Reggio Emilia, M Aladdin J. Mohammad by Lund University, Maria Letizia Urban by University of Florence, Irene Mattioli by University of Florence, Giorgio Trivioli by University of Florence, Elena Treppo by University of Udine, Paola Toniati by University of Brescia, Colas Tcherakian by Hôpital Foch, Suresnes, Roser Solans by Autònoma de Barcelona, Renato Alberto Sinico by IRCCS Humanitas Research Hospital Rozzano, Benjamin Seeliger by Hannover Medical School, Maxime Samson by Dijon Bourgogne University Hospital, Dario Roccatello by University of Turin, Pavel Novikov by Sechenov First Moscow State Medical University, Santi Nolasco by University of Catania, Thomas Neumann by Jena University Hospital, Simone Matteo Negrini by AO Ordine Mauriziano Torino, Gianluca Moroncini by Marche University Hospital, Frank Moosig by Rheumazentrum Schleswig-Holstein Mitte, Neumünster, Sara Monti by IRCCS Istituto Auxologico Italiano, Immunorheumatology Research Laboratory, Laura Moi by Centre Hospitalier Universitaire Vaudois, Lausanne, Matteo Maule by University of Verona, Chiara Marvisi by Università di Modena e Reggio Emilia, Carlos Martinez Rivera by Universitat Autònoma de Barcelona, Maria Rita Marchi by Cittadella Hospital, ULSS 6 Euganea, Padua, Laura Losappio by ASST Grande Ospedale Metropolitano Niguarda, Giuseppe Lopalco by University of Bari, Carlo Lombardi by Fondazione Poliambulanza, Brescia, Alberto Lo Gullo by ARNAS Garibaldi, Catania, Anna Kernder by Heinrich-Heine University, Düsseldorf, Rachel Jones by University of Cambridge, Florenzo Iannone by University of Bari, Bernhard Hellmich by University of Tübingen, Gabriella Guarnieri by Azienda Ospedaliero-universitaria di Padova, Marcello Govoni by University of Ferrara, Franco Franceschini by University of Brescia, Marco Fornaro by University of Bari, Marco Folci by Fondazione Poliambulanza Istituto Ospedaliero, Brescia, Georgina Espigol-Frigolé by Hospital Clínic and University of Barcelona and Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), Barcelona, Allyson Egan by Tallaght University Hospital, Dublin, Charlene Desaintjean by Hospices Civils de Lyon, Claudia Crimi by University of Catania, Giulia Costanzo by University of Cagliari,

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J Asthma

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. 2025 Mar 27:1-8.

doi: 10.1080/02770903.2025.2482995. Online ahead of print.

[Sevoflurane-induction via the Flow-i ventilator in the pediatric intensive care unit for the treatment of status asthmaticus: a case report and literature review](#)

[Ahmani DoDoo](#)¹, [Melissa Cregan](#)¹, [Kailey A Remien](#)^{2,3}, [Ambrish Patel](#)^{2,4}

Affiliations Expand

- PMID: 40146751
- DOI: [10.1080/02770903.2025.2482995](https://doi.org/10.1080/02770903.2025.2482995)

Abstract

Introduction: Status asthmaticus is a severe asthma exacerbation commonly associated with hypercarbia, hypoxia, and respiratory acidosis that can be unresponsive to conventional therapies. Non-invasive positive pressure ventilation is utilized as the first modality of respiratory support. Inhaled anesthetic agents are non-standard treatment options which can be considered for their bronchodilator properties once the patient is intubated.

Case report: We present a 14-year-old adolescent with a history of severe persistent asthma who was admitted to the pediatric intensive care unit (PICU) in status asthmaticus. The patient required intubation, was induced with sevoflurane, and mechanically ventilated with the Flow-i ventilator.

Discussion: Status asthmaticus is described as severe asthma that is refractory to repeated administration of beta-agonists, while near-fatal asthma is described as exacerbations requiring intubation and mechanical ventilation. When mechanical ventilation and conventional therapies are inadequate, inhalational anesthetics and extracorporeal membrane oxygenation (ECMO) are considered. This article examines the use of sevoflurane as a treatment modality for pediatric patients with status asthmaticus highlighting the therapeutic approach and outcome.

Conclusion: The use of inhaled anesthetic gases and advanced anesthesia machines can diversify and enhance treatment for patients with refractory status asthmaticus. With continuous monitoring of hemodynamics, anesthesia machines may be an integral therapeutic option for treating refractory status asthmaticus within the PICU without the need for extracorporeal life support.

Keywords: Asthma; Flow-i; Maquet; inhaled anesthetic; pediatric asthma; pediatric critical care; sevoflurane.

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Review

Curr Allergy Asthma Rep

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. 2025 Mar 27;25(1):20.

doi: 10.1007/s11882-025-01201-0.

[Climate Change and the Future of Allergies and Asthma](#)

[Allison J Burbank¹](#)

Affiliations Expand

- PMID: 40146339

- DOI: [10.1007/s11882-025-01201-0](https://doi.org/10.1007/s11882-025-01201-0)

Abstract

Purpose of this review: Climate change affects global temperature, meteorological variables, plant aerobiology, air pollution exposure and a host of other factors that individually have been implicated in the inception and/or exacerbation of allergic disease like asthma and allergic rhinitis. It is unknown how climate change will impact allergic disease prevalence and morbidity in the future.

Recent findings: Pollen seasons are lengthening with variable effects on pollen peak concentrations and allergenicity. Air pollution exposure is linked with enhanced susceptibility to allergic inflammation induced by pollen and with enhanced susceptibility to infection with a morbidity/mortality from respiratory viruses, including SARS-CoV-2. The available literature largely supports the association between climate change and three of the most salient factors for allergic respiratory disease prevalence and morbidity: changes in allergen exposure, pollution exposure, and viral respiratory infection. More research is needed to understand the complex interactions between these factors and individual-level variables that influence disease susceptibility.

Keywords: Aeroallergen; Air pollution; Climate change; Respiratory virus.

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Conflict of interest statement

Declarations. Human and Animal Rights: This article does not contain any studies with human or animal subjects performed by any of the authors. **Competing Interests:** The authors declare no competing interests.

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Arch Dis Child Educ Pract Ed

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. 2025 Mar 26:edpract-2024-327734.

doi: 10.1136/archdischild-2024-327734. Online ahead of print.

[Fifteen-minute consultation: Maintenance and reliever therapy for the management of asthma in children and young people](#)

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Affiliations Expand

- PMID: 40139738
- DOI: [10.1136/archdischild-2024-327734](https://doi.org/10.1136/archdischild-2024-327734)

Abstract

Asthma is the most common chronic disease of childhood. Acute asthma attacks are a frequent reason for emergency presentation in children and young people (CYP), and fatal asthma attacks can occur even in those thought to have mild disease. Asthma treatment in the UK has until recently relied heavily on a strategy of regular 'maintenance' inhaled corticosteroid (ICS) and separate 'reliever' inhalers containing short-acting beta-agonist (SABA) taken as needed to relieve symptoms (most commonly relievers contain salbutamol). This strategy is vulnerable to poor adherence to maintenance treatment and over-reliance on SABA inhalers, both of which increase airway inflammation and the risk of asthma attack. An alternative strategy using a single fixed-dose inhaler combining ICS with a fast-onset long-acting beta 2-agonist (eg, formoterol) as either anti-inflammatory reliever (AIR) or as maintenance and reliever therapy (MART) is gaining support. In randomised controlled studies as well as pragmatic real-world studies in people with mild to moderate asthma, AIR and MART have been shown to be as effective as standard fixed ICS with as-required SABA and better than SABA-only treatment. Additionally, the Symbicort Turbohaler, the most-studied of the devices licensed for MART/AIR currently, is an inhaled powder device which does not require a spacer and is potentially more environmentally friendly compared with pressurised metered-dose inhaler and metered-dose inhaler devices while being equally effective. Our article aims to review some of the evidence base for AIR/MART in CYP, while giving practical guidance on how to incorporate them into paediatric asthma management.

Keywords: Paediatrics; Respiratory Medicine.

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J Asthma

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doi: [10.1080/02770903.2025.2482998](https://doi.org/10.1080/02770903.2025.2482998). Online ahead of print.

[Asthma Incidence, Prevalence, and Mortality in the United States and Worldwide, 1990-2019: Findings from the Global Burden of Disease Study](#)

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Affiliations Expand

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Abstract

Asthma is a serious global health issue, contributing to premature deaths and reduced quality of life. This study examines trends in the incidence, prevalence, and mortality of asthma in the US and globally from 1990 to 2019. Data from the Global Burden of Disease database were used to calculate age-standardized incidence (ASIR), prevalence (ASPR), and mortality (ASMR) rates per 100,000 individuals, stratified by gender. Joinpoint regression analysis determined annual percent changes (APCs), and average annual percentage changes (AAPCs) were calculated as weighted averages of these trends. In the US, ASIR increased by 10.2%, rising from 1404.6 in 1990 to 1547.2 in 2019, with an overall AAPC of 0.33. Globally, ASIR decreased by 13%, declining from 580.1 to 504.3, with an overall AAPC of -0.46. ASPR in the US rose from 9374.0 to 10399.3, reflecting a 0.37% annual increase, whereas globally, ASPR dropped by 24.1%, decreasing from 4496.9 to 3415.5 with an overall AAPC of -0.91. Females consistently exhibited higher ASPR rates than males in both settings. US asthma mortality decreased by 50%, with ASMR dropping from 1.66 to 0.87 and an AAPC of -2.15. Globally, ASMR decreased by 51.3%, falling

from 11.91 to 5.80, with an overall AAPC of -2.47. Males globally showed higher ASMR, whereas in the US, females had higher rates. While asthma incidence and prevalence increased in the US, global rates declined. Both the US and global populations experienced substantial reductions in asthma-related mortality, highlighting the need for targeted interventions and international collaboration.

Keywords: Asthma; Global Burden of Disease; Incidence; Mortality; Prevalence; Sex; USA.

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Review

Expert Rev Respir Med

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doi: 10.1080/17476348.2025.2484289. Online ahead of print.

[An update on long-acting muscarinic agents for asthma therapy](#)

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Affiliations Expand

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- DOI: [10.1080/17476348.2025.2484289](https://doi.org/10.1080/17476348.2025.2484289)

Abstract

Introduction: The manifestations of asthma are influenced by the dysfunction of the autonomic nervous system, which results in elevated vagal tone within the airways. Acetylcholine (ACh) plays a pivotal role in the pathophysiology of asthma through

its interaction with muscarinic acetylcholine receptors (mAChRs). Consequently, using mAChR antagonists to counteract the actions of ACh is scientifically sound.

Areas covered: This narrative review methodically examines the latest information on the mechanisms and evidence supporting the use of long-acting muscarinic antagonists (LAMAs) in asthma.

Expert opinion: Adding a LAMA to existing asthma treatments involving an ICS and a LABA, within a single inhaler triple therapy (SITT), improves lung function regulating airflow limitation, reduces exacerbations, and eosinophilic inflammation and offers a more comprehensive approach to managing inflammation and tissue remodeling, which are linked to ACh. Additionally, it disrupts the vicious cycle of ACh release that contributes to neuronal plasticity and dysfunction of small airways. Identifying treatable traits is key to using SITT in a customized way that aligns with patients' needs. The 5T (Triple Therapy Targeting Treatable Traits) approach proposes the utilization of SITT for all asthma cases, not solely severe ones, and involves using LAMAs in ICS/LABA combinations earlier than current guidelines recommend.

Keywords: Asthma; cholinergic system; long-acting muscarinic antagonists; single inhaler triple therapy; treatable traits approach.

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Review

Curr Opin Pulm Med

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. 2025 May 1;31(3):287-293.

doi: 10.1097/MCP.0000000000001154. Epub 2025 Mar 27.

[Non-T2 asthma](#)

[Emily K Duffus](#)¹, [Fernando Holguin](#)², [Deepa Rastogi](#)³

Affiliations [Expand](#)

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- DOI: [10.1097/MCP.0000000000001154](https://doi.org/10.1097/MCP.0000000000001154)

Abstract

Purpose of review: This review provides a comprehensive overview of the non-T2 asthma phenotypes. Asthma is an umbrella term that defines a complex group of heterogenous airway disorders, which are broadly categorized into predominantly T2 or non-T2 phenotypes depending on the presence and levels of airway and systemic biomarkers associated with a T2 inflammatory response. Individuals with predominant T2 asthma have greater numbers of peripheral blood eosinophils, exhaled nitric oxide and IgE. These patients have more atopy and earlier onset asthma. In contrast, the absence or low levels of these biomarkers define non-T2 asthma. This is a heterogenous group with a later onset of asthma that is also more commonly associated with obesity and with females.

Recent findings: This article summarizes new information regarding the plasticity that exists between T2 and non-T2 mechanisms, including their role in exacerbation-prone and nonexacerbating asthma, and many of the risk factors associated with the non-T2 phenotype, such as viral infections, ambient air pollution exposure, smoking, genetic and metabolic factors. It also provides new information on the immunological and metabolic mechanisms associated with non-T2 asthma. We also discuss how to manage this asthma phenotype and how treatment responses differ for these patients.

Summary: Non-T2 asthma defines a heterogenous group of asthma phenotypes. However, acknowledging that the absence of T2 biomarkers is influenced by several factors is important and can longitudinally change in relation to exacerbations, particularly in children.

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Clinical Trial

N Engl J Med

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. 2025 Mar 27;392(12):1178-1188.

doi: 10.1056/NEJMoa2414482. Epub 2025 Mar 1.

[Tezepelumab in Adults with Severe Chronic Rhinosinusitis with Nasal Polyps](#)

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Collaborators, Affiliations Expand

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Abstract

Background: Treatment with tezepelumab has been effective for sinonasal symptoms in patients with severe, uncontrolled asthma and a history of chronic rhinosinusitis with nasal polyps, but its efficacy and safety in adults with severe, uncontrolled chronic rhinosinusitis with nasal polyps is unknown.

Methods: We randomly assigned adults with physician-diagnosed, symptomatic, severe chronic rhinosinusitis with nasal polyps to receive standard care and either tezepelumab (at a dose of 210 mg) or placebo subcutaneously every 4 weeks for 52 weeks. The coprimary end points were the changes from baseline in the total nasal-polyp score (range, 0 to 4 [for each nostril]; higher scores indicate greater severity) and the mean nasal-congestion score (range, 0 to 3; higher scores indicate greater severity) at week 52. Key secondary end points assessed in the overall population were the loss-of-smell score, the total score on the Sinonasal Outcome Test (SNOT-22; range, 0 to 110; higher scores indicate greater severity), the Lund-Mackay score (range, 0 to 24; higher scores indicate greater severity), the total symptom score (range, 0 to 24; higher scores indicate greater severity), and the first decision to treat with nasal-polyp surgery or use of systemic glucocorticoid therapy, or both, assessed in time-to-event analyses (individual and composite).

Results: In total, 203 patients were assigned to receive tezepelumab and 205 to receive placebo. At week 52, the patients who received tezepelumab had significant improvements in the total nasal-polyp score (mean difference vs. placebo, -2.07; 95% confidence interval [CI], -2.39 to -1.74) and the mean nasal-congestion score (-1.03; 95% CI, -1.20 to -0.86) ($P < 0.001$ for both scores). Tezepelumab significantly improved the loss-of-smell score (mean difference vs. placebo, -1.00; 95% CI, -1.18 to -0.83), SNOT-22 total score (-27.26; 95% CI, -32.32 to -22.21), Lund-Mackay score (-5.72; 95% CI, -6.39 to -5.06), and total symptom score (-6.89; 95% CI, -8.02 to -5.76) ($P < 0.001$ for all scores). Surgery for nasal polyps was indicated in significantly fewer patients in the tezepelumab group (0.5%) than in the placebo group (22.1%) (hazard ratio, 0.02; 95% CI, 0.00 to 0.09); there was significantly less use of systemic glucocorticoids with tezepelumab (5.2%) than with placebo (18.3%) (hazard ratio, 0.12; 95% CI, 0.04 to 0.27) ($P < 0.001$ for both time-to-event analyses).

Conclusions: Tezepelumab therapy led to significantly greater reductions in the size of nasal polyps, the severity of nasal congestion and sinonasal symptoms, and the use of nasal-polyp surgery and systemic glucocorticoids than placebo in adults with severe, uncontrolled chronic rhinosinusitis with nasal polyps. (Funded by AstraZeneca and Amgen; WAYPOINT ClinicalTrials.gov number, [NCT04851964](https://clinicaltrials.gov/ct2/show/study/NCT04851964)).

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. 2025 Mar 27;65(3):2402264.

doi: 10.1183/13993003.02264-2024. Print 2025 Mar.

[What can lockdowns tell us about the underlying causes of asthma exacerbations? A retrospective cohort study](#)

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Affiliations Expand

- PMID: 40015749
- DOI: [10.1183/13993003.02264-2024](https://doi.org/10.1183/13993003.02264-2024)

No abstract available

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. 2025 Mar 27;65(3):2400691.

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Patient-centred composite scores as tools for assessment of response to biological therapy for paediatric and adult severe asthma

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Abstract

Background: We have previously developed Core Outcome Measures sets for Severe Asthma (COMSA) by multi-stakeholder consensus. There are no patient-centred tools to quantify response to biological therapies for severe asthma. We aimed to develop paediatric and adult CompOsite iNDexes For Response in asthMa (CONFIRM) incorporating clinical parameters and patient-reported quality of life.

Methods: International expert healthcare professionals and patients with severe asthma were invited to 1) develop consensus levels of clinically relevant changes for each outcome measure within COMSA, 2) use multicriteria decision analysis to

develop the CONFIRM scores and 3) assess their internal validity. A separate group of healthcare professionals evaluated CONFIRM's external validity.

Results: Five levels of change for each COMSA outcome were agreed. Severe exacerbations and maintenance oral corticosteroid use were rated as the most important in determining both paediatric and adult CONFIRM scores. There was strong agreement between healthcare professionals and patients, although patients assigned greater importance to quality of life. The CONFIRM score quantified response to a biologic from -31 (deterioration) to 69 (best possible response). Paediatric and adult CONFIRMs had good discriminative ability for a sufficient (area under the curve ≥ 0.92) and a substantial (area under the curve ≥ 0.95) response to biologics. Both CONFIRMs demonstrated excellent external validity (Spearman correlation coefficients 0.9 and 0.8 for paediatric and adult, respectively; $p < 0.0001$).

Conclusions: We have developed novel patient-centred paediatric and adult CONFIRMs that include quality of life measures. CONFIRMs should allow a more holistic understanding of response for the patient and a standardised assessment of the effectiveness of biologics between studies. Further research is needed to prospectively validate CONFIRM scores.

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Conflict of interest statement

Conflict of interest: E. Khaleva reports support for the present study from 3TR European Union IMI 2 and Asthma, Allergy and Inflammation Research (AAIR) Charity. C. Brightling reports support for the present study from 3TR and Leicester NIHR BRC; grants from GSK, AstraZeneca, Sanofi, Regeneron, Roche, Genentech, Novartis, Chiesi and Mologic; and consultancy fees from GSK, AstraZeneca, Sanofi, Regeneron, Roche, Genentech, Novartis, Chiesi and Mologic. T. Eiwegger reports grants from ALK and Greer Stallergen; consultancy fees from ALK; payment or honoraria for lectures, presentations, manuscript writing or educational events from Aimune, ThermoFisher, Nutricia/Danone, ALK and Novartis; payment for expert testimony from Aimune; participation on a data safety monitoring board or advisory board with ALK, Aimune and Nutricia/Danone; leadership roles with EAACI (Chair WG Biologicals and Board Immunology Section) and Allergy – European Journal of Allergy and Clinical Immunology (Associate Editor); and receipt of equipment, materials, drugs, medical writing, gifts or other services from MADX and Novartis. A. Altraja reports consultancy fees from AstraZeneca, Boehringer Ingelheim, GSK and Sanofi; payment or honoraria for lectures, presentations, manuscript writing or educational events from AstraZeneca, Berlin-Chemie Menarini, Boehringer Ingelheim, Norameda, GSK, Sanofi and Zentiva; payment for expert testimony from AstraZeneca, Boehringer Ingelheim, GSK and Sanofi; support for attending meetings from AstraZeneca, Berlin-Chemie Menarini, Boehringer Ingelheim and Norameda; participation on a data safety monitoring board or advisory board with AstraZeneca, Boehringer Ingelheim, GSK and Sanofi; and receipt of equipment, materials, drugs, medical writing, gifts or other services from Berlin-Chemie and Menarini. P. Bégin reports grants from Novartis, DBV Technologies, Sanofi and Regeneron; consultancy fees from Pfizer, Sanofi and DBV Technologies; and payment or honoraria for lectures, presentations, manuscript writing or educational events from ALK, Sanofi, Pfizer, AstraZeneca and Bausch Health. K. Blumchen reports grants from Novartis Pharma GmbH, Allergy Therapeutics, Aimmune Therapeutics, DBV Technologies and Hipp GmbH; consultancy fees from Novartis

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Review

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[Update on the genetics of allergic diseases](#)

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Abstract

The field of genetic etiology of allergic diseases has advanced significantly in recent years. Shared risk loci reflect the contribution of genetic factors to the sequential development of allergic conditions across the atopic march, while unique risk loci provide opportunities to understand tissue specific manifestations of allergic disease. Most identified risk variants are non-coding, indicating that they likely influence gene expression through gene regulatory mechanisms. Despite recent advances, challenges persist, particularly regarding the need for increased ancestral diversity in research populations. Further, while polygenic risk scores show promise for identifying individuals at higher genetic risk for allergic diseases, their predictive accuracy varies across different ancestries and can be difficult to translate to an individual's absolute risk of developing a disease. Methodologies, including "nearest gene", 3D chromatin interaction analysis, expression quantitative trait locus analysis, experimental screens, and integrative bioinformatic models have established connection between genetic variants and their regulatory targets, enhancing our understanding of disease risk and phenotypic variability. In this review, we focus on the state of knowledge of allergic sensitization and five allergic diseases: asthma, atopic dermatitis, allergic rhinitis, food allergy, and eosinophilic esophagitis. We summarize recent progress and highlight opportunities for advancing our understanding of their genetic etiology.

Keywords: GWAS; Genetics of allergic diseases; allelic mechanisms; diversity; functional genomics; polygenic risk scores.

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[Risk factors for postpartum depression in pregnant women with allergic rhinitis: a retrospective study](#)

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Abstract

Objective: Allergic rhinitis can cause symptoms to worsen after pregnancy and may cause problems such as postpartum depression. The goal of this study was to investigate the factors that influence postpartum depression in pregnant women with allergic rhinitis (AR).

Methods: We conducted a retrospective cohort study that included women with AR (based on self-reports) between June 2015 to June 2019 in Harvard University Partners Healthcare Systems (PARTNERS) in the USA. The study group was divided into postpartum depression and non-postpartum depression. Routine clinical and laboratory information was collected. Univariate and least absolute shrinkage and selection operator (LASSO, employed for predictor selection) regression analysis was used to study associations between AR during pollen seasons and adverse outcomes. Additionally, the receiver operating characteristic (ROC) curve evaluates discriminative ability by the area under the ROC curve (AUC). The calibration curve (DCA) was conducted to determine the clinical utility and benefit of the nomogram.

Results: A total of 216 pregnant women with AR participated in this study. Univariate analysis showed that 7 indicators were significantly different ($P < 0.05$). LASSO and multivariable regression identified four predictors to construct a nomogram for PPD in pregnant women with AR, the four selected risk predictors are as follows: pollen season pregnancy (OR = 1.514, 95%CI: 0.771-2.973), history of preterm birth (OR = 2.723, 95%CI: 1.157-6.406), number of pregnancies (OR = 2.104, 95%CI: 1.356-3.267), anti-allergy medication during pregnancy (OR = 2.975, 95%CI: 1.521-5.819). The nomogram displayed good discrimination, with AUC of 0.732 (95% CI: 0.657-0.808). The risk of postpartum depression increased with the increasing risk score of predictive nomogram. The calibration curve and DCA present optimal predictive power.

Conclusions: We highlighted the comorbidity of AR and postpartum depression, and suggested that a multidisciplinary consideration between allergists and obstetricians or midwives is needed to ensure that pregnant women consult experts to reduce AR symptoms.

Trial registration number: 2018P002646.

Keywords: Allergic rhinitis; Nomogram; Postpartum depression; Pregnant women.

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Conflict of interest statement

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Erratum for

- [Adherence to Treatment in Allergic Rhinitis During the Pollen Season in Europe: A MASK-air Study.](#)

Sousa-Pinto B, Costa EM, Vieira RJ, Klimek L, Czarlewski W, Pfaar O, Bedbrook A, Amaral R, Brussino L, Kvedariene V, Larenas-Linnemann DE, Iinuma T, Pham-Thi N, Regateiro FS, Taborda-Barata L, Ventura MT, Ansotegui IJ, Bergmann KC, Canonica GW, Cardona V, Cecchi L, Cherrez-Ojeda I, Cingi C, Cruz AA, Del Giacco S, Devillier P, Fokkens WJ, Gemicioglu B, Haahtela T, Ivancevich JC, Kuna P, Kraxner H, Laune D, Louis R, Makris M, Morais-Almeida M, Mösges R, Niedoszytko M, Papadopoulos NG, Patella V, Pereira AM, Reitsma S, Robles-Velasco K, Rouadi PW, Samolinski B, Sova M, Toppila-Salmi SK, Sastre J, Valiulis A, Yorgancioglu A, Zidarn M, Zuberbier T, Fonseca JA, Bousquet J; MASK-air think tank. *Clin Exp Allergy*. 2025 Mar;55(3):226-238. doi: 10.1111/cea.70004. Epub 2025 Feb 16. PMID: 39956639 Free PMC article.

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Health Psychol

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. 2025 Mar 27.

doi: 10.1037/hea0001487. Online ahead of print.

[Bidirectional two-sample mendelian randomization analysis identifies a causal relationship between major depressive disorder and allergic diseases](#)

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Affiliations Expand

- PMID: 40146608
- DOI: [10.1037/hea0001487](#)

Abstract

Background: Several studies have indicated an association between major depressive disorder (MDD) and allergic diseases (ADs), but the exact causal relationship remains inconclusive. Thus, this study aimed to explore the causal relationship between MDD and ADs employing bidirectional two-sample Mendelian randomization (MR).

Method: The summary statistics for MDD were sourced from the Psychiatric Genomics Consortium. Single nucleotide polymorphisms (SNPs) associated with allergic asthma (AAS), allergic rhinitis (AR), and atopic dermatitis, were extracted from the FinnGen Consortium. The inverse variance weighted was primarily used in this MR analysis, with other methods as supplements. Several sensitivity analyses were performed to evaluate heterogeneity and horizontal pleiotropy. A reverse MR analysis was also conducted.

Results: The inverse variance weighted method demonstrated a nominally significant association between MDD and an increased risk of AR ($OR = 1.191$, 95% confidence interval [CI] [1.006, 1.411], $p = .042$); after removing the two outlier Single nucleotide polymorphisms, a causal relationship was found between genetic susceptibility to MDD and AAS ($OR = 1.418$, 95% CI [1.207, 1.666], $p = .00022$). These results passed the heterogeneity and horizontal pleiotropy tests. However, MDD did not cause atopic dermatitis according to our results ($OR = 1.049$, 95% CI [0.903, 1.219], $p = .53$). Furthermore, reverse MR analysis unsupported ADs cause MDD.

Conclusion: This MR study suggested a nominally significant causal relationship between MDD and increased risk of AR, and a specific condition-based causal relationship between MDD and AAS. In the future, these results need to be validated further. (PsycInfo Database Record (c) 2025 APA, all rights reserved).

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[Climate Change and the Future of Allergies and Asthma](#)

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Affiliations Expand

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- DOI: [10.1007/s11882-025-01201-0](https://doi.org/10.1007/s11882-025-01201-0)

Abstract

Purpose of this review: Climate change affects global temperature, meteorological variables, plant aerobiology, air pollution exposure and a host of other factors that individually have been implicated in the inception and/or exacerbation of allergic disease like asthma and allergic rhinitis. It is unknown how climate change will impact allergic disease prevalence and morbidity in the future.

Recent findings: Pollen seasons are lengthening with variable effects on pollen peak concentrations and allergenicity. Air pollution exposure is linked with enhanced susceptibility to allergic inflammation induced by pollen and with enhanced susceptibility to infection with a morbidity/mortality from respiratory viruses, including SARS-CoV-2. The available literature largely supports the association between climate change and three of the most salient factors for allergic respiratory disease prevalence and morbidity: changes in allergen exposure, pollution exposure, and viral respiratory infection. More research is needed to understand the complex interactions between these factors and individual-level variables that influence disease susceptibility.

Keywords: Aeroallergen; Air pollution; Climate change; Respiratory virus.

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Conflict of interest statement

Declarations. Human and Animal Rights: This article does not contain any studies with human or animal subjects performed by any of the authors. **Competing Interests:** The authors declare no competing interests.

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[Efficacy and Safety of Combined Pharmacotherapies in Moderate-to-Severe Allergic Rhinitis: A Network Meta-Analysis](#)

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Affiliations Expand

- PMID: 40135771
- DOI: [10.1002/alr.23578](#)

Abstract

Background: Combination pharmacotherapies are often selected for moderate-to-severe allergic rhinitis (AR), particularly when monotherapies do not control symptoms effectively. However, few studies have compared the efficacy and safety of different combination regimens. Therefore, we performed this study to investigate the clinical benefits of different combination strategies for moderate-to-severe AR.

Methods: Electronic databases were searched (inception-May 31, 2024) for randomized controlled trials involving combination therapies for treating moderate-to-severe AR. The medication classes included intranasal corticosteroids (INCS), intranasal antihistamines (INAH), oral antihistamines (OAH), and oral leukotriene receptor antagonists (LTRA). A network meta-analysis with a random-effects model was performed following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines.

Results: Forty-eight eligible studies with 17,188 participants were included. In this meta-analysis, INAH and INCS, OAH and INCS, and INCS were the most effective in improving Total Nasal Symptom Score, and INAH and INCS, INAH, and INCS most effectively enhanced the total ocular symptom score. INCS and LTRA, OAH and INCS, and INAH and INCS showed the greatest benefit in improving the Rhinitis Quality of Life Questionnaire. Although INCS and INAH increased the risk of overall adverse events, specific adverse events predominantly included a bitter taste.

Conclusion: Combination therapies demonstrated superior efficacy compared to monotherapies overall. The INAH and INCS combination provided the greatest advantage in symptom improvement. The combination of OAH and INCS could be a viable alternative treatment option if the bitter taste is unacceptable. Our findings provide novel insights into optimizing personalized combination therapies.

Keywords: allergic rhinitis; combination therapy; efficacy; network meta-analysis; safety.

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. 2025 Mar 27;392(12):1178-1188.

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[Tezepelumab in Adults with Severe Chronic Rhinosinusitis with Nasal Polyps](#)

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Collaborators, Affiliations Expand

- PMID: 40106374
- DOI: [10.1056/NEJMoa2414482](https://doi.org/10.1056/NEJMoa2414482)

Abstract

Background: Treatment with tezepelumab has been effective for sinonasal symptoms in patients with severe, uncontrolled asthma and a history of chronic rhinosinusitis with nasal polyps, but its efficacy and safety in adults with severe, uncontrolled chronic rhinosinusitis with nasal polyps is unknown.

Methods: We randomly assigned adults with physician-diagnosed, symptomatic, severe chronic rhinosinusitis with nasal polyps to receive standard care and either tezepelumab (at a dose of 210 mg) or placebo subcutaneously every 4 weeks for 52 weeks. The coprimary end points were the changes from baseline in the total nasal-polyp score (range, 0 to 4 [for each nostril]; higher scores indicate greater severity) and the mean nasal-congestion score (range, 0 to 3; higher scores indicate greater severity) at week 52. Key secondary end points assessed in the overall population were the loss-of-smell score, the total score on the Sinonasal Outcome Test (SNOT-22; range, 0 to 110; higher scores indicate greater severity), the Lund-Mackay score (range, 0 to 24; higher scores indicate greater severity), the total symptom score (range, 0 to 24; higher scores indicate greater severity), and the first decision to treat with nasal-polyp surgery or use of systemic glucocorticoid therapy, or both, assessed in time-to-event analyses (individual and composite).

Results: In total, 203 patients were assigned to receive tezepelumab and 205 to receive placebo. At week 52, the patients who received tezepelumab had significant improvements in the total nasal-polyp score (mean difference vs. placebo, -2.07; 95% confidence interval [CI], -2.39 to -1.74) and the mean nasal-congestion score (-1.03; 95% CI, -1.20 to -0.86) ($P < 0.001$ for both scores). Tezepelumab significantly improved the loss-of-smell score (mean difference vs. placebo, -1.00; 95% CI, -1.18 to -0.83), SNOT-22 total score (-27.26; 95% CI, -32.32 to -22.21), Lund-Mackay score (-5.72; 95% CI, -6.39 to -5.06), and total symptom score (-6.89; 95% CI, -8.02 to -5.76) ($P < 0.001$ for all scores). Surgery for nasal polyps was indicated in significantly fewer patients in the tezepelumab group (0.5%) than in the placebo group (22.1%)

(hazard ratio, 0.02; 95% CI, 0.00 to 0.09); there was significantly less use of systemic glucocorticoids with tezepelumab (5.2%) than with placebo (18.3%) (hazard ratio, 0.12; 95% CI, 0.04 to 0.27) (P<0.001 for both time-to-event analyses).

Conclusions: Tezepelumab therapy led to significantly greater reductions in the size of nasal polyps, the severity of nasal congestion and sinonasal symptoms, and the use of nasal-polyp surgery and systemic glucocorticoids than placebo in adults with severe, uncontrolled chronic rhinosinusitis with nasal polyps. (Funded by AstraZeneca and Amgen; WAYPOINT ClinicalTrials.gov number, [NCT04851964](#)).

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. 2025 Feb 11;14(1):548-560.

doi: 10.1556/2006.2024.00078. Print 2025 Mar 28.

[Does nose spray addiction exist? A qualitative analysis of addiction components in rhinitis medicamentosa](#)

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Affiliations Expand

- PMID: 39932504
- DOI: [10.1556/2006.2024.00078](#)

Abstract

Background and aims: Nasal congestion is a prevalent symptom often alleviated with over-the-counter nasal sprays containing decongestants. Rhinitis medicamentosa (RM), caused by the overuse of decongestants leading to recurrent mucosal swelling, poses a significant challenge for specialists in managing patients. Despite advancements in understanding, research primarily consists of case series with limited data on its impact on quality of life. This qualitative study aimed to explore the effect of nasal spray overuse on quality of life and identify addiction components among individuals with RM.

Methods: Twenty participants with RM were interviewed by an otorhinolaryngologist and addiction counsellor. The study employed a qualitative approach utilising directed content analysis and revealed eleven categories, classified into addiction components and distinctive features of nasal spray addiction.

Results: The analysis revealed the presence of all Griffiths' addiction components in the identified themes. Additionally, sleep disorders, the feeling of suffocation, side effects, illness identity and psychological effects on nasal congestion significantly impair individuals' quality of life.

Conclusion: This qualitative study identified key components of addiction in nasal spray overuse and suggested that RM might be conceptualised in the DSM-5 category of "Other (or Unknown) Substance-Related Disorders", considering the lack of psychoactive effects. Nevertheless, in view of the current findings, it also seems to be plausible to examine the phenomenon in the behavioural addiction framework. The study underscores the need for further research and intervention strategies to address the significant impact of RM on individuals' quality of life.

Keywords: addiction; content analysis; nasal decongestant; qualitative; rhinitis medicamentosa.

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chronic cough

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doi: 10.1183/23120541.00308-2024. eCollection 2025 Mar.

Cough in pulmonary rehabilitation: a retrospective analysis of responders and nonresponders

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Affiliations Expand

- PMID: 40129544
- PMCID: [PMC11931550](#)
- DOI: [10.1183/23120541.00308-2024](#)

Abstract

Background: Pulmonary rehabilitation (PR) is essential for people with chronic respiratory diseases (CRDs), yet its impact on cough-related quality of life (CR-QoL) remains unexplored. We assessed the effects of PR on CR-QoL, described the characteristics of responders and nonresponders to PR, and explored determinants of responsiveness in this health domain in individuals with CRDs.

Methods: A retrospective study was conducted. We assessed CR-QoL using the Leicester Cough Questionnaire (LCQ) and the impact of the disease with the COPD Assessment Test (CAT), before and after PR. Cut-offs of <17.05 in LCQ total score and ≥ 10 in CAT were used to detect low CR-QoL and medium impact of the disease. Responders were defined as achieving a minimal clinically important difference (MCID) of ≥ 1.3 on the LCQ total score. Pre- versus post-PR analysis involved the t-test, Wilcoxon test or McNemar test and comparisons between groups included the independent t-test, Mann-Whitney U-test or Fisher's exact test. Logistic regression was employed to investigate factors influencing MCID achievement.

Results: 135 participants with CRDs (39% females; age 68 ± 10 years; 61% COPD; forced expiratory volume in 1 s (FEV₁) % pred $62.6 \pm 23.0\%$) were included. After PR, significant improvements were observed in all LCQ domains and CAT. 31% of participants were identified as responders in the LCQ (36% females; age 66 ± 10 years; 62% COPD; FEV₁ % pred $60.0 \pm 22.3\%$), showcasing significant differences in the LCQ and CAT compared to nonresponders. People with low CR-QoL and medium/high impact of the disease at baseline were 11 and 4 times more likely to respond to PR in CR-QoL, respectively.

Conclusion: PR enhances CR-QoL. Identification of CR-QoL and disease impact traits at baseline offers insights to optimise this outcome responsiveness to PR.

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Conflict of interest statement

Conflict of interest: A.S. Grave reports receiving “Research fellow in the project “CENTR(AR): Pulmões em andamento”, através do Programa de Parcerias para o Impacto, Portugal Inovação Social, mediante o Programa Operacional Inclusão Social e Emprego (POISE-03-4639-FSE-000597) e do Programa Operacional Competitividade e Internacionalização (COMPETE 2020 – POCI-01-0145-FEDER-007628; UIDB/04501/2020)” and PhD Grant 2023.01387.BDANA, outside the submitted work. C. Paixão reports receiving a PhD grant attributed by Fundação para a Ciência e Tecnologia (SFRH/BD/148741/2019 and COVID/BD/153477/2023), outside the submitted work. A. Oliveira is an associate editor of this journal. The remaining authors have nothing to disclose.

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

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Affiliations Expand

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- DOI: [10.1136/thorax-2024-221825](https://doi.org/10.1136/thorax-2024-221825)

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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Review

Cochrane Database Syst Rev

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doi: [10.1002/14651858.CD015313.pub2](https://doi.org/10.1002/14651858.CD015313.pub2).

[Mucolytics for children with chronic suppurative lung disease](#)

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Affiliations Expand

- PMID: 40152354
- DOI: [10.1002/14651858.CD015313.pub2](https://doi.org/10.1002/14651858.CD015313.pub2)

Abstract

Background: Chronic suppurative lung disease (CSLD) is an umbrella term to define the spectrum of endobronchial suppurative lung disease, including bronchiectasis and protracted bacterial bronchitis (PBB), associated with chronic wet or productive cough. Research that explores new therapeutic options in children with CSLD has been identified by clinicians and patients as one of the top research priorities. Mucolytic agents work to improve mucociliary clearance and interrupt the vicious vortex of airway infection and inflammation, hence they have potential as a therapeutic option.

Objectives: To assess the effects of mucolytics for reducing exacerbations, improving quality of life and other clinical outcomes in children with CSLD (including PBB and bronchiectasis), and to assess the risk of harm due to adverse events.

Search methods: An Information Specialist searched the Cochrane Airways Trials Register to June 2022, and a review author searched the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE and Embase databases to 27 September 2024. Other review authors handsearched respiratory journals.

Selection criteria: We included randomised controlled trials (RCTs), of both cross-over and parallel design, that compared a mucolytic with a placebo or 'no intervention' control group and included children (aged 18 years and under) with any type of CSLD (including PBB and bronchiectasis). We excluded studies with adult participants and studies in children with cystic fibrosis, empyema, pulmonary abscess or bronchopulmonary fistula.

Data collection and analysis: Two authors independently reviewed titles and abstracts to assess eligibility for inclusion. The authors then assessed study quality and extracted data. They assessed the quality of the study using the Cochrane risk of bias tool (RoB 2), and used GRADE to assess the certainty of evidence.

Outcomes of interest to be analysed included: i) for maintenance or stable state: rate of exacerbations, ii) for exacerbation state: time to resolution of respiratory exacerbation, iii) lung function - forced expiratory volume in one second (FEV₁) and forced vital capacity (FVC), iv) quality of life and v) adverse events. Only one study met the inclusion criteria, so we could not perform a meta-analysis. Data were continuous, so we reported outcomes as mean differences.

Main results: The sole included RCT was a cross-over study of 63 children in the total cohort, with reported data and analysis of only 52 children (26 per arm) with non-cystic fibrosis bronchiectasis. The study compared 3% hypertonic saline nebulised before chest physiotherapy with a control arm (physiotherapy alone), with each phase lasting eight weeks. Children in the hypertonic saline arm had a mean age of 9.80 (SD 2.97) years and 42.3% were male; those in the control arm had a mean age of 9.10 (SD 2.40) years and 38.4% were male. Only results of the first arm of the cross-over study were included in this review. The RCT reported a clinically important difference between the groups for our review's primary outcome: rate of respiratory exacerbations. The mean number of exacerbations per child-year was 2.50 (SD 0.64) in the intervention group and 7.80 (SD 1.05) in the control group (mean difference (MD) -5.30, 95% CI -5.77 to -4.83; 1 study, 52 participants; very low-certainty evidence). The RCT also reported that the percentage point improvement in mean % predicted FEV₁ and FVC from baseline to week eight was better with hypertonic saline compared to control. Mean FEV₁ improvement was 14.15% (SD 5.50) in the intervention group versus 5.04% (SD 5.55) in the control group (MD 9.11%, 95% CI 6.11 to 12.11; 1 study, 52 participants; very low-certainty evidence). While for FVC, the mean improvement was 13.77% (SD 5.73) compared with 7.54% (SD 4.90), respectively (MD 6.23%, 95% CI 3.33 to 9.13; 1 study, 52 participants; very low-certainty evidence). Quality of life measures were not used. We judged the study to have a high risk of bias due to unblinding, missing data, deviation from the intended intervention and reporting bias with measurement and selection of outcome measures. The authors reported that there were no dropouts due to adverse events. No data were available regarding quality of life. The included study

assessed mucolytic use during a stable state, and we found no studies of mucolytic use during an exacerbation. We also found no studies assessing oral mucolytics, other inhaled mucolytics, use in PBB, or in settings other than hospital outpatients. We also found two ongoing studies, one using hypertonic saline and one using an oral mucolytic agent erdosteine, which will potentially be included in future updates of this review.

Authors' conclusions: This systematic review is limited to a single small study, which we judged to be at high risk of bias. It remains uncertain whether regular nebulised hypertonic saline during a stable state reduces exacerbations or improves lung function. Further multi-centre, well-designed RCTs of longer duration that investigate various mucolytics are required to answer this important clinical question.

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Otolaryngol Clin North Am

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. 2025 Mar 26:S0030-6665(25)00004-0.

doi: 10.1016/j.otc.2025.01.004. Online ahead of print.

[Chronic Cough and Pulmonary Manifestations of Laryngopharyngeal Reflux Disease](#)

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Affiliations Expand

- PMID: 40148169

- DOI: [10.1016/j.otc.2025.01.004](https://doi.org/10.1016/j.otc.2025.01.004)

Abstract

Laryngopharyngeal reflux plays an important role in respiratory diseases such as chronic cough, asthma, chronic obstructive pulmonary disease, interstitial lung disease, and lung transplantation, among others. In cases of refractory chronic cough, reflux testing (hypopharyngeal-esophageal multichannel intraluminal impedance with dual-PH sensor and high-resolution esophageal manometry) will assist the clinician in determining whether additional reflux treatment steps should be undertaken. It is important to consider all mechanisms of reflux pathophysiology to yield the optimal result in the management of a patient with chronic respiratory disease.

Keywords: Chronic cough; Gastroesophageal reflux disease; Laryngopharyngeal reflux; Pulmonary; Refractory chronic cough; Respiratory.

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Conflict of interest statement

Disclosures T.L. Carroll is a consultant for Pentax Medical, Ambu and GSK. He has received stock options from and is on the scientific advisory board for Sofregen Medical and N-Zyme Biomedical. He receives royalties from Plural Publishing. A.J. Jaworek is a consultant for Smith + Nephew.

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Review

Ital J Pediatr

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. 2025 Mar 26;51(1):102.

doi: 10.1186/s13052-025-01868-1.

Treatment of sinusitis in children: an Italian intersociety consensus (SIPPS-SIP-SITIP-FIMP-SIAIP-SIMRI-SIM-FIMMG)

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Affiliations Expand

- PMID: 40140854
- PMCID: [PMC11948864](#)
- DOI: [10.1186/s13052-025-01868-1](#)

Abstract

Sinusitis is an inflammation of the mucous membrane of the paranasal sinuses. Bacterial sinusitis usually occurs as a complication of viral infections of the upper respiratory tract and is a frequent cause of medical consultation. The clinical presentation of acute bacterial sinusitis can vary. It most commonly manifests as an upper respiratory tract infection (nasal congestion, postnasal drip, cough) that persists for more than 10 days without clinical improvement. Unfortunately, updated guidelines in paediatric age are not currently available. The purpose of this consensus is to provide guidelines for the therapeutic management of previous healthy paediatric patients with sinusitis. A systematic review was conducted to identify the most recent and relevant evidence. Embase, Scopus, PubMed, and Cochrane databases were systematically screened, combining the terms "children" and "sinusitis" and "antibiotics" and "rhinosinusitis" with a date restriction from 2012 to April 2024, but without language limitations. The certainty of evidence was assessed using the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) methods. The final recommendations were obtained through a Delphi consensus of an expert panel. In children with a diagnosis of uncomplicated acute bacterial sinusitis, made according to strict clinical criteria, systemic empiric antibiotic therapy with amoxicillin or amoxicillin-clavulanic acid is indicated at a high dose (90 mg/kg/day, calculated based on amoxicillin, preferably in 3 daily doses) and for at least 10 days. In children with chronic sinusitis, systemic antibiotic treatment is not recommended, and it is not possible to make any specific recommendation regarding antibiotic agents due to the scarcity of scientific evidence supporting treatment. In conclusion, the diagnosis of sinusitis is primarily clinical, and despite acute sinusitis generally having a favourable course, some cases can present orbital and intracranial complications. The misuse of antibiotics

in managing upper respiratory tract infections, including acute sinusitis, and the challenges posed by antibiotic resistance are a current issue in paediatric care. Due to the scarcity, heterogeneity, and poor quality of available evidence either supporting or opposing the use of systemic antibiotic therapy in children with sinusitis prospective studies on larger and more homogeneous cohort are needed.

Keywords: Antibiotics; Children; Sinusitis; Treatment.

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Conflict of interest statement

Declarations. Ethical approval: Not applicable. Consent to participate: Not applicable. Consent for publication: Not applicable. Competing interests: Authors declare no relevant financial or non-financial interests.

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. 2025 Mar 27;392(12):1203-1214.

doi: 10.1056/NEJMra2309906.

[Unexplained or Refractory Chronic Cough in Adults](#)

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- DOI: [10.1056/NEJMra2309906](https://doi.org/10.1056/NEJMra2309906)

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. 2025 Mar 26;86(3):1-12.

doi: [10.12968/hmed.2024.0764](https://doi.org/10.12968/hmed.2024.0764). Epub 2025 Mar 16.

[The Effect of Asthma Education Program on Disease Management in Children with Asthma: A Retrospective Analysis](#)

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- PMID: 40135320

- DOI: [10.12968/hmed.2024.0764](https://doi.org/10.12968/hmed.2024.0764)

Free article

Abstract

Aims/Background As a common chronic respiratory disease, asthma may lead to airway inflammation and accelerated, progressive loss of lung function, if not well controlled, posing risks to patients' life and health. This study evaluates the impact

of asthma education program on enhancing asthma control, quality of life, and pulmonary function in children, addressing gaps in existing management approaches. **Methods** In this retrospective study, 60 patients who had undergone routine nursing care at Beijing Shijitan Hospital affiliated to Capital Medical University from May 2022 to May 2023 were enrolled for the reference group; after excluding 3 patients, this study finally included 57 patients. Separately, 55 patients who had attended the child-oriented asthma education program on the basis of routine nursing care at the same hospital from May 2023 to May 2024 were enrolled for the observation group; after excluding 2 patients, this study eventually included 53 patients. The Childhood Asthma Control Test (C-ACT) score, the Pediatric Asthma Quality of Life Questionnaire (PAQLQ) score, pulmonary function index levels measured in terms of percentage of predicted forced vital capacity (FVC%), peak expiratory flow (PEF), forced vital capacity in one second/forced vital capacity (FEV1/FVC), and the disappearance time of clinical symptoms (dyspnea, chest tightness, cough, wheezing) were compared between the two groups. **Results** Before the management, there were no differences in the C-ACT and PAQLQ scores between the two groups ($p > 0.05$). After management, the C-ACT and PAQLQ scores of the observation group were significantly higher than those of the reference group ($p < 0.001$). There were no differences in FVC%, PEF, and FEV1/FVC between the two groups before management ($p > 0.05$). After management, the FVC%, PEF, and FEV1/FVC levels of the observation group were higher than those of the reference group ($p < 0.001$). The disappearance time of clinical symptoms such as dyspnea, chest tightness, cough and lung wheezing in the observation group was shorter than that in the reference group ($p < 0.001$). **Conclusion** The child-oriented asthma education program is beneficial to the disease management in children with asthma, improving asthma control, quality of life, lung function indexes, and shortening the time of symptom disappearance.

Keywords: asthma; child; disease management; education.

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Chronic Obstr Pulm Dis

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. 2025 Mar 27;12(2):127-136.

doi: 10.15326/jcopdf.2024.0565.

[Disease Onset and Burden in Patients With Chronic Bronchitis and COPD: A Real-World Evidence Study](#)

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Affiliations Expand

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Abstract

Background: Chronic bronchitis (CB), classically defined as having cough and sputum production for at least 3 months per year for 2 consecutive years, is frequently associated with chronic obstructive pulmonary disease (COPD).

Methods: This retrospective cohort study using the Optum[®] de-identified electronic health record data set (Optum[®] EHR) aimed to identify patients with CB, COPD, and both CB and COPD through the application of the classical definition of CB, and to compare the characteristics of these populations, and the timing of diagnosis as well as their health care resource utilization (HCRU). Scanning of the EHRs was performed electronically using a specially developed algorithm.

Results: Of 104,633,876 patients in the study period between January 2007 and September 2020, 628,545 patients had CB only (i.e., nonobstructive disease), 129,084 had COPD only (COPD cohort), and 77,749 had both COPD and CB (COPD-CB cohort). A total of 75.9% of patients (59,009 of 77,749) fulfilled the criteria for a CB diagnosis before their first diagnosis with COPD, compared with 24.1% who had COPD before being diagnosed with CB. HCRU over 5 years was highest in the COPD-CB cohort, whereas the COPD cohort and CB cohorts had similar HCRU over 5 years. The COPD-CB cohort had a greater percentage of common COPD comorbidities and exposure to more drug classes than the other cohorts.

Conclusions: These results highlight the importance of increased attention to CB. CB often precedes the diagnosis of COPD and subsequently leads to high HCRU. Interventions to better manage CB and prevent the progression of CB to COPD could improve morbidity in this population.

Keywords: chronic bronchitis; electronic health records; real-world evidence.

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

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Orphanet J Rare Dis

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doi: [10.1186/s13023-025-03661-z](https://doi.org/10.1186/s13023-025-03661-z).

[Whole exome sequencing enhances diagnosis of hereditary bronchiectasis](#)

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Affiliations Expand

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- PMCID: [PMC11934690](#)
- DOI: [10.1186/s13023-025-03661-z](#)

Abstract

Background: Hereditary bronchiectasis refers to a subset of bronchiectasis related to genetic mutations, presenting with common clinical features. Historically, diagnosing this condition has been difficult due to the inaccessibility of diagnostic services coupled with a lack of awareness of the syndrome. We hypothesize that whole exome sequencing (WES) in patients with supporting clinical features, combined with non-genetic testing methods, will enhance the diagnosis of hereditary bronchiectasis.

Results: In total, 87 patients with clinical features suggestive of hereditary bronchiectasis, such as diffuse bronchiectasis (≥ 2 lobes) combined with early onset symptoms, recurrent otitis media, rhinosinusitis, infertility, organ laterality defects or a family history of bronchiectasis, were included in this study. Among them, 49.4% (43/87) were diagnosed with hereditary bronchiectasis, including 15 patients with cystic fibrosis, 27 patients with primary ciliary dyskinesia, and 1 patient with immunodeficiency-21. The combined use of WES and non-genetic testing methods significantly improved the diagnostic rate of hereditary bronchiectasis compared to non-genetic testing alone (47.1% vs. 25.3%, $P = 0.005$). Re-analysis of negative commercial genetic tests led to two additional diagnoses, though this increase was not statistically significant (47.1% vs. 49.4%, $P = 0.879$).

Conclusions: We have described the supporting clinical features of patients with hereditary bronchiectasis. Clinicians should recommend WES for patients exhibiting these characteristics, in combination with accessible non-genetic testing methods, to maximize diagnostic accuracy. For patients with negative initial genetic test results, re-analysis of WES data may facilitate obtaining a new diagnosis.

Keywords: Diagnosis; Hereditary bronchiectasis; Re-analysis; Whole exome sequencing.

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Conflict of interest statement

Declarations. Ethics approval and consent to participate: The study was approved by the IRB of PUMCH (I-24PJ0537) and was carried out in accordance with the tenets of the Declaration of Helsinki. Informed consent was obtained from all patients or their legal guardians. Consent for publication: All participants consented for anonymized quotes to be used in published research. Competing interests: The authors declare that they have no competing interests.

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. 2025 Mar 23: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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- PMID: 40122611
- DOI: [10.1136/thorax-2024-221825](https://doi.org/10.1136/thorax-2024-221825)

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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Editorial

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[Inhaled corticosteroids may be useful in bronchiectasis with peripheral blood eosinophilia](#)

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Review

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[Mucolytics for children with chronic suppurative lung disease](#)

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Abstract

Background: Chronic suppurative lung disease (CSLD) is an umbrella term to define the spectrum of endobronchial suppurative lung disease, including bronchiectasis and protracted bacterial bronchitis (PBB), associated with chronic wet or productive cough. Research that explores new therapeutic options in children with CSLD has been identified by clinicians and patients as one of the top research priorities. Mucolytic agents work to improve mucociliary clearance and interrupt the vicious vortex of airway infection and inflammation, hence they have potential as a therapeutic option.

Objectives: To assess the effects of mucolytics for reducing exacerbations, improving quality of life and other clinical outcomes in children with CSLD (including PBB and bronchiectasis), and to assess the risk of harm due to adverse events.

Search methods: An Information Specialist searched the Cochrane Airways Trials Register to June 2022, and a review author searched the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE and Embase databases to 27 September 2024. Other review authors handsearched respiratory journals.

Selection criteria: We included randomised controlled trials (RCTs), of both cross-over and parallel design, that compared a mucolytic with a placebo or 'no intervention' control group and included children (aged 18 years and under) with any type of CSLD (including PBB and bronchiectasis). We excluded studies with adult participants and studies in children with cystic fibrosis, empyema, pulmonary abscess or bronchopulmonary fistula.

Data collection and analysis: Two authors independently reviewed titles and abstracts to assess eligibility for inclusion. The authors then assessed study quality and extracted data. They assessed the quality of the study using the Cochrane risk of bias tool (RoB 2), and used GRADE to assess the certainty of evidence.

Outcomes of interest to be analysed included: i) for maintenance or stable state: rate of exacerbations, ii) for exacerbation state: time to resolution of respiratory exacerbation, iii) lung function - forced expiratory volume in one second (FEV₁) and forced vital capacity (FVC), iv) quality of life and v) adverse events. Only one study met the inclusion criteria, so we could not perform a meta-analysis. Data were continuous, so we reported outcomes as mean differences.

Main results: The sole included RCT was a cross-over study of 63 children in the total cohort, with reported data and analysis of only 52 children (26 per arm) with non-cystic fibrosis bronchiectasis. The study compared 3% hypertonic saline nebulised before chest physiotherapy with a control arm (physiotherapy alone), with each phase lasting eight weeks. Children in the hypertonic saline arm had a mean age of 9.80 (SD 2.97) years and 42.3% were male; those in the control arm had a mean age of 9.10 (SD 2.40) years and 38.4% were male. Only results of the first arm of the cross-over study were included in this review. The RCT reported a clinically important difference between the groups for our review's primary outcome: rate of respiratory exacerbations. The mean number of exacerbations per child-year was 2.50 (SD 0.64) in the intervention group and 7.80 (SD 1.05) in the control group (mean difference (MD) -5.30, 95% CI -5.77 to -4.83; 1 study, 52 participants; very low-certainty evidence). The RCT also reported that the percentage point improvement in mean % predicted FEV₁ and FVC from baseline to week eight was better with hypertonic saline compared to control. Mean FEV₁ improvement was 14.15% (SD 5.50) in the intervention group versus 5.04% (SD 5.55) in the control group (MD 9.11%, 95% CI 6.11 to 12.11; 1 study, 52 participants; very low-certainty evidence). While for FVC, the mean improvement was 13.77% (SD 5.73) compared with 7.54% (SD 4.90), respectively (MD 6.23%, 95% CI 3.33 to 9.13; 1 study, 52 participants; very low-certainty evidence). Quality of life measures were not used. We judged the study to have a high risk of bias due to unblinding, missing data, deviation from the intended intervention and reporting bias with measurement and selection of outcome measures. The authors reported that there were no dropouts due to adverse events. No data were available regarding quality of life. The included study assessed mucolytic use during a stable state, and we found no studies of mucolytic use during an exacerbation. We also found no studies assessing oral mucolytics, other inhaled mucolytics, use in PBB, or in settings other than hospital outpatients. We also found two ongoing studies, one using hypertonic saline and one using an oral mucolytic agent erdosteine, which will potentially be included in future updates of this review.

Authors' conclusions: This systematic review is limited to a single small study, which we judged to be at high risk of bias. It remains uncertain whether regular nebulised hypertonic saline during a stable state reduces exacerbations or improves lung function. Further multi-centre, well-designed RCTs of longer duration that investigate various mucolytics are required to answer this important clinical question.

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[Clinical Implications of *Pseudomonas Aeruginosa* Colonization in Chronic Obstructive Pulmonary Disease Patients](#)

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Free article

Abstract

Background: *Pseudomonas aeruginosa* is an important pathogen in patients with chronic respiratory diseases. It can colonize the airways and could have prognostic value in bronchiectasis and cystic fibrosis. Its role in chronic obstructive pulmonary disease (COPD) is less well-defined.

Methods: A prospective study was conducted in Hong Kong to investigate the possible association between *Pseudomonas aeruginosa* colonization and acute exacerbation of COPD (AECOPD) risks.

Results: Among 327 Chinese patients with COPD, 33 (10.1%) of the patients had *Pseudomonas aeruginosa* colonization. Patients with or without *Pseudomonas aeruginosa* colonization had similar background characteristics. Patients with *Pseudomonas aeruginosa* colonization had increased risks of moderate to severe AECOPD, severe AECOPD, and pneumonia with an adjusted odds ratio (aOR) of 3.15 (95% CI 1.05-9.48, $p=0.042$), 2.59 (95% CI 1.01-6.64, $p=0.048$), and 4.19 (95% CI 1.40-12.54, $p=0.011$) respectively. Patients with *Pseudomonas aeruginosa* colonization also had increased annual frequency of moderate to severe AECOPDs, median 0 (0-0.93) in the non-*Pseudomonas aeruginosa* colonization group and 1.35 (0-3.39) in the *Pseudomonas aeruginosa* colonization group, with a p -value of 0.005 in multivariate linear regression.

Conclusion: *Pseudomonas aeruginosa* colonization is a potential independent risk factor for moderate to severe AECOPD and pneumonia among patients with COPD without coexisting bronchiectasis.

Keywords: COPD; COPD exacerbation; Pseudomonas aeruginosa; pneumonia.

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