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

1

Nursing

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. 2025 Jan 1;55(1):32-39.

doi: 10.1097/NSG.000000000000112. Epub 2024 Dec 20.

[The health effects of poor air quality](#)

[Karilee W Bingham¹](#)

Affiliations Expand

- PMID: 39702915
- DOI: [10.1097/NSG.000000000000112](https://doi.org/10.1097/NSG.000000000000112)

Abstract

Smoke, particularly from wildfires and other combustion sources, is a significant contributor to air pollution, comprising a complex mixture of particulate matter and gaseous pollutants. Prolonged exposure to smoke can exacerbate respiratory diseases, such as asthma and chronic obstructive pulmonary disease, leading to increased ED visits and hospitalizations. This article examines the significant health risks associated with air pollution, particularly chronic diseases and acute respiratory conditions, and discusses the emergency treatment of acute respiratory distress from exposure.

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J Glob Health

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. 2024 Dec 20:14:04263.

doi: 10.7189/jogh.14.04263.

[Multimorbidity in elderly patients with or without T2DM: A real-world cross-sectional analysis based on primary care and hospitalisation data](#)

[Yang Li](#)^{#1,2}, [Shasha Geng](#)^{#1,2}, [Huixiao Yuan](#)^{1,2}, [Jianli Ge](#)^{1,2}, [Qingqing Li](#)^{1,2}, [Xin Chen](#)^{1,2}, [Yingqian Zhu](#)^{1,2}, [Yue Liu](#)^{1,2}, [Xiaotong Guo](#)^{1,2}, [Xiaoli Wang](#)³, [Hua Jiang](#)^{1,2}

Affiliations Expand

- PMID: 39700381
- DOI: [10.7189/jogh.14.04263](#)

Free article

Abstract

Background: Shanghai's high level of ageing has given rise to a considerable number of elderly patients with type 2 diabetes mellitus (T2DM) who are confronted with the challenge of managing multimorbidity. We aimed to determine the prevalence of multimorbidity in elderly T2DM patients in a representative Pudong New Area community and critically evaluate current guidelines' inclusiveness in addressing major comorbidities.

Methods: Through the Shanghai Health Cloud platform, we extracted medical records of residents in the Huamu community (Pudong New Area, Shanghai) to screen elderly patients with at least three outpatient visits or one hospitalisation per

year between 2019 and 2022. According to International Classification of Disease, 10th edition codes and personal identification number, we identified the status of T2DM and 12 other common chronic diseases, matched T2DM patients and non-T2DM patients 1:1 by age and gender, and then calculated the prevalence of multimorbidity status and annual prevalence of each comorbidity. We analysed associations between T2DM and specific chronic diseases using logistic regression models.

Results: More than 90% of elderly T2DM patients had at least one additional chronic disease. Multimorbidity was more frequent in women and older patients. Hyperlipidemia, hypertension, and ischaemic heart disease were the most prevalent comorbidities. The diagnosis of T2DM was significantly associated with both cardiovascular-kidney-metabolic and neuropsychiatric diseases. In addition, a higher prevalence and risk of chronic obstructive pulmonary disease (COPD) were consistently detected in elderly patients with T2DM, regardless of age and gender.

Conclusions: Multimorbidity in elderly patients with T2DM needs broader acknowledgement. Current guidelines focus more on cardiovascular-kidney-metabolic and neuropsychiatric diseases with inadequate guidance on COPD management. Hence, the pleiotropic effects of glucose-lowering drugs on COPD should be further investigated to optimise the comprehensive management strategy for this population.

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Conflict of interest statement

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

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Review

World J Psychiatry

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. 2024 Dec 19;14(12):1797-1803.

doi: 10.5498/wjp.v14.i12.1797.

[Depression and anxiety disorders in chronic obstructive pulmonary disease patients: Prevalence, disease impact, treatment](#)

[Chang-Jian Qiu](#)¹, [Shuang Wu](#)²

Affiliations Expand

- PMID: 39704377
- PMCID: [PMC11622031](#)
- DOI: [10.5498/wjp.v14.i12.1797](#)

Abstract

Chronic obstructive pulmonary disease (COPD) is a common respiratory disorder that often co-occurs with depression and anxiety, worsening disease progression and reducing quality of life. A thorough review of the existing literature was conducted, including searches in PubMed, Embase, PsycINFO, and Cochrane Library databases up to 2024. This review encompasses a critical analysis of studies reporting on the prevalence, impact, and management of depression and anxiety in COPD patients. We found a high prevalence of psychological comorbidities in COPD patients, which were associated with worse disease outcomes, including increased exacerbations, hospitalizations, and reduced health-related quality of life. Diagnosing and managing these conditions is complex due to overlapping symptoms, necessitating a comprehensive patient care approach. While there has been progress in understanding COPD comorbidities, there is a need for more personalized and integrated treatments. This review emphasizes the need for increased awareness, tailored treatment plans, and further research for effective interventions.

Keywords: Anxiety; Chronic obstructive pulmonary disease; Comorbidities; Depression; Narrative review; Treatment strategies.

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Conflict of interest statement

Conflict-of-interest statement: The authors report no relevant conflicts of interest for this article.

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Respir Res

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. 2024 Dec 19;25(1):437.

doi: [10.1186/s12931-024-03071-y](https://doi.org/10.1186/s12931-024-03071-y).

[Longitudinal anemia status and risk for adverse outcomes in former smokers with COPD](#)

[Yukiko Kunitomo](#)¹, [Han Woo](#)¹, [Aparna Balasubramanian](#)¹, [Ashraf Fawzy](#)¹, [Cheng Ting Lin](#)², [Sarath Raju](#)¹, [Daniel C Belz](#)¹, [Meredith C McCormack](#)¹, [Kirsten Koehler](#)³, [Nadia N Hansel](#)¹, [Nirupama Putcha](#)⁴

Affiliations Expand

- PMID: 39702327
- DOI: [10.1186/s12931-024-03071-y](https://doi.org/10.1186/s12931-024-03071-y)

Abstract

Background: Anemia is a prevalent comorbidity in COPD associated with increased morbidity. However, the significance of longitudinal anemia status and variation in anemia status trends over time in COPD are not known. Furthermore, individuals with COPD and smoking history often have multiple comorbidities, in particular cardiovascular disease. The objective of this study was to evaluate the association between longitudinal anemia status and COPD outcomes, accounting for comorbid cardiovascular disease.

Methods: Serial hemoglobin measures and clinical outcomes were obtained in former smokers with moderate to severe COPD from two clinical studies over a 6-to-9-month period. In the first analysis, the association between repeated measures of time-varying anemia status and outcomes was assessed by generalized estimating equations adjusted for covariates including cardiovascular disease. In the second analysis, each participant's anemia risk profile during the study period was

characterized as high versus low anemia risk-growth rate. Mean differences in the progression of COPD outcomes over time between the two groups were assessed using a generalized linear mixed model. Effect modification by baseline coronary artery calcium (CAC) burden was explored.

Results: There were 159 individuals with mean age of 66.5 years (\pm 8.3) and mean FEV₁% predicted of 51.4% (\pm 17.0), of which 41% were ever-anemic during the study period. Repeated measures of anemia status were associated with higher St. George's Respiratory Questionnaire (SGRQ) scores (β 2.5, 95% CI: 0.1,4.8, $p = 0.04$), lower 6-minute walk distance (6MWD) (β -38.6, 95% CI: -67.7,-7.4, $p = 0.02$), and higher rate of moderate-to-severe exacerbations over the prospective follow-up period (IRR 1.8, 95% CI: 1.1,2.8, $p = 0.02$). There was effect modification by CAC burden such that with higher burden the mean difference in COPD outcome by anemia status was greater for a subset of symptom scores. Participants with profiles of increasing anemia risk had higher estimated rates of decline in the FEV₁% predicted and 6MWD and increase in SGRQ scores compared to those with stable or decreasing anemia risk.

Conclusions: Longitudinal anemia status trends may be predictive of COPD disease trajectory. Anemia status by repeated measures analysis is associated with COPD morbidity with potentially stronger associations in the setting of high CAC burden.

Keywords: Anemia; COPD; Comorbidity; Longitudinal analysis.

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Conflict of interest statement

Declarations. Ethics approval and consent to participate: Informed consent was obtained from all participants in Clinical Trial of Air Cleaners to Improve Indoor Air Quality and COPD Health (CLEAN AIR, clinicaltrials.gov #NCT02236858, registration date 9/11/2014) and Obesity and Adverse Dietary Patterns as Susceptibility Factors to Pollutant Exposure in Urban COPD (CURE COPD). Both studies were approved by the Johns Hopkins Institutional Review Board (ID#: NA_00085617, IRB0069904) and conducted in accordance with the Declaration of Helsinki. Consent for publication: Not applicable. Competing interests: The authors declare they have no competing interests. Clinical trial number: Not applicable. However, part of the data utilized in this study was obtained from a previously completed clinical trial: CLEAN AIR, clinicaltrials.gov #NCT02236858, registration date 9/11/2014.

- [39 references](#)

Supplementary info

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Am J Respir Crit Care Med

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. 2024 Dec 19.

doi: 10.1164/rccm.202411-2119LE. Online ahead of print.

[Timing for Initiating Home Noninvasive Ventilation in Italy: Beyond Clinical Parameters](#)

[Claudia Crimi](#)^{1,2}, [Annalisa Carlucci](#)^{3,4}

Affiliations Expand

- PMID: 39701084
- DOI: [10.1164/rccm.202411-2119LE](#)

No abstract available

Keywords: COPD; COPD exacerbation; chronic hypercapnic respiratory failure; home NIV; long-term noninvasive ventilation.

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Comment

Int Urol Nephrol

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. 2024 Dec 19.

doi: 10.1007/s11255-024-04325-w. Online ahead of print.

[Beyond blood pressure: identifying factors associated with rapid kidney function decline in patients with CKD and coexisting COPD](#)

[Areti Georgiou](#)¹, [Marieta Theodorakopoulou](#)¹, [Fotini Iatridi](#)¹, [Pantelis Sarafidis](#)²

Affiliations Expand

- PMID: 39699841
- DOI: [10.1007/s11255-024-04325-w](https://doi.org/10.1007/s11255-024-04325-w)

No abstract available

Conflict of interest statement

Declarations. Conflict of interest: All authors disclose that they do not have any financial or other relationships, which might lead to conflict of interest regarding this article.

Comment on

- [Risk factors for renal progression in patients with CKD and coexisting COPD.](#)

Zhu F, Gan W, Liu H, Chen W, Zeng X. Int Urol Nephrol. 2024 Oct 14. doi: 10.1007/s11255-024-04227-x. Online ahead of print. PMID: 39400674

- [10 references](#)

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Review

Respir Investig

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. 2024 Dec 18;63(1):146-155.

doi: 10.1016/j.resinv.2024.12.012. Online ahead of print.

Efficacy and safety of ensifentrine, a novel phosphodiesterase 3 and 4 inhibitor, in chronic obstructive pulmonary disease: A systematic review and meta-analysis

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Affiliations Expand

- PMID: 39700851
- DOI: [10.1016/j.resinv.2024.12.012](https://doi.org/10.1016/j.resinv.2024.12.012)

Abstract

Background: We evaluated the efficacy and safety of Ensifentrine in COPD via a systematic review and meta-analysis of randomized controlled trials (RCTs).

Methods: We performed a detailed literature search on Medline (via PubMed), Scopus, Google Scholar, and Cochrane on the basis of pre-specified eligibility criteria. We used Review Manager to calculate pooled mean differences (MD) and 95% Confidence Interval (CI) using a random effects model. The Cochrane's Risk of Bias 2 (RoB-2) tool was used to assess the risk of bias in the included RCTs.

Results: A total of 4 studies, consisting of 2020 patients, were included in the meta-analysis. The mean age ranged from 62.5 years to 65.5 years in the included studies. All the included studies were at low risk of bias. Ensifentrine 3 mg dose significantly improved the mean peak Forced Expiratory Volume-1 (FEV-1), morning trough FEV-1, TDI score, ERS score, and SGRQ-C score as compared to the placebo, yielding a pooled MD of 149.76 (95% CI, 127.9 to 171.6), 43.93 (95% CI, 23.82 to 64.05), 0.92 (95% CI, 0.64 to 1.21, -1.20 (95% CI, -1.99 to -0.40), and -1.92 (95% CI, -3.24 to -0.59), respectively.

Conclusion: Ensifentrine is associated with improvements in outcomes related to COPD symptoms such as peak FEV-1, morning trough FEV-1 and TDI in the patients suffering from this chronic disease. It is also associated with improved quality of life as seen by E-RS score and SGRQ-C score.

Keywords: COPD; Dual PDE3 and PDE4 inhibitors; Ensifentrine; Meta analysis; Phosphodiesterase inhibitors.

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Conflict of interest statement

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

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Observational Study

Respir Res

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. 2024 Dec 18;25(1):434.

doi: [10.1186/s12931-024-03037-0](https://doi.org/10.1186/s12931-024-03037-0).

[A worldwide assessment of the mechanical ventilation in patients with acute exacerbations of chronic obstructive pulmonary disease. Analysis of the VENTILAGROUP over time. A retrospective, multicenter study](#)

[Oscar Peñuelas](#)¹, [Laura Del Campo-Albendea](#)², [Luis Morales-Quinteros](#)³, [Alfonso Muriel](#)^{2,4,5}, [Nicolás Nin](#)⁶, [Arnaud Thille](#)⁷, [Bin Du](#)⁸, [Bruno Pinheiro](#)⁹, [Fernando Ríos](#)¹⁰, [María Carmen Marín](#)¹¹, [Salvatore Maggiore](#)¹², [Konstantinos Raymondos](#)¹³, [Marco González](#)¹⁴, [Andrew Bersten](#)¹⁵, [Pravin Amin](#)¹⁶, [Nahit Cakar](#)¹⁷, [Gee Young Suh](#)¹⁸, [Fekri Abrouq](#)¹⁹, [Manuel Jibaja](#)²⁰, [Dimitros Matamis](#)²¹, [Amine Ali Zeggwagh](#)²², [Yuda Sutherasan](#)²³, [Antonio Artigas](#)²⁴, [Antonio Anzueto](#)²⁵, [Andrés Esteban](#)²⁶, [Fernando Frutos-Vivar](#)²⁶, [Lorenzo Del Sorbo](#)²⁷; [VENTILAGROUP](#)

Affiliations Expand

- PMID: 39696494
- PMCID: [PMC11656863](#)
- DOI: [10.1186/s12931-024-03037-0](https://doi.org/10.1186/s12931-024-03037-0)

Abstract

Background: The trend over time and across different geographical areas of outcomes and management with noninvasive ventilation or invasive mechanical ventilation in patients admitted for acute exacerbations of chronic obstructive pulmonary disease and treated with ventilatory support is unknown. The purpose of this study was to describe outcomes and identify variables associated with survival for patients admitted to an intensive care unit (ICU) with acute exacerbation of chronic obstructive pulmonary disease [aeCOPD] who received noninvasive or invasive mechanical ventilation worldwide.

Methods: Retrospective, multi-national, and multicenter studies, including four observational cohort studies, were carried out in 1998, 2004, 2010, and 2016 for the VENTILAGROUP following the same methodology.

Results: A total of 1,848 patients from 1,253 ICUs in 38 countries admitted for aeCOPD and need of ventilatory support were identified in the four study cohorts and included in the study. The overall incidence of aeCOPD as a cause for ventilatory support at ICU admission significantly decreased over time and varied widely according to the gross national income. The mortality of patients admitted to ICU for aeCOPD and ventilatory support significantly decreased over time regardless of the geographical area and gross national income; however, there is a remarkable variability in ICU mortality according to geographical area and gross national income. The use of NPPV as the first attempt at ventilatory support has significantly increased over time, with a parallel reduction of invasive mechanical ventilation regardless of gross national income.

Conclusion: In this worldwide observational study, including four sequential cohorts of patients over 18 years from 1998 to 2016, the mortality of patients admitted to ICU for aeCOPD and ventilatory support significantly decreased regardless of the geographical area and gross national income. Future research will need to investigate the reason for the remarkable variability in ICU mortality according to the geographical area, gross national income, and methods to select patients for the appropriate ventilatory support.

Keywords: Chronic obstructive pulmonary disease; Exacerbation; Mechanical ventilation; Mortality.

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Conflict of interest statement

Declarations. Ethics approval and consent to approval: The creation of the pooled database did not require additional ethical approval. The pooled studies had individual approval from the local Hospital Universitario de Getafe, Spain Institutional Review Board (PY16/14). Consent for publication: Not applicable. **Competing interests:** The authors declare no competing interests.

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BMC Pulm Med

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. 2024 Dec 18;24(1):618.

doi: 10.1186/s12890-024-03444-5.

[Integrating genetic and clinical data to predict lung cancer in patients with chronic obstructive pulmonary disease](#)

[Zhan Gu](#)¹, [Yonghui Wu](#)¹, [Fengzhi Yu](#)¹, [Jijia Sun](#)², [Lixin Wang](#)³

Affiliations Expand

- PMID: 39696223
- PMCID: [PMC11656926](#)
- DOI: [10.1186/s12890-024-03444-5](#)

Abstract

Background: Chronic obstructive pulmonary disease (COPD) is closely linked to lung cancer (LC) development. The aim of this study is to identify the genetic and clinical risk factors for LC risk in COPD, according to which the prediction model for LC in COPD was constructed.

Methods: This is a case-control study in which patients with COPD + LC as the case group, patients with only COPD as the control group, and patients with only LC as the second control group. A panel of clinical variables including demographic, environmental and lifestyle factors were collected. A total of 20 single nucleotide polymorphisms (SNPs) were genotyped. The univariate analysis, candidate gene study and multivariate analysis were applied to identify the independent risk

factors, as well as the prediction model was constructed. The ROC analysis was used to evaluate the predictive ability of the model.

Results: A total of 503 patients were finally enrolled in this study, with 188 patients for COPD + LC group, 162 patients for COPD group and 153 patients for LC group. The univariate analysis of clinical data showed compared with the patients with COPD, the patients with COPD + LC tended to have significantly lower BMI, higher smoking pack-years, and higher prevalence of emphysema. The results of the candidate gene study showed the rs1489759 in HHIP and rs56113850 in CYP2A6 demonstrated significant differences between COPD and COPD + LC groups. By using multivariate logistic regression analysis, four variables including BMI, pack-years, emphysema and rs56113850 were identified as independent risk factors for LC in COPD and the prediction model integrating genetic and clinical data was constructed. The AUC of the prediction model for LC in COPD reached 0.712, and the AUC of the model for predicting LC in serious COPD reached up to 0.836.

Conclusion: The rs56113850 (risk allele C) in CYP2A6, decrease in BMI, increase in pack-years and emphysema presence were independent risk factors for LC in COPD. Integrating genetic and clinical data for predicting LC in COPD demonstrated favorable predictive performance.

Keywords: Chronic obstructive pulmonary disease; Lung cancer; Prediction model; Risk factors; Single nucleotide polymorphisms.

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Conflict of interest statement

Declarations. Ethics approval and consent to participate: This study was performed in accordance with the guidelines of the Helsinki Declaration (as revised in 2013) and was approved by the Ethics Committee of Shanghai Pulmonary Hospital affiliated to Tongji University (K20-036Z). Written informed consent was obtained from all subjects. This type of research was considered no need for submission of Clinical Trial Number. Consent for publication: Not applicable. Competing interests: The authors declare no competing interests.

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- [3 figures](#)

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BMC Pulm Med

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. 2024 Dec 18;24(1):609.

doi: 10.1186/s12890-024-03445-4.

[Evaluation of comparative efficacy of Umeclidinium/Vilanterol versus other bronchodilators in the management of chronic obstructive pulmonary disease: a systematic review and meta-analysis of RCTs](#)

[He Zhu](#)¹, [Jiahui Lei](#)¹, [Fan Gao](#)¹, [Yingjie Guo](#)¹, [Limin Zhao](#)^{2,3}

Affiliations Expand

- PMID: 39696097
- PMCID: [PMC11654331](#)
- DOI: [10.1186/s12890-024-03445-4](#)

Abstract

Background: UMEC/VI administered via a combination inhaler is associated with a clinically significant improvement in lung function and health-related quality of life in patients with mild-to-moderate COPD. However, their efficacy compared to other bronchodilator mono or dual therapies still remains unclear.

Objective: The objective of this research was to evaluate the therapeutic efficacy of UMEC/VI dual and UMEC/VI/FF triple therapies versus alternative bronchodilator regimens in COPD patients.

Methods: A systematic search was conducted using four electronic databases (PubMed, EMBASE, Scopus, and Cochrane Library) to select publications published in peer-reviewed journals written in English. The odds ratio (OR) and risk ratio (RR) was calculated, along with their 95% confidence intervals. We assessed heterogeneity using Cochrane Q and I [2] statistics and the appropriate p-value. The analysis used RevMan 5.4.

Results: The current meta-analysis includes 31,814 COPD patients from 17 RCTs. The meta-analysis results demonstrate that the combination of LABA and LAMA provides additive bronchodilation and improved lung function in COPD patients. We

found that UMEC/VI dual therapy significantly improved FEV1 (OR 1.98 [95% CI 1.70-2.30]), TDI values (OR 1.97 [95% CI 1.72-2.26]), and reduced SGRQ total scores (OR 1.99 [95% CI 1.71-2.32]), with fewer drug-related adverse events (RR 0.58 [95% CI 0.53-0.64]). Similarly, UMEC/VI/FF triple therapy also showed similar benefits, with significant improvements in FEV1 (OR 1.93 [95% CI 1.73-2.15]), TDI values (OR 2.37 [95% CI 2.15-2.61]), and reduced SGRQ total scores (OR 1.83 [95% CI 1.63-2.05]), and fewer drug-related adverse events (RR 0.53 [95% CI 0.49-0.58]).

Conclusion: This systematic review and meta-analysis concludes that UMEC and VI combinations are an efficacious treatment option for symptomatic COPD patients.

Keywords: Chronic obstructive pulmonary disease (COPD), Bronchodilators; Fluticasone furoate (FF); Indacaterol/glycopyrrolate (IND/GLY); Long acting beta2-agonists (LABA); Long-acting muscarinic antagonists (LAMA); Salmeterol/Fluticasone propionate (SAL/FP); Tiotropium/olodaterol (TIO/OLO); Umeclidinium/Vilanterol (UMEC/VI).

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Conflict of interest statement

Declarations. Ethics approval and consent to participate: Not applicable as the study is totally based on the published literature. Clinical trial number: Not applicable. Patient consent for publication: N/A. Competing interests: The authors declare no competing interests.

- [63 references](#)
- [11 figures](#)

Supplementary info

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BMJ Open Respir Res

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. 2024 Dec 18;11(1):e002539.

doi: 10.1136/bmjresp-2024-002539.

[Lung function may recover after coal mine fire smoke exposure: a longitudinal cohort study](#)

[Nicolette R Holt](#)^{1,2,3}, [Catherine L Smith](#)¹, [Caroline X Gao](#)^{1,4}, [Brigitte Borg](#)^{1,5}, [Tyler Lane](#)¹, [David Brown](#)¹, [Jillian Ikin](#)¹, [Annie Makar](#)⁵, [Thomas McCrabb](#)⁵, [Mikayla Thomas](#)⁵, [Kris Nilsen](#)⁵, [Bruce R Thompson](#)⁶, [Michael J Abramson](#)⁷

Affiliations Expand

- PMID: 39694680
- DOI: [10.1136/bmjresp-2024-002539](https://doi.org/10.1136/bmjresp-2024-002539)

Free article

Abstract

Background and objective: The 2014 Hazelwood coal mine fire exposed residents in nearby Morwell to high concentrations of particulate matter <2.5 µm (PM_{2.5}) for approximately 6 weeks. This analysis aimed to evaluate the long-term impact on respiratory health.

Methods: Adults from Morwell and the unexposed town of Sale completed validated respiratory questionnaires and performed spirometry, gas transfer and oscillometry 3.5-4 years (round 1) and 7.3-7.8 years (round 2) after the fire. Individual PM_{2.5} exposure levels were estimated using chemical transport models mapped onto participant-reported time-location data. Mixed-effects regression models were fitted to analyse associations between PM_{2.5} exposure and outcomes, controlling for key confounders.

Results: From 519 (346 exposed) round 1 participants, 329 (217 exposed) participated in round 2. Spirometry and gas transfer in round 2 were mostly lower compared with round 1, excepting forced vital capacity (FVC) (increased) and forced expiratory volume in 1 second (minimal change). The effect of mine fire-related PM_{2.5} exposure changed from a negative effect in round 1 to no effect in round 2 for both pre-bronchodilator (p=0.005) and post-bronchodilator FVC (p=0.032). PM_{2.5} was not associated with gas transfer in either round. For post-bronchodilator reactance and area under the curve, a negative impact of PM_{2.5} in round 1 showed signs of recovery in round 2 (both p<0.001).

Conclusion: In this novel study evaluating long-term respiratory outcomes after medium-duration high concentration PM_{2.5} exposure, the attenuated associations between exposure and respiratory function may indicate some recovery in lung function. With increased frequency and severity of landscape fires observed globally, these results inform public health policies and planning.

Keywords: COPD epidemiology; Occupational Lung Disease; Respiratory Function Test; Respiratory Measurement.

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Conflict of interest statement

Competing interests: MJA declares an unrelated consultancy with Sanofi, investigator initiated grants from Pfizer, Boehringer-Ingelheim, Sanofi and GlaxoSmithKline, a speakers fee from GSK, honorarium from The Limbic and honorary membership of the Data Safety Monitoring Board of the Woolcock Institute of Medical Research. The other authors have nothing to disclose.

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Multicenter Study

BMJ Open Respir Res

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. 2024 Dec 18;11(1):e002702.

doi: 10.1136/bmjresp-2024-002702.

[What is the true target population for biologics in real-life COPD or asthma-COPD overlap patients?](#)

[Maéva Zysman](#)^{1,2}, [Fanchon Herman](#)³, [Léo Grassion](#)⁴, [Camille Taillé](#)⁵, [Jesus Gonzalez-Bermejo](#)^{6,7}, [Marina Guecamburu](#)⁸, [Nicolas Roche](#)⁹, [Arthur Pavot](#)², [Pierre-Olivier Girodet](#)¹⁰, [Arnaud Bourdin](#)¹¹, [Nicolas Molinari](#)¹¹, [Patrick Berger](#)^{12,13}; [COBRA Study Group](#)

Affiliations Expand

- PMID: 39694677

- DOI: [10.1136/bmjresp-2024-002702](https://doi.org/10.1136/bmjresp-2024-002702)

Free article

Abstract

Introduction: Biologics provide significant benefits in asthma, reducing exacerbations and symptoms. Some biologics have shown promising results in small subgroups of patients with chronic obstructive pulmonary disease (COPD) and frequent exacerbations. Nevertheless, real-life data on the size of the COPD target population remain scarce.

Methods: We analysed the characteristics of COPD and coexisting asthma and COPD patients included in the prospective multicentre, French COhort of BRonchial obstruction and Asthma, between 2008 and 2023 and evaluated the number of patients who could correspond to the inclusion criteria of randomised controlled trials evaluating various biologics targeting interleukin 33 (IL-33) (-receptor), IL-5 (-receptor), IL-4R α or TSLP, in routine clinical practice.

Results: Among 434 COPD patients, only 21.7% met inclusion criteria for at least one biologic. Among patients with asthma, 54 (3.5%) had coexisting features of COPD in terms of age, smoking status and airflow obstruction and met inclusion criteria for at least one biologic. Notably, these patients were predominantly female, with worse lung function. Globally, the target chronic airway diseases population of the eagerly awaited biologics remains limited to a small part (ie, 1.3%-8%, depending on the biologic).

Conclusion: In a real-life COPD and asthma population (including asthmatic patients with features of COPD), the proportion of patients satisfying selection criteria applied in randomised controlled trials assessing the efficacy of biologics remains limited to less than 10% of the whole population.

Keywords: Asthma Pharmacology; Asthma in primary care; COPD Pharmacology; Eosinophil Biology.

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Conflict of interest statement

Competing interests: MZ reports grants and personal fees from Menarini, personal fees from Sanofi, personal fees from Chiesi, personal fees from AstraZeneca, personal fees from CSLBehring and personal fees from GSK outside the submitted work, grants from AVAD, grants from FRM. FH has no conflict of interest to declare related to the present work. LG has no conflict of interest to declare related to the present work. He received grants from AADAIRC. He received speaker or advisory board fees from GSK, ASTEN, Air Liquide Medical System, Sanofi Genzyme, SOS Oxygene, AstraZeneca, ASV, Boehringer, VIVISOL and RESMED. CT has no conflict of interest to declare related to the present work. She received grants from GSK to INSERM UMR 1152. She received speaker or advisory board fees from AstraZeneca, GSK, Novartis, Sanofi, Stallergenes, Leo Pharma outside the submitted work. JG-B has no conflict of interest to declare related to the present work. MG has no

conflicts of interest to disclose. NR has no conflict of interest to declare related to the present work. He received grants from Boehringer Ingelheim, Novartis, GSK and Pfizer to Institution. He received speaker or advisory board fees from Boehringer Ingelheim, AstraZeneca, GSK, Novartis, Sanofi, Chiesi, Pfizer, Novartis, Teva, Bayer, Austral, Biosency, Zambon, MSD, Menarini outside the submitted work. AP has no conflict of interest to declare related to the present work. P-OG has no conflict of interest to declare related to the present work. He received grants from AstraZeneca. He received speaker or advisory board fees from AstraZeneca, GSK, Sanofi, Chiesi, outside the submitted work. AB has no conflict of interest to declare related to the present work. NM has no conflict of interest to declare related to the present work. PB reports grants and personal fees from AstraZeneca, Menarini, personal fees from Sanofi, personal fees from Chiesi, grants from AVAD, grants from FRM, grants from AstraZeneca.

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. 2024 Dec 18:1-8.

doi: 10.1080/09638288.2024.2439574. Online ahead of print.

[Responders COPD patients to two different home-based rehabilitation programs: a blind, randomized, and controlled clinical trial](#)

[Marcela Maria Carvalho da Silva^{1,2}, Juliano Ferreira Arcuri³, Daiane Roberta Viana⁴, Kamilla Tays Marrara⁵, Francisco José Barbosa Zorner Franco⁶, Nathalia Maria de Souza⁷, Leonardo Garbin Bueno⁸, Bruna Shara Vidal de Oliveira⁹, Fabíola Paula Galhardo Rizzatti¹⁰, Livia Cristina França Gibertoni⁷, Valéria A Pires Di Lorenzo⁴](#)

Affiliations Expand

- PMID: 39692172

- DOI: [10.1080/09638288.2024.2439574](https://doi.org/10.1080/09638288.2024.2439574)

Abstract

Purpose: To verify the number of patients with COPD responders to two different home-based rehabilitation programs.

Methods: This was a blinded, randomized, and controlled clinical trial. The six-minute step test (6MST), one-minute sit-stand test (1-MSTST), six-minute walk test (6MWT), COPD Assessment Test (CAT), modified Medical Research Council (mMRC), monitoring of physical activity in daily life, and isometric quadriceps muscle strength were assessed pre- and post-intervention. A total of 50 patients were randomized into two groups: hybrid rehabilitation (HR), consisting of supervised physical exercise once a week associated with exercises at home, and home-based rehabilitation (HBR), which consisted of a single meeting for guidance related to the physical exercises prescribed.

Results: Significant differences ($p < 0.05$) were observed in the following parameters post-intervention and between groups: 6MST (HR = 67.1 ± 25.7 to 93.5 ± 37.2 ; HBR = 69.6 ± 19.5 to 82.3 ± 25.2 steps), 6MWT (HR = 367.7 ± 84 to 433.2 ± 88.8 ; HBR = 396.2 ± 97.2 to 418.3 ± 83.8 m), CAT (HR = 19.5 ± 6.8 to 13.0 ± 7.8 ; HBR = 17.0 ± 7.6 to 15.0 ± 10 points), and mMRC (HR = 2[2-3] to 1[1-2]; HBR = 2[2-3] to 2[1-3] points). However, the response rate was 80% in the HR and 50% in the HBR.

Conclusion: Both pulmonary rehabilitation programs improved physical capacity, alleviated dyspnea, and reduced the impact of the disease on health status; however, the number of responders was higher in the HR.

Keywords: Pulmonary rehabilitation; home rehabilitation; physical capacity; physical therapy; quality of life.

Plain language summary

Hybrid rehabilitation (HR) and home-based rehabilitation (HBR), tested and implemented based on the performance in functional tests, improve physical capacity, the sensation of dyspnea, and quality of life of patients with chronic obstructive pulmonary disease (COPD). Hybrid rehabilitation (HR) and home-based rehabilitation (HBR), could be recommended as alternatives to conventional pulmonary rehabilitation (PR). Home-based PR programs, individually prescribed based on functional tests, may be accessible options for the rehabilitation of patients with COPD under no treatment.

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. 2024 Dec 17:107915.

doi: 10.1016/j.rmed.2024.107915. Online ahead of print.

[Reversibility of Airwave Oscillometry in COPD](#)

[Robert Greig](#)¹, [Chris RuiWen Kuo](#)¹, [Rory Chan](#)¹, [Brian Lipworth](#)²

Affiliations Expand

- PMID: 39701397
- DOI: [10.1016/j.rmed.2024.107915](#)

No abstract available

Keywords: COPD; airwave oscillometry; bronchodilator; reversibility; spirometry.

Conflict of interest statement

Declaration of Competing Interest The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Robert Greig reports a relationship with AstraZeneca UK Limited that includes: speaking and lecture fees. Chris RuiWen Kuo reports a relationship with AstraZeneca UK Limited that includes: speaking and lecture fees. Chris RuiWen Kuo reports a relationship with Chiesi Ltd that includes: consulting or advisory. Chris RuiWen Kuo reports a relationship with GSK that includes: non-financial support. Rory Chan reports a relationship with AstraZeneca UK Limited that includes: speaking and lecture fees and travel reimbursement. Rory Chan reports a relationship with Vitalograph UK Ltd that includes: consulting or advisory. Rory Chan reports a relationship with Thorasys that includes: speaking and lecture fees. Brian Lipworth reports a relationship with GSK that includes: non-financial support. Brian Lipworth reports a relationship with AstraZeneca UK Limited that includes: consulting or advisory, funding grants, speaking and lecture fees, and travel reimbursement. Brian Lipworth reports a relationship with Sanofi UK that includes: speaking and lecture fees. Brian Lipworth reports a relationship with Circassia Pharmaceuticals Plc that includes: consulting or advisory and speaking and lecture fees. Brian Lipworth reports a relationship with Teva UK Ltd that includes: consulting or advisory, funding grants, speaking and lecture fees, and travel reimbursement. Brian Lipworth reports a relationship with Chiesi Ltd that includes: consulting or advisory, funding grants, speaking and lecture fees, and travel reimbursement. Brian Lipworth reports a relationship with Lupin Healthcare UK Ltd that includes: consulting or advisory. Brian Lipworth reports a relationship with Glenmark Pharmaceuticals Ltd that includes: consulting or advisory. Brian Lipworth

reports a relationship with Dr Reddy's Laboratories UK Ltd that includes: consulting or advisory. Brian Lipworth reports a relationship with Sandoz UK Ltd that includes: consulting or advisory. Brian Lipworth reports a relationship with Boehringer Ingelheim Ltd that includes: consulting or advisory, speaking and lecture fees, and travel reimbursement. Brian Lipworth reports a relationship with Mylan Laboratories Ltd that includes: consulting or advisory and speaking and lecture fees. The son of Dr Brian Lipworth is presently an employee of AstraZeneca. B.J.L. 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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. 2024 Dec 17:107916.

doi: 10.1016/j.rmed.2024.107916. Online ahead of print.

[Particularities of deposition of two ICS-LABA fixed dose combination dry powder aerosol drugs in the airways of COPD patients](#)

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Affiliations Expand

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Abstract

The aim of this study was to analyse the effect of breathing parameters, age, gender and disease status on the lung doses of the two ICS+LABA fixed combination dry powder drugs. Breathing parameters of 113 COPD patients were measured while

inhaling through emptied NEXThaler® and Ellipta® inhalers and the corresponding lung doses were calculated. Lung dose of Foster® NEXThaler® was superior to the lung dose of Relvar® Ellipta® in around 85% of the patients. The average value of the ratio of bronchiolar to bronchial deposition fractions was 5.0 for Foster® NEXThaler® and 2.6 for Relvar® Ellipta®. Lung dose was sensitive to the inhalation parameters, such as peak inhalation flow, inhaled volume and breath-hold time. For both studied drugs the dose to the lungs was relatively high for moderate PIF values, but it declined for low (< 35 L/min) and high (> 95 L/min) PIFs. The lung dose increased by the increase of the inhaled volume, but saturated over 1.0 L of inhaled air. Longer breath-hold time led to higher lung deposition, but the dependence was drug-specific. FEV₁(%) and FEV₁/FVC (%) did not influence the lung dose significantly (p=0.05). Exacerbating patients had lower lung doses (28.8±5.8% for Foster® NEXThaler® and 23.7±3.8% for Relvar® Ellipta®) than their non-exacerbating counterparts (33.7±6.1% for Foster® NEXThaler® and for 24.9±3.9% for Relvar® Ellipta®). The exact clinical consequences of the differences between the deposition distributions of the two drugs could be assessed only by systematic clinical trials.

Keywords: COPD management; airway deposition; dry powder aerosol drug; numerical simulation.

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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: Balázs Sánta reports a relationship with Chiesi Hungary Kft that includes: employment.

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Tidsskr Nor Laegeforen

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. 2024 Dec 2;144(15).

doi: 10.4045/tidsskr.24.0370. Print 2024 Dec 17.

[COPD - can we reduce mortality with drugs?](#)

[Article in English, Norwegian]

[Per Sigvald Bakke](#), [Kristian Jong Høines](#), [Frode Gallefoss](#)

- PMID: 39692670
- DOI: [10.4045/tidsskr.24.0370](#)

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Chronic Obstr Pulm Dis

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. 2024 Dec 16.

doi: 10.15326/jcopdf.2024.0559. Online ahead of print.

[Phosphodiesterase Inhibition as a Therapeutic Strategy for Chronic Obstructive Pulmonary Disease: Where We Have Been and What Lies Ahead](#)

[Nicola A Hanania](#)¹, [Bartolome R Celli](#)²

Affiliations Expand

- PMID: 39688360
- DOI: [10.15326/jcopdf.2024.0559](#)

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Abstract

Chronic obstructive pulmonary disease (COPD) is a highly prevalent inflammatory lung condition characterized by chronic respiratory symptoms and airflow obstruction that often lead to diminished quality of life. Non-pharmacologic management for patients with COPD involves smoking cessation and healthy lifestyle changes. Pharmacologic treatments include inhaled bronchodilators with or without the use of inhaled corticosteroids, which can be administered through inhalation or nebulization. In addition, oral medications including macrolide antibiotics and phosphodiesterase (PDE) 4 inhibitors can help reduce exacerbation risk. However, many of these medications provide suboptimal disease control, owing to limited efficacy, increased risk of adverse events with long-term use, or difficulty in administration technique. PDE3 plays an important role in maintaining smooth muscle function, and PDE4 plays a crucial role in the inflammatory response in airway smooth muscle. Direct molecular inhibition of PDE3 or PDE4 has been shown to provide benefit in COPD. Dual PDE3 and PDE4 inhibition may therefore have synergistic anti-inflammatory and bronchodilator effects. These results have been observed in clinical trials of nebulized ensifentrine, a novel, dual-action PDE3 and PDE4 inhibitor that is the first in its class to be approved by the US Food and Drug Administration for maintenance treatment of COPD in adult patients. In this review, we explore the pathophysiologic mechanisms of COPD, describe current paradigms and methods of drug delivery for the treatment of the disease, and illustrate how dual inhibition of PDE3 and PDE4 may provide additional benefit to current standard-of-care regimens.

Keywords: COPD; PDE4 inhibitors; phosphodiesterase; quality of life; standard of care.

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Am J Respir Crit Care Med

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. 2024 Dec 16.

doi: 10.1164/rccm.202406-1254CI. Online ahead of print.

[Is Disease Stability an Attainable COPD Treatment Goal?](#)

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Affiliations Expand

- PMID: 39680953
- DOI: [10.1164/rccm.202406-1254CI](https://doi.org/10.1164/rccm.202406-1254CI)

Abstract

Chronic obstructive pulmonary disease (COPD) is a heterogenous lung condition characterized by progressive airflow obstruction. Despite advancements in diagnosis and treatment, the disease burden remains high; although clinical trials have shown improvements in outcomes such as exacerbations, quality of life, and lung function, improvement may not be attainable for many patients. For patients who do experience improvement, it is challenging to set management goals given the progressive nature of COPD. We therefore propose disease stability as an appropriate and attainable treatment goal. Other disease areas have developed definitions of no disease activity or remission, which provide relevant information for defining and achieving stability for patients with COPD. Disease stability builds on related concepts already defined in COPD such as clinical control and clinically important deterioration. Current components that could form part of a disease stability definition include exacerbations, health status (including quality of life and symptoms) and lung function. Considerations should be given to intervals over which stability is defined and assessed, appropriate thresholds, and defining a composite. Ensuring a holistic approach, objective measurements and harmonious, clear communication between patients and physicians can further support establishing disease stability. Here we propose a preliminary definition of disease stability, informed by existing research in COPD. Further research will be needed to validate the framework for use in clinical and research settings. Exploring disease stability as a goal, however, is an opportunity to develop and validate an attainable treatment target to advance the standard of care for patients with COPD.

Keywords: COPD; Disease Management; Treatment Outcome.

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doi: [10.1513/AnnalsATS.202407-716OC](https://doi.org/10.1513/AnnalsATS.202407-716OC). Online ahead of print.

[Incidence of Pulmonary Hypertension in the Echocardiography Referral Population](#)

[Jonah D Garry](#)¹, [Suman Kundu](#)², [Jeffrey Annis](#)³, [Chuck Alcorn](#)⁴, [Svetlana Eden](#)⁵, [Emily Smith](#)², [Robert Greevy](#)⁵, [Bradley A Maron](#)^{6,7}, [Matthew Freiberg](#)^{1,8}, [Evan L Brittain](#)⁹

Affiliations Expand

- PMID: 39680898
- DOI: [10.1513/AnnalsATS.202407-716OC](https://doi.org/10.1513/AnnalsATS.202407-716OC)

Abstract

Rationale: Incidence rates for pulmonary hypertension using diagnostic data in patients with cardiopulmonary disease are not known.

Objectives: To determine incidence rates of, risk factors for, and mortality hazard associated with pulmonary hypertension among patients referred for transthoracic echocardiography.

Methods: Retrospective cohort study using data from the Veterans Health Administration (1999-2020) and Vanderbilt University Medical Center (1994-2020). Pulmonary hypertension was defined as pulmonary artery systolic pressure >35mmHg with prevalent cases excluded. Heart failure and chronic obstructive pulmonary disease were the primary exposures of interest. The primary outcome was incident pulmonary hypertension. Secondarily, we examined mortality rate following incident diagnosis.

Measurements and main results: We identified 245,067 VA patients (94% male, 20% Black) and 117,526 Vanderbilt patients (46% male, 11% Black) without pulmonary hypertension, of whom 38,882 VA patients and 8,061 Vanderbilt patients developed pulmonary hypertension. Only 18-19% of patients with echo-based pulmonary hypertension also had a diagnostic code. Hazard of pulmonary hypertension was 4-fold higher in patients with heart failure and chronic obstructive pulmonary disease compared to patients without either. Mortality rates increased from pulmonary artery systolic pressure of 35mmHg to 45mmHg then plateaued. Independent risk factors for incident pulmonary hypertension included older age, male sex, black race, and cardiometabolic comorbidities.

Conclusions: Pulmonary hypertension incidence rates estimated by diagnostic data are higher than code-based rates. Heart failure and chronic obstructive pulmonary disease strongly associate with incident pulmonary hypertension. Pulmonary artery systolic pressure >45mmHg at diagnosis is associated with high mortality. New pulmonary hypertension on echocardiography is an important prognostic sign.

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. 2024 Dec 16.

doi: 10.1111/all.16436. Online ahead of print.

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

[I Agache¹](#), [I M Adcock²](#), [C A Akdis³](#), [M Akdis³](#), [G Bentabol-Ramos⁴](#), [M van den Berge⁵](#), [C Boccabella⁶](#), [W G Canonica^{7,8}](#), [C Caruso⁹](#), [M Couto¹⁰](#), [I Davila¹¹](#), [D Drummond¹²](#), [J Fonseca¹³](#), [A Gherasim¹⁴](#), [S Del Giacco¹⁵](#), [D J Jackson¹⁶](#), [M Jutel^{17,18}](#), [A Licari¹⁹](#), [S Loukides²⁰](#), [A Moreira^{21,22,23}](#), [M Mukherjee²⁴](#), [I Ojanguren²⁵](#), [O Palomares²⁶](#), [A Papi²⁷](#), [L Perez de Llano²⁸](#), [O J Price^{29,30}](#), [M Rukhazde^{31,32}](#), [M H Shamji^{33,34}](#), [D Shaw³⁵](#), [S Sanchez-Garcia³⁶](#), [A Testera-Montes³⁷](#), [M J Torres³⁷](#), [I Equiluz-Gracia³⁷](#)

Affiliations Expand

- PMID: 39676750
- DOI: [10.1111/all.16436](https://doi.org/10.1111/all.16436)

Abstract

As cholinergic innervation is a major contributor to increased vagal tone and mucus secretion, inhaled long-acting muscarinic antagonists (LAMA) are a pillar for the treatment of chronic obstructive pulmonary disease and asthma. By blocking the

muscarinic receptors expressed in the lung, LAMA improve lung function and reduce exacerbations in asthma patients who remained poorly controlled despite treatment with inhaled corticosteroids and long-acting β 2 agonists. Asthma guidelines recommend LAMA as a third controller to be added on before the initiation of biologicals. In addition to bronchodilation, LAMA also exert anti-inflammatory and anti-fibrotic effects by inhibiting muscarinic receptors present in neutrophils, macrophages, fibroblasts and airway smooth muscle cells. Thus, besides bronchodilation, LAMA might provide additional therapeutic effects, thereby supporting an endotype-driven approach to asthma management. The Position Paper, developed by the Asthma Section of the European Academy of Allergy and Clinical Immunology, discusses the main cholinergic pathways in the lung, reviews the findings of significant clinical trials and real-life studies on LAMA use in asthma, examines the placement of these drugs in asthma clinical guidelines, and considers the potential for personalised medicine with LAMA in both adult and paediatric asthma patients.

Keywords: acetylcholine; asthma; bronchodilator; endotype; long-acting muscarinic antagonists; precision medicine.

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J Breath Res

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. 2024 Dec 16;19(1).

doi: 10.1088/1752-7163/ad9ac4.

[Molecular breath profile of acute COPD exacerbations](#)

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Affiliations Expand

- PMID: 39637433
- DOI: [10.1088/1752-7163/ad9ac4](https://doi.org/10.1088/1752-7163/ad9ac4)

Abstract

Acute exacerbations of chronic obstructive pulmonary disease (AECOPD) show high variability in individual susceptibility and promote disease progression; thus, accurate diagnosis and treatment is essential. Unravelling the molecular metabolic changes during AECOPD in breath could promote understanding of AECOPD and its treatment. Our objective was to investigate the metabolic breath profiles during AECOPD for biomarker detection. We conducted real-time breath analysis in patients with COPD during AECOPD and during subsequent stable phase. Molecular breath patterns were compared between AECOPD and stable phase by dimension reduction techniques and paired t-tests. Pathway enrichment analyses were performed to investigate underlying metabolic pathways. Partial least-squares discriminant analysis and XGboost were utilised to build a prediction model to differentiate AECOPD from stable state. 35 patients (60% male) with a mean age of 65 (10.2) yr with AECOPD were included. AECOPD could be predicted with a high sensitivity of 82.5% (95% confidence interval of 68.8%-93.8%) and an excellent discriminative power (AUC = 0.86). Metabolic changes in the linoleate, tyrosine, and tryptophan pathways during AECOPD were predominant. Significant metabolic changes occur during COPD exacerbations, predominantly in the linoleate, tyrosine, and tryptophan pathways, which are all linked to inflammation. Real-time exhaled breath analysis enables a good prediction of AECOPD compared to stable state and thus could enhance precision of AECOPD diagnosis and efficacy in clinical practice.

Keywords: COPD; SESI-HRMS; biomarkers; breath research; exacerbation; inflammation.

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. 2024 Dec 16;230(6):1342-1351.

doi: 10.1093/infdis/jiae346.

Relative Contribution of Diagnostic Testing to the Diagnosis of Respiratory Syncytial Virus in Hospitalized Adults in the United States

Evan J Anderson^{1,2,3}, **Ashley Tippet**^{1,2}, **Elizabeth Begier**⁴, **Theda Gibson**^{1,2}, **Gabby Ess**^{1,2}, **Vikash Patel**^{1,2}, **Meq Taylor**^{1,2}, **Olivia Reese**^{1,2}, **Luis Salazar**^{1,2}, **Samadhan Jadhao**^{1,2}, **He-Ying Sun**^{1,2}, **Hui-Mien Hsiao**^{1,2}, **Shadwal Gupta**^{1,2}, **Wensheng Li**^{1,2}, **Kathleen Stephens**^{1,2}, **Amy Keane**^{1,2}, **Caroline Ciric**^{1,2}, **Kieffer Hellmeister**³, **Andrew Cheng**³, **Zayna Al-Husein**³, **Laurel Bristow**³, **Robin Hubler**⁴, **Qing Liu**⁴, **Bradford D Gessner**⁴, **Luis Jodar**⁴, **David Swerdlow**⁴, **Warren Kalina**⁴, **Sonal Uppal**⁴, **Satoshi Kamidani**^{1,2}, **Nadine Rouphael**³, **Larry J Anderson**^{1,2}, **Christina A Rostad**^{1,2}

Affiliations Expand

- PMID: 38995029
- PMCID: [PMC11646620](#)
- DOI: [10.1093/infdis/jiae346](#)

Abstract

Background: Respiratory syncytial virus (RSV) is a leading cause of acute respiratory illness (ARI) in older adults. Optimizing diagnosis could improve understanding of RSV burden.

Methods: We enrolled adults ≥ 50 years of age hospitalized with ARI and adults of any age hospitalized with congestive heart failure or chronic obstructive pulmonary disease exacerbations at 2 hospitals during 2 respiratory seasons (2018-2020). We collected nasopharyngeal (NP) and oropharyngeal (OP) swabs (n = 1558), acute and convalescent sera (n = 568), and expectorated sputum (n = 153) from participants, and recorded standard-of-care (SOC) NP results (n = 805). We measured RSV antibodies by 2 immunoassays and performed BioFire testing on respiratory specimens.

Results: Of 1558 eligible participants, 92 (5.9%) tested positive for RSV by any diagnostic method. Combined NP/OP polymerase chain reaction (PCR) testing yielded 58 positives, while separate NP and OP testing identified 11 additional

positives (18.9% increase). Compared to study NP/OP PCR alone, the addition of paired serology increased RSV detection by 42.9% (28 vs 40) among those with both specimen types, while the addition of SOC swab PCR increased RSV detection by 25.9% (47 vs 59).

Conclusions: The addition of paired serology testing, SOC swab results, and separate testing of NP and OP swabs improved RSV diagnostic yield in hospitalized adults.

Keywords: BioFire; Chronic obstructive pulmonary disease; Congestive heart failure; RSV; serology; sputum.

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Conflict of interest statement

Potential conflicts of interest. E. J. A. has consulted for Pfizer, Sanofi Pasteur, GSK, Janssen, Moderna, and Medscape; served on a safety monitoring board for Kentucky BioProcessing, Inc and Sanofi Pasteur; served on a data adjudication board for WCG and ACI Clinical; is currently employed by Moderna; and his institution had received funds to conduct clinical research unrelated to this study from MedImmune, Regeneron, PaxVax, Pfizer, GSK, Merck, Sanofi-Pasteur, Janssen, and Micron, and from the National Institutes of Health to conduct clinical trials of COVID-19 vaccines. C. A. R. has received institutional support from ModernaTX, Inc, Pfizer, Inc, BioFire, Inc, GSK, plc, MedImmune, Micron Technology, Inc, Janssen Pharmaceuticals, Merck & Co, Inc, Novavax, PaxVax, Regeneron, Sanofi Pasteur, the Centers for Disease Control and Prevention, and the National Institutes of Health; and is coinventor of patented RSV vaccine technology licensed to Meissa Vaccines, Inc. L. J. A. has done paid consultancies on RSV vaccines for Bavarian Nordic, ClearPath Vaccines Company, Janssen, Pfizer, and ADVI; is a coinventor on several CDC patents on the RSV G protein and its CX3C chemokine motif relative to immune therapy and vaccine development; is coinventor on a patent filing for use of RSV platform VLPs with the F and G proteins for vaccines; and his laboratory is currently receiving funding through Emory University from Pfizer for laboratory studies for RSV surveillance studies in adults, Sciogen for animal studies of RSV vaccines, and Advaccine Pharmaceuticals, Ltd for RSV neutralizing antibody studies. N. R. serves as safety consultant for ICON, CyanVac, and EMMES; serves or has served on the advisory boards for Sanofi, Seqirus, Pfizer, and Moderna; and her institution receives funds to conduct research from Sanofi, Lilly, Merck, Quidel, Immorna, Vaccine Company, and Pfizer. E. B., R. H., Q. L., B. D. G., L. J., D. S., W. K., and S. U. are employees of Pfizer, Inc with stock/stock options or were employees during the conduct of this study. All other authors report no potential conflicts. All authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

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. 2024 Dec 15:107913.

doi: 10.1016/j.rmed.2024.107913. Online ahead of print.

[Early childhood respiratory morbidity according to gestational age at birth: A nationwide cohort study](#)

[Yishai Sompolinsky](#)¹, [Michal Lipschuetz](#)², [Malena Cohen-Cyberknoh](#)³, [Sarah M Cohen](#)¹, [Doron Kabiri](#)¹, [Asnat Walfisch](#)⁴, [Simcha Yagel](#)⁵, [Shulamit Gordon](#)⁶, [Ziona Haklai](#)⁶, [Yael Applbaum](#)⁶

Affiliations Expand

- PMID: 39689734
- DOI: [10.1016/j.rmed.2024.107913](https://doi.org/10.1016/j.rmed.2024.107913)

Abstract

Background: Preterm birth survivors are at risk for short- and long-term respiratory morbidity. This includes increased rates of chronic obstructive pulmonary disease and infectious morbidity. Previous studies showed increased utilization of healthcare services throughout early childhood. However, only a few large-scale studies showed the effect on respiratory morbidity throughout the full spectrum of gestational age at birth. The aim of this study was to show the healthcare burden associated with prematurity, in a large nationwide cohort.

Study design: Data regarding gestational age at birth, month and year of birth, and infant sex were gathered for all 1 762 149 infants born in Israel between January 1, 2010, and December 31, 2019. Rates of hospitalization, length of hospitalization, and emergency department visits were calculated per 1000 live births and stratified by

gestational age. Poisson regression was constructed to adjust for infant sex, year and month of birth.

Results: Preterm birth occurred in 6.43% of deliveries (n=109,405). A negative association was found between gestational age at birth and respiratory morbidity. As gestational age at birth advances, rates of respiratory hospitalization decrease, and length of hospitalization shortens. This association continues even after full term is reached.

Conclusion: The short- and long-term effect of preterm birth poses a significant burden on healthcare systems globally, not only at birth or in infancy, but well into early childhood. These results are a call for action to stakeholders and professional organizations to increase efforts in preventing and treating preterm and early term labor.

Keywords: obstetrics; pediatrics; preterm birth; public health; respiratory morbidity.

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Conflict of interest statement

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

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. 2024 Dec 15:8971900241308623.

doi: 10.1177/08971900241308623. Online ahead of print.

[Letter re: Why Bisoprolol? A Neglected Beta-Blocker in the U.S](#)

[Kazuhiko Kido](#)¹, [Maya Guglin](#)²

Affiliations Expand

- PMID: 39675838

- DOI: [10.1177/08971900241308623](https://doi.org/10.1177/08971900241308623)

No abstract available

Keywords: COPD; asthma; bisoprolol; erectile dysfunction; heart failure.

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Am J Respir Crit Care Med

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. 2024 Dec 15;210(12):1453-1460.

doi: [10.1164/rccm.202402-0313OC](https://doi.org/10.1164/rccm.202402-0313OC).

[Development, Progression, and Mortality of Suspected Interstitial Lung Disease in COPD](#)
[Gene](#)

[Jonathan A Rose](#)¹, [Ann-Marcia C Tukpah](#)¹, [Claire Cutting](#)¹, [Noriaki Wada](#)², [Mizuki Nishino](#)^{2,3}, [Matthew Moll](#)^{1,4,5}, [Sean Kalra](#)⁴, [Bina Choi](#)¹, [David A Lynch](#)⁶, [Benjamin A Raby](#)^{1,7}, [Ivan O Rosas](#)⁸, [Raúl San José Estépar](#)², [George R Washko](#)¹, [Edwin K Silverman](#)⁴, [Michael H Cho](#)⁴, [Hiroto Hatabu](#)², [Rachel K Putman](#)¹, [Gary M Hunninghake](#)¹

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- PMID: 39133466
- DOI: [10.1164/rccm.202402-0313OC](https://doi.org/10.1164/rccm.202402-0313OC)

Abstract

Rationale: Some with interstitial lung abnormalities (ILA) are suspected to have interstitial lung disease (ILD), a subgroup with adverse outcomes. Rates of development and progression of suspected ILD and their effect on mortality are unknown. **Objectives:** To determine rates of development, progression, and mortality in those with suspected ILD and assess effects of individual ILD and progression criteria. **Methods:** Participants from COPDGene (Genetic Epidemiology of Chronic Obstructive Pulmonary Disease) with ILA characterization and FVC at enrollment and 5-year follow-up were included. ILD was defined as ILA and fibrosis and/or FVC < 80% predicted. Prevalent ILD was assessed at enrollment and incident ILD and progression were assessed at 5-year follow-up. Computed tomography (CT) progression was assessed visually and FVC decline as relative change. **Multivariable Cox regression** tested associations between mortality and prevalent ILD, incident ILD, and progression groups. **Measurements and Main Results:** Of 9,588 participants at enrollment, 268 (2.8%; 51% of ILA) had prevalent ILD. Those with prevalent ILD had 51% mortality after median 10.6 years, which was higher than those with ILA without prevalent ILD (henceforth ILA) (33%; hazard ratio [HR], 2.0; $P < 0.001$). The subgroup of prevalent ILD with only fibrosis criteria (FVC \geq 80%) had worse mortality (58%) than ILA (HR, 2.2; $P < 0.001$). A total of 98 participants with prevalent ILD completed 5-year follow-up: 33% had stable CT and relative FVC decline <10%, 6% had FVC decline \geq 10% only, 39% had CT progression only, and 22% had both CT progression and FVC decline \geq 10%. Mortality rates were 31%, 50%, 45%, and 45%, respectively; those with only CT progression had worse mortality than those with ILA (HR, 2.6; $P = 0.005$). At 5-year follow-up, incident ILD occurred in 148/4,842 participants without prevalent ILD (5.5/1,000 person-years) and had worse mortality than ILA (HR, 2.4; $P < 0.001$). **Conclusion:** Rates of mortality and progression are high among those with suspected ILD in COPDGene; fibrosis and radiologic progression are important predictors of mortality.

Keywords: ILD; idiopathic pulmonary fibrosis; interstitial lung abnormalities; pulmonary fibrosis.

Comment in

- [Big Things Have Small Beginnings: Clinical Implications of Early Interstitial Lung Disease.](#)

Podolanczuk AJ, Tomassetti S. Am J Respir Crit Care Med. 2024 Dec 15;210(12):1394-1395. doi: 10.1164/rccm.202408-1611ED. PMID: 39312209 No abstract available.

Supplementary info

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Editorial

Am J Respir Crit Care Med

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. 2024 Dec 15;210(12):1391-1392.

doi: 10.1164/rccm.202406-1256ED.

[Unraveling Dysanapsis: Genetic Insights into Airway Lung Mismatch and COPD](#)

[Anne Yang](#)¹, [Jessica Bon](#)¹

Affiliations Expand

- PMID: 39078250
- DOI: [10.1164/rccm.202406-1256ED](#)

No abstract available

Comment on

- [Dysanapsis Genetic Risk Predicts Lung Function Across the Lifespan.](#)

Debban CL, Ambalavanan A, Ghosh A, Li Z, Buschur KL, Ma Y, George E, Pistenmaa C, Bertoni AG, Oelsner EC, Michos ED, Moraes TJ, Jacobs DR Jr, Christenson S, Bhatt SP, Kaner RJ, Simons E, Turvey SE, Vameghestahbanati M, Engert JC, Kirby M, Bourbeau J, Tan WC, Gabriel SB, Gupta N, Woodruff PG, Subbarao P, Ortega VE, Bleecker ER, Meyers DA, Rich SS, Hoffman EA, Barr RG, Cho MH, Bossé Y, Duan Q, Manichaikul A, Smith BM. Am J Respir Crit Care Med. 2024 Dec 15;210(12):1421-1431. doi: 10.1164/rccm.202401-0011OC. PMID: 38935874

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Am J Respir Crit Care Med

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. 2024 Dec 15;210(12):1421-1431.

doi: [10.1164/rccm.202401-0011OC](https://doi.org/10.1164/rccm.202401-0011OC).

[Dysanapsis Genetic Risk Predicts Lung Function Across the Lifespan](#)

[Catherine L Debban](#)¹, [Amirthagowri Ambalavanan](#)², [Auyon Ghosh](#)³, [Zhonglin Li](#)⁴, [Kristina L Buschur](#)^{5,6}, [Yanlin Ma](#)¹, [Elizabeth George](#)², [Carrie Pistenmaa](#)⁷, [Alain G Bertoni](#)⁸, [Elizabeth C Oelsner](#)⁶, [Erin D Michos](#)⁹, [Theo J Moraes](#)^{10,11}, [David R Jacobs Jr](#)¹², [Stephanie Christenson](#)¹³, [Surya P Bhatt](#)¹⁴, [Robert J Kaner](#)^{15,16}, [Elinor Simons](#)¹⁷, [Stuart E Turvey](#)¹⁸, [Motahareh Vameghestahbanati](#)¹⁹, [James C Engert](#)¹⁹, [Miranda Kirby](#)²⁰, [Jean Bourbeau](#)¹⁹, [Wan C Tan](#)²¹, [Stacey B Gabriel](#)²², [Namrata Gupta](#)²², [Prescott G Woodruff](#)¹³, [Padmaja Subbarao](#)^{23,24,25}, [Victor E Ortega](#)²⁶, [Eugene R Bleecker](#)²⁶, [Deborah A Meyers](#)²⁶, [Stephen S Rich](#)¹, [Eric A Hoffman](#)^{27,28,29}, [R Graham Barr](#)^{6,30}, [Michael H Cho](#)³¹, [Yohan Bossé](#)⁴, [Qingling Duan](#)², [Ani Manichaikul](#)¹, [Benjamin M Smith](#)^{6,19}

Affiliations Expand

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Abstract

Rationale: Dysanapsis refers to a mismatch between airway tree caliber and lung size arising early in life. Dysanapsis assessed by computed tomography (CT) is evident by early adulthood and associated with chronic obstructive pulmonary disease (COPD) risk later in life. **Objectives:** By examining the genetic factors associated with CT-assessed dysanapsis, we aimed to elucidate its molecular underpinnings and physiological significance across the lifespan. **Methods:** We performed a genome-wide association study of CT-assessed dysanapsis in 11,951 adults, including individuals from two population-based and two COPD-enriched studies. We applied colocalization analysis to integrate genome-wide association study and gene expression data from whole blood and lung. Genetic variants associated with dysanapsis were combined into a genetic risk score that was applied to examine association with lung function in children from a population-based birth cohort ($n = 1,278$) and adults from the UKBiobank ($n = 369,157$). **Measurements and Main Results:** CT-assessed dysanapsis was associated with genetic variants from 21 independent signals in 19 gene regions,

implicating *HHIP* (hedgehog interacting protein), *DSP*, and *NPNT* as potential molecular targets based on colocalization of their expression. A higher dysanapsis genetic risk score was associated with obstructive spirometry among 5-year-old children and among adults in the fifth, sixth, and seventh decades of life. Conclusions: CT-assessed dysanapsis is associated with variation in genes previously implicated in lung development, and dysanapsis genetic risk is associated with obstructive lung function from early life through older adulthood. Dysanapsis may represent an endophenotype link between the genetic variations associated with lung function and COPD.

Keywords: airflow obstruction; chronic obstructive pulmonary disease; lung growth and development.

Comment in

- [Unraveling Dysanapsis: Genetic Insights into Airway Lung Mismatch and COPD.](#)

Yang A, Bon J. *Am J Respir Crit Care Med*. 2024 Dec 15;210(12):1391-1392. doi: 10.1164/rccm.202406-1256ED. PMID: 39078250 No abstract available.

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Am J Respir Crit Care Med

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. 2024 Dec 15;210(12):1432-1440.

doi: 10.1164/rccm.202310-1825OC.

[Association of Ground-Glass Opacities with Systemic Inflammation and Progression of Emphysema](#)

[Spyridon Fortis](#)^{1,2}, [Junfeng Guo](#)^{3,4}, [Prashant Nagpal](#)⁵, [Muhammad F A Chaudhary](#)³, [John D Newell Jr](#)^{3,4}, [Sarah E Gerard](#)³, [MeiLan K Han](#)⁶, [Ella A](#)

[Kazerooni⁶](#), [Fernando J Martinez^{7,8}](#), [Igor Z Barjaktarevic⁹](#), [R Graham Barr¹⁰](#), [Sandeep Bodduluri¹¹](#), [Robert Paine 3rd¹²](#), [Hira A Awan³](#), [Joyce D Schroeder¹³](#), [Lisa D Gravens-Mueller¹⁴](#), [Victor E Ortega¹⁵](#), [Wayne H Anderson¹⁶](#), [Christopher B Cooper⁹](#), [David Couper¹⁷](#), [Prescott G Woodruff¹⁸](#), [Russell P Bowler¹⁹](#), [Surya P Bhatt^{11,20}](#), [Eric A Hoffman^{2,3,4}](#), [Joseph M Reinhardt^{3,4}](#), [Alejandro P Comellas²](#)

Affiliations Expand

- PMID: 38843116
- DOI: [10.1164/rccm.202310-1825OC](https://doi.org/10.1164/rccm.202310-1825OC)

Abstract

Rationale: Ground-glass opacities (GGOs) in the absence of interstitial lung disease are understudied. **Objectives:** To assess the association of GGOs with white blood cells (WBCs) and progression of quantified chest computed tomography emphysema. **Methods:** We analyzed data of participants in the SPIROMICS study (Subpopulations and Intermediate Outcome Measures in COPD Study). Chest radiologists and pulmonologists labeled regions of the lung as GGOs, and the adaptive multiple feature method (AMFM) trained the computer to assign those labels to image voxels and quantify the volume of the lung with GGOs (%GGO_{AMFM}). We used multivariable linear regression, zero-inflated negative binomial, and proportional hazards regression models to assess the association of %GGO_{AMFM} with WBCs, changes in percentage emphysema, and clinical outcomes. **Measurements and Main Results:** Among 2,714 participants, 1,680 had chronic obstructive pulmonary disease (COPD) and 1,034 had normal spirometry. Among participants with COPD, on the basis of multivariable analysis, current smoking and chronic productive cough were associated with higher %GGO_{AMFM}. Higher %GGO_{AMFM} was cross-sectionally associated with higher WBC and neutrophil concentrations. Higher %GGO_{AMFM} per interquartile range at visit 1 (baseline) was associated with an increase in emphysema at 1-year follow-up visit by 11.7% (relative increase; 95% confidence interval, 7.5-16.1%; *P* < 0.001). We found no association between %GGO_{AMFM} and 1-year FEV₁ decline, but %GGO_{AMFM} was associated with exacerbations and all-cause mortality during a median follow-up of 1,544 days (interquartile interval, 1,118-2,059). Among normal spirometry participants, we found similar results, except that %GGO_{AMFM} was associated with progression to COPD at 1-year follow-up. **Conclusions:** Our findings suggest that GGO_{AMFM} is associated with increased systemic inflammation and emphysema progression.

Keywords: chronic obstructive pulmonary disease; emphysema; ground-glass opacity; inflammation.

Comment in

- [Ground-Glass Opacities on Computed Tomography of the Thorax to Predict Progression of Emphysema: Are We There Yet?](#)

Ko FWS, Hui DSC. Am J Respir Crit Care Med. 2024 Dec 15;210(12):1392-1394. doi: 10.1164/rccm.202405-1066ED. PMID: 38990733 No abstract available.

Supplementary info

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

1

J Glob Health

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. 2024 Dec 20:14:04263.

doi: 10.7189/jogh.14.04263.

[Multimorbidity in elderly patients with or without T2DM: A real-world cross-sectional analysis based on primary care and hospitalisation data](#)

[Yang Li](#)^{#1,2}, [Shasha Geng](#)^{#1,2}, [Huixiao Yuan](#)^{1,2}, [Jianli Ge](#)^{1,2}, [Qingqing Li](#)^{1,2}, [Xin Chen](#)^{1,2}, [Yingqian Zhu](#)^{1,2}, [Yue Liu](#)^{1,2}, [Xiaotong Guo](#)^{1,2}, [Xiaoli Wang](#)³, [Hua Jiang](#)^{1,2}

Affiliations Expand

- PMID: 39700381
- DOI: [10.7189/jogh.14.04263](https://doi.org/10.7189/jogh.14.04263)

Free article

Abstract

Background: Shanghai's high level of ageing has given rise to a considerable number of elderly patients with type 2 diabetes mellitus (T2DM) who are confronted with the challenge of managing multimorbidity. We aimed to determine the prevalence of multimorbidity in elderly T2DM patients in a representative Pudong New Area community and critically evaluate current guidelines' inclusiveness in addressing major comorbidities.

Methods: Through the Shanghai Health Cloud platform, we extracted medical records of residents in the Huamu community (Pudong New Area, Shanghai) to

screen elderly patients with at least three outpatient visits or one hospitalisation per year between 2019 and 2022. According to International Classification of Disease, 10th edition codes and personal identification number, we identified the status of T2DM and 12 other common chronic diseases, matched T2DM patients and non-T2DM patients 1:1 by age and gender, and then calculated the prevalence of multimorbidity status and annual prevalence of each comorbidity. We analysed associations between T2DM and specific chronic diseases using logistic regression models.

Results: More than 90% of elderly T2DM patients had at least one additional chronic disease. Multimorbidity was more frequent in women and older patients. Hyperlipidemia, hypertension, and ischaemic heart disease were the most prevalent comorbidities. The diagnosis of T2DM was significantly associated with both cardiovascular-kidney-metabolic and neuropsychiatric diseases. In addition, a higher prevalence and risk of chronic obstructive pulmonary disease (COPD) were consistently detected in elderly patients with T2DM, regardless of age and gender.

Conclusions: Multimorbidity in elderly patients with T2DM needs broader acknowledgement. Current guidelines focus more on cardiovascular-kidney-metabolic and neuropsychiatric diseases with inadequate guidance on COPD management. Hence, the pleiotropic effects of glucose-lowering drugs on COPD should be further investigated to optimise the comprehensive management strategy for this population.

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Conflict of interest statement

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

Supplementary info

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Eur Geriatr Med

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. 2024 Dec 19.

doi: 10.1007/s41999-024-01098-4. Online ahead of print.

Frailty, comorbidity, and multimorbidity and their relation with medications adherence in primary care older adults

Francesco Lapi¹, Ettore Marconi², Pierangelo Lora Aprile³, Alberto Magni³, Davide Liborio Vetrano^{4,5}, Alessandro Rossi³, Alberto Pilotto^{6,7}, Claudio Cricelli³

Affiliations Expand

- PMID: 39699748
- DOI: [10.1007/s41999-024-01098-4](https://doi.org/10.1007/s41999-024-01098-4)

Abstract

Purpose: To assess and compare, through a retrospective cohort study, the relationships between frailty, comorbidity, multimorbidity, and levels of adherence to lipid-lowering drugs (LLDs), antihypertensives and antidepressants.

Methods: In a primary care database, we selected a cohort of patients aged 60 or older on December 31, 2022. The date of the first prescription of the aforementioned medications was the study index date. Patients with Variable Medication Possession Ratio (VMPR) $\geq 80\%$ were classified as properly adherent. Frailty (i.e. Primary Care-Frailty Index), comorbidity (i.e. Charlson Index) and multimorbidity (i.e. disease counts) alternatively entered multivariate logistic regressions along with age and sex. Models' performances in prediction of medications adherence were compared in terms of information (AIC; BIC) and discrimination values (AUC).

Results: Incident users of LLDs, antihypertensives or antidepressants were 4310 (mean age: 67.9 (SD: 6.9); 56.0% females), 5969 (mean age: 69.1 (SD: 7.6); 58.0% females), and 3834 (mean age: 68.7 (SD: 6.9); 66.5% females), respectively. Among users of LLDs (46% adherent) and antidepressants (22% adherent), those who were moderately or severely frail showed a significant 30-32% decrease in adherence. In contrast, users of antihypertensives (46% adherent) showed a 41% increase in adherence when multimorbid. As a whole, the three multivariate models were equally effective in informing on medication adherence, as per AIC and BIC. They also displayed similar discriminatory ability, with AUC scores ranging from 53 to 58%. Regarding the workload of GPs, the number of elderly patients classified as moderately/high frail was less than those with co-morbidities or multimorbidities. For instance, there were approximately 35 users of antihypertensive medications per GP for the moderately frail group, compared to 46 and 66 for the co-morbid and multi-morbid groups, respectively.

Conclusions: These findings showed similar capacity for frailty, comorbidity, and multimorbidity in capturing medications adherence. Given the existence of a validated tool in primary care that aligns well with GPs' workload, frailty seems the most suitable measure for assessing the complexity of older adults in relation to their adherence to long-term medications.

Keywords: Comorbidity; Frailty; Medications adherence; Multimorbidity.

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Conflict of interest statement

Declarations. Conflict of interest: FL and EM provided consultancies in protocol preparation for epidemiological studies and data analyses for Viatris, Abbott Nutrition, and Abiogen. PLA, AM, AR and CC provided clinical consultancies for Viatris, Abbott Nutrition, and Abiogen. DLV and AP have no conflict of interest to disclose. **Ethical approval:** According to a by-law on the classification and implementation of observational drug-related research, as issued by the Italian National Drug Agency (an entity belonging to the Italian Ministry of Health), the present study does not require approval by an Ethics Committee in Italy (Italian Drug Agency note of 3 August 2007). This study followed the principles of the Declaration of Helsinki and compliant with the STrengthening the Reporting of OBservational studies in Epidemiology (STROBE) guidelines. **Informed consent:** Not Applicable.

- [52 references](#)

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. 2024 Dec 18;22(1):36.

doi: 10.1186/s12963-024-00356-8.

[Beyond the underlying cause of death: an algorithm to study multi-morbidity at death](#)

[Francesco Grippo](#)¹, [Luisa Frova](#)², [Marilena Pappagallo](#)², [Magali Barbieri](#)^{3,4}, [Sergj Trias-Llimós](#)⁵, [Viviana Egidi](#)⁶, [France Meslé](#)³, [Aline Désesquelles](#)³

Affiliations Expand

- PMID: 39696432
- PMCID: [PMC11653578](#)

- DOI: [10.1186/s12963-024-00356-8](https://doi.org/10.1186/s12963-024-00356-8)

Abstract

Background: In countries with high life expectancy, a growing share of the population is living with several diseases, a situation referred to as multi-morbidity. In addition to health data, cause-of-death data, based on the information reported on death certificates, can help monitor and characterize this situation. This requires going beyond the underlying cause of death and accounting for all causes on the death certificates which may have played various roles in the morbid process, depending on how they relate to each other.

Methods: Apart from the underlying cause, the cause-of death data available in vital registration systems do not differentiate all other causes. We developed an algorithm based on the WHO rules that assigns a "role" to each entry on the death certificate. We distinguish between the following roles: originating (o), when the condition has initiated a sequence of events leading directly to death; precipitating (p), when it was caused by an originating condition or one of its consequences; associated (a), when it contributed to death but was not part of the direct sequence leading to death; ill-defined (i), i.e., conditions such as symptoms or signs or poorly informative causes. We applied this algorithm to all death records in four countries (Italy, France, Spain and the US) in 2017.

Results: The average number of originating causes is similar in the four countries. The proportion of death certificates with more than one originating cause—a situation typical of multi-morbidity—ranges from 10% in the US to 18% in Spain. All ages combined, the proportion of deaths with at least one associated cause is higher in Italy (41%) and in the US (42%) than in France (29%) and in Spain (27%). It is especially high in the US at all adult ages. Variations in the average number of causes between the four countries are mainly due to precipitating and ill-defined causes.

Conclusions: The output of our algorithm sheds light on cross-country differences in the average number of causes on death certificates. It also opens the door for improvements in the methods used for multiple cause-of-death analysis.

Keywords: Aging; Causes of death; Mortality; Multi-morbidity.

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Conflict of interest statement

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

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

Supplementary info

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. 2024 Dec 18;24(1):3465.

doi: [10.1186/s12889-024-21028-0](https://doi.org/10.1186/s12889-024-21028-0).

[The importance of including a mental health dimension in a multimorbidity indicator: an analysis of Belgian health survey data](#)

[Pierre Laloux](#)¹, [Lydia Gisle](#)², [William D'hoore](#)³, [Rana Charafeddine](#)², [Johan Van der Heyden](#)²

Affiliations Expand

- PMID: 39695533
- PMCID: [PMC11657147](#)
- DOI: [10.1186/s12889-024-21028-0](https://doi.org/10.1186/s12889-024-21028-0)

Abstract

Background: Multimorbidity is a rising public health concern. Indicators that address these complex health conditions are often exclusively devoted to physical diseases. Because of their high disease burden, mental health disorders ought to be considered as well. This paper aims to measure the added value of including a mental health dimension in a population-based multimorbidity indicator and identify which mental health measures are most appropriate.

Methods: Secondary analyses were conducted on data from the Belgian Health Interview Survey 2018. We compared the prevalence of different multimorbidity indicators (MIs) in relation to health impact measures, such as quality of life (EQ-5D score) and activity limitation (GALI). The MIs differed as to the health conditions

involved: one was based on physical conditions only; the other three included mental health dimensions that were either self-reported or assessed by a scale (GAD-7, PHQ-9, and GHQ-12). We performed linear and logistic regressions to assess the association between the MIs and the health correlates and compared the goodness of fit of the different models.

Results: MI prevalence was higher when including a mental health dimension assessed with the GHQ-12 (42.0%) and with the GAD-7 or the PHQ-9 (39.4%) as compared to physical conditions only (35.0%). Associations between the MI and health correlates were consistently stronger if the MI included a mental health dimension. The regression models with MI including the GAD-7 and PHQ-9 showed the strongest association between MI and the health correlates and also had the best goodness-of-fit measures.

Conclusions: MIs that only take physical conditions into account underestimate their impact on individuals' lives. Including mental ill-health in an MI is key to linking it to health correlates.

Keywords: Activity limitation; Health interview survey; Mental health; Multimorbidity; Quality of life.

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Conflict of interest statement

Declarations. Ethics approval and consent to participate: The BHIS 2018 sampling and survey method was carried out according to the Belgian privacy legislation and has been approved by the Privacy Commission and the Ethical Committee of the University of Ghent. Informed consent was obtained from all individual participants in the BHIS. Consent for publication: Not applicable. Competing interests: The authors declare no competing interests.

- [69 references](#)

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Ann Am Thorac Soc

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doi: [10.1513/AnnalsATS.202406-587OC](https://doi.org/10.1513/AnnalsATS.202406-587OC). Online ahead of print.

[Multimorbidity and Its Impact in Older United States Veterans Newly Treated for Advanced Non-Small Cell Lung Cancer](#)

[Joseph R Larsen](#)¹, [Chunlei Zheng](#)², [Jennifer La](#)², [Julie Tsu-Yu Wu](#)³, [Michael Kelley](#)^{4,5}, [J Michael Gaziano](#)², [Mary Brophy](#)², [Nhan V Do](#)², [Dae H Kim](#)^{6,7}, [Jane A Driver](#)⁷, [Clark Dumontier](#)⁷, [Nathanael R Fillmore](#)²

Affiliations Expand

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- DOI: [10.1513/AnnalsATS.202406-587OC](https://doi.org/10.1513/AnnalsATS.202406-587OC)

Abstract

Rationale: Older adults make up the majority of patients with advanced non-small cell lung cancer (NSCLC) and often carry multiple other comorbidities (multimorbidity) when initiating treatment. The nature and impact of multimorbidity remain largely unknown, given the limitations of standard count-based comorbidity indices in aging patients and their exclusion from clinical trials.

Objective: Our objective is to identify and define multimorbidity patterns in older U.S. veterans newly treated for advanced NSCLC in the national VA healthcare system between 2002 to 2020, and whether they are associated with mortality and healthcare utilization.

Methods: We measured 63 chronic conditions in 10,160 veterans age ≥ 65 years newly treated for NSCLC in the national Veterans Affairs healthcare system from 2002 to 2020. Latent class analysis (LCA) was used to identify patterns of multimorbidity among these conditions, with final patterns determined based on model fit and clinical meaningfulness. Kaplan-Meier and Cox proportional hazards regression analyses were used to evaluate the association of multimorbidity patterns with overall survival (primary outcome), and with emergency department visits and unplanned hospitalizations (secondary outcomes).

Results: Five multimorbidity patterns arose from the LCA, with overall survival varying across patterns (log-rank 2-sided $P < 0.001$). Veterans with metabolic diseases (24.7% of all patients; HR [95% CI], 1.10 [1.04 -1.16]), psychiatric and substance use disorders (16.0%; HR [95% CI], 1.17 [1.10-1.24]), cardiovascular disease (14.4%; HR [95% CI], 1.22 [1.15-1.30]), and multisystem impairment (10.7%; HR [95% CI], 1.36 [1.26 -1.46]) had a higher hazard of death compared to veterans with common conditions of aging beyond their NSCLC (34.2%, reference), controlling for age, gender, race, days between diagnosis and treatment, date of diagnosis, and NSCLC stage and histology. Associations held after adjusting for the count-based Charlson Comorbidity Index. Multimorbidity patterns were also

independently associated with emergency department visits and unplanned hospitalizations.

Conclusion: Our findings reveal that the numerous chronic conditions present in older veterans with late-stage NSCLC cluster together into distinct multimorbidity patterns; the nature of conditions in these patterns carry value beyond their number.

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Arch Gerontol Geriatr

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. 2024 Dec 15:130:105726.

doi: 10.1016/j.archger.2024.105726. Online ahead of print.

[Multimorbidity clusters and their contribution to well-being among the oldest old: Results based on a nationally representative sample in Germany](#)

[André Hajek](#)¹, [Razak M Gyasi](#)², [Karel Kostev](#)³, [Pinar Soysal](#)⁴, [Nicola Veronese](#)⁵, [Lee Smith](#)⁶, [Louis Jacob](#)⁷, [Hans Oh](#)⁸, [Supa Pengpid](#)⁹, [Karl Peltzer](#)¹⁰, [Hans-Helmut König](#)¹¹

Affiliations Expand

- PMID: 39700712
- DOI: [10.1016/j.archger.2024.105726](https://doi.org/10.1016/j.archger.2024.105726)

Abstract

Aim: Our aim was to identify multimorbidity clusters and, in particular, to examine their contribution to well-being outcomes among the oldest old in Germany.

Methods: Data were taken from the large nationally representative D80+ study including community-dwelling and institutionalized individuals aged 80 years and over residing in Germany (n = 8,773). The mean age was 85.6 years (SD: 4.1). Based

on 21 chronic conditions, latent class analysis was carried out to explore multimorbidity (≥ 2 chronic conditions) clusters. Widely used tools were applied to quantify well-being outcomes.

Results: Approximately nine out of ten people aged 80 and over living in Germany were multimorbid. Four multimorbidity clusters were identified: relatively healthy class (30.2 %), musculoskeletal class (44.8 %), mental illness class (8.6 %), and high morbidity class (16.4 %). Being part of the mental disorders cluster was consistently linked to reduced well-being (in terms of low life satisfaction, high loneliness and lower odds of meaning in life), followed by membership in the high morbidity cluster.

Conclusions: Four multimorbidity clusters were detected among the oldest old in Germany. Particularly belonging to the mental disorders cluster is consistently associated with low well-being, followed by belonging to the high morbidity cluster. This stresses the need for efforts to target such vulnerable groups, pending future longitudinal research.

Keywords: Depression; High morbidity; Latent class analysis; Life satisfaction; Loneliness; Mental health; Mental illness; Multimorbidity clusters; Multimorbidity patterns; Multiple chronic conditions; Oldest old.

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Conflict of interest statement

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

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. 2024 Dec 15:14:26335565241307614.

doi: 10.1177/26335565241307614. eCollection 2024 Jan-Dec.

Associations between number and type of conditions and physical activity levels in adults with multimorbidity - a cross-sectional study from the Danish Lolland-Falster health study

Lars Bo Jørgensen^{1,2,3}, Sofie Rath Mortensen^{1,4}, Lars Hermann Tang^{1,5}, Anders Grøntved⁴, Jan Christian Brønd⁴, Randi Jepsen⁶, Therese Lockenwitz Petersen^{6,7}, Søren T Skou^{1,2}

Affiliations Expand

- PMID: 39687004
- PMCID: [PMC11648043](#)
- DOI: [10.1177/26335565241307614](#)

Free PMC article

Abstract

Aim: To provide detailed descriptions of the amount of daily physical activity (PA) performed by people with multimorbidity and investigate the association between the number of conditions, multimorbidity profiles, and PA.

Methods: All adults (≥ 18 years) from The Lolland-Falster Health Study, conducted from 2016 to 2020, who had PA measured with accelerometers and reported medical conditions were included ($n=2,158$). Sedentary behavior and daily PA at light, moderate, vigorous, and moderate to vigorous intensity and number of steps were measured with two accelerometers. Associations were investigated using multivariable and quantile regression analyses.

Results: Adults with multimorbidity spent nearly half their day sedentary, and the majority did not adhere to the World Health Organization's (WHO) PA recommendations (two conditions: 63%, three conditions: 74%, \geq four conditions: 81%). Number of conditions was inversely associated with both PA for all intensity levels except sedentary time and daily number of steps. Participants with multimorbidity and presence of mental disorders (somatic/mental multimorbidity) had significantly lower levels of PA at all intensity levels, except sedentary time, and number of daily steps, compared to participants with multimorbidity combinations of exclusively somatic conditions.

Conclusion: Levels of sedentary behavior and non-adherence to PA recommendations in adults with multimorbidity were high. Inverse associations between PA and the number of conditions and mental multimorbidity profiles suggest that physical inactivity increases as multimorbidity becomes more complex.

Keywords: LOFUS; Multimorbidity; accelerometer; physical activity; sedentary behavior.

Conflict of interest statement

The author(s) declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: Søren T. Skou is the associate editor of the Journal of Orthopaedic & Sports Physical Therapy and has received personal fees from Munksgaard, Nestlé Health Science and TrustMe-Ed. He is co-founder of Good Life with Osteoarthritis in Denmark (GLA:D®), a not-for-profit initiative hosted at the University of Southern Denmark aimed at implementing clinical guidelines for OA in clinical practice. None of the other authors have competing interests.

Full text links

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

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Nursing

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. 2025 Jan 1;55(1):32-39.

doi: 10.1097/NSG.000000000000112. Epub 2024 Dec 20.

[The health effects of poor air quality](#)

[Karilee W Bingham](#)¹

Affiliations Expand

- PMID: 39702915
- DOI: [10.1097/NSG.000000000000112](https://doi.org/10.1097/NSG.000000000000112)

Abstract

Smoke, particularly from wildfires and other combustion sources, is a significant contributor to air pollution, comprising a complex mixture of particulate matter and gaseous pollutants. Prolonged exposure to smoke can exacerbate respiratory diseases, such as asthma and chronic obstructive pulmonary disease, leading to increased ED visits and hospitalizations. This article examines the significant health risks associated with air pollution, particularly chronic diseases and acute respiratory conditions, and discusses the emergency treatment of acute respiratory distress from exposure.

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Review

JAAPA

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. 2025 Jan 1;38(1):e13-e15.

doi: 10.1097/01.JAA.0000000000000153. Epub 2024 Dec 19.

[Triple inhaler therapy in adolescents and adults with moderate or severe persistent asthma](#)

[Mark L'Eplattenier¹](#), [Gina Pontrelli](#), [Carina Loscalzo](#)

Affiliations Expand

- PMID: 39699325
- DOI: [10.1097/01.JAA.0000000000000153](#)

Abstract

Expert guidelines, meta-analyses, and multiple randomized controlled trials have demonstrated the effectiveness of long-acting inhaled antimuscarinic agents (LAMAs) as an additive medication for patients with poorly controlled moderate or severe persistent asthma. LAMAs play an essential role in blocking acetylcholine binding to muscarinic receptors and reducing bronchoconstriction and mucus production. By adding this medication to other combination inhalers, patients can use a triple inhaler to improve FEV1 values and reduce exacerbations.

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- [25 references](#)

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Am J Respir Crit Care Med

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. 2024 Dec 19.

doi: 10.1164/rccm.202411-2290ED. Online ahead of print.

[In Asthma, Change Is the Only Constant](#)

[Karl J Staples¹](#)

Affiliations Expand

- PMID: 39700529
- DOI: [10.1164/rccm.202411-2290ED](https://doi.org/10.1164/rccm.202411-2290ED)

No abstract available

Keywords: Asthma; Sputum; T1/T2; Transcriptomics.

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Review

J Investig Allergol Clin Immunol

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. 2024 Dec 19:0.

doi: 10.18176/jiaci.1038. Online ahead of print.

[Position Paper on the Treatment of Eosinophilic Esophagitis With Dupilumab](#)

[M Tomás-Pérez](#)^{1 2 3}, [J Domenech-Witek](#)^{3 4}, [M R Ávila-Castellano](#)^{3 5 6}, [C Carballas-Vázquez](#)^{3 7}, [A A Vázquez-Bautista](#)^{3 8}, [V Jover-Cerdá](#)^{3 9}, [R González-Mendiola](#)^{3 10}

Affiliations Expand

- PMID: 39698911
- DOI: [10.18176/jiaci.1038](#)

Abstract

Eosinophilic esophagitis (EoE) is a chronic allergic condition affecting the esophagus and driven by food antigens. Many individuals diagnosed with EoE have other allergic conditions, such as food allergy, asthma, allergic rhinitis, and atopic dermatitis. The clinical goals of therapy in EoE include symptomatic, histologic, and endoscopic remission. The current paradigm for the treatment of EoE in Spain includes proton pump inhibitors, swallowed topical corticosteroids, and food elimination diets. These treatments have proven very effective in clinical studies. In April 2024, the Spanish Agency for Medicines and Medical Products approved dupilumab as the second drug for the treatment of EoE, thus adding this biologic to the therapeutic arsenal in EoE. The present review includes a positioning statement by the authors, all of whom are members of the Spanish Society of Allergy and Clinical Immunology Food-EoE Working Group.

Keywords: Atopy; Dupilumab; Eosinophilic esophagitis; Food allergy; Outcomes; Positioning.

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Allergy

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. 2024 Dec 19.

doi: 10.1111/all.16441. Online ahead of print.

[How FEV₁ Improvement Induced by Anti-IL-5 in Severe Type-2 Asthma Is Linked to Mucus Plugs Clearance](#)

[Alain Michils¹](#), [Maxime Hackx²](#), [Lucas Mlynarski¹](#), [Amaryllis Haccuria¹](#), [Silvia Perez-Bogerd¹](#), [Andrei Malinovski³](#), [Alain Van Muylem¹](#)

Affiliations Expand

- PMID: 39698780
- DOI: [10.1111/all.16441](#)

No abstract available

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Clinical Trial

N Engl J Med

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. 2024 Dec 19;391(24):2337-2349.

doi: 10.1056/NEJMoa2406673. Epub 2024 Sep 9.

[Twice-Yearly Depemokimab in Severe Asthma with an Eosinophilic Phenotype](#)

[David J Jackson](#)¹, [Michael E Wechsler](#)¹, [Daniel J Jackson](#)¹, [David Bernstein](#)¹, [Stephanie Korn](#)¹, [Paul E Pfeffer](#)¹, [Ruchong Chen](#)¹, [Junpei Saito](#)¹, [Gustavo de Luíz Martinez](#)¹, [Lucyna Dymek](#)¹, [Loretta Jacques](#)¹, [Nicholas Bird](#)¹, [Stein Schalkwijk](#)¹, [Douglas Smith](#)¹, [Peter Howarth](#)¹, [Ian D Pavord](#)¹; [SWIFT-1 and SWIFT-2 Investigators](#); [SWIFT-1 Investigators](#); [SWIFT-2 Investigators](#)

Collaborators, Affiliations Expand

- PMID: 39248309
- DOI: [10.1056/NEJMoa2406673](https://doi.org/10.1056/NEJMoa2406673)

Abstract

Background: Depemokimab is an ultra-long-acting biologic therapy with enhanced binding affinity for interleukin-5 that may enable effective 6-month dosing intervals.

Methods: In these phase 3A, randomized, placebo-controlled replicate trials, we evaluated the efficacy and safety of depemokimab in patients with severe asthma and an eosinophilic phenotype characterized by a high eosinophil count (≥ 300 cells per microliter in the previous 12 months or ≥ 150 cells per microliter at screening) and a history of exacerbations despite the receipt of medium- or high-dose inhaled glucocorticoids. Patients were randomly assigned in a 2:1 ratio to receive either depemokimab (at a dose of 100 mg subcutaneously) or placebo at weeks 0 and 26, plus standard care. The primary end point was the annualized rate of exacerbations at 52 weeks. Secondary end points, which were analyzed in a hierarchical manner to adjust for multiplicity, included the change from baseline in the score on the St. George's Respiratory Questionnaire (SGRQ), the forced expiratory volume in 1 second, and asthma symptom reports at 52 weeks.

Results: Across the two trials, 792 patients underwent randomization and 762 were included in the full analysis; 502 were assigned to receive depemokimab and 260 to receive placebo. The annualized rate of exacerbations was 0.46 (95% confidence interval [CI], 0.36 to 0.58) with depemokimab and 1.11 (95% CI, 0.86 to 1.43) with placebo (rate ratio, 0.42; 95% CI, 0.30 to 0.59; $P < 0.001$) in SWIFT-1 and 0.56 (95% CI, 0.44 to 0.70) with depemokimab and 1.08 (95% CI, 0.83 to 1.41) with placebo (rate ratio, 0.52; 95% CI, 0.36 to 0.73; $P < 0.001$) in SWIFT-2. No significant between-group difference in the change from baseline in the SGRQ score was observed in either trial, so no statistical inference was drawn on subsequent secondary end points. The proportion of patients with any adverse event was similar in the two groups in both trials.

Conclusions: Depemokimab reduced the annualized rate of exacerbations among patients with severe asthma with an eosinophilic phenotype. (Funded by GSK; SWIFT-1 and SWIFT-2 ClinicalTrials.gov numbers, [NCT04719832](#) and [NCT04718103](#)).

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Allergy Asthma Clin Immunol

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. 2024 Dec 18;20(1):68.

doi: [10.1186/s13223-024-00940-5](#).

[Effective use of dupilumab for eosinophilic gastritis concomitant with severe asthma](#)

[Tomohito Takeshige](#)^{1,2}, [Ryo Koyama](#)³, [Hiroaki Motomura](#)³, [Akifumi Okajima](#)³, [Toshihiko Nishioki](#)³, [Junko Watanabe](#)³, [Toshifumi Yae](#)³, [Kenji Kido](#)³, [Kazuhisa Takahashi](#)⁴

Affiliations Expand

- PMID: 39696614
- PMCID: [PMC11656811](#)
- DOI: [10.1186/s13223-024-00940-5](#)

Abstract

Background: Eosinophilic gastrointestinal diseases (EGIDs) are chronic immune-mediated inflammatory disorders characterized by gastrointestinal symptoms and eosinophilic inflammation in specific regions of the gastrointestinal tract.

"Eosinophilic gastritis" (EoG) refers to the condition in which the stomach is involved. In patients with EoG, approved treatment options are restricted despite the high mortality associated with the condition. Dupilumab is a human monoclonal antibody directed against the interleukin (IL)-4 receptor α subunit and inhibits the signaling pathways of both IL-4 and IL-13. The real-world data on the effectiveness of dupilumab for EoG are limited. We present the case of a patient with EoG and accompanying severe asthma who demonstrated improvement with dupilumab administration.

Case presentation: A 35-year-old woman who had been treated for asthma complained of worsening intermittent upper abdominal pain. Her dyspnea aggravated and she was admitted to our hospital for asthma exacerbation. Despite the improvement in her asthma symptoms with systemic corticosteroids, her abdominal pain persisted. Upper gastrointestinal endoscopic mucosal biopsy revealed eosinophilic cell infiltration; therefore, the patient was diagnosed with EoG. Dupilumab administration was initiated for asthma, while improvement of secondary EoG was expected. Following dupilumab administration, both EoG and asthma symptoms, disease control, laboratory findings, endoscopic findings, and pathological findings improved. No adverse events have been reported after the dupilumab treatment.

Conclusion: This case report supports that dupilumab could be an effective treatment option for EoG and accompanying severe asthma.

Keywords: Bronchial asthma; Dupilumab; Eosinophilic gastritis (EoG); Eosinophilic gastrointestinal diseases (EGIDs).

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Conflict of interest statement

Declarations. Ethics approval and consent to participate: Not applicable. Consent for publication: Consent for publication was obtained from the patient. Competing interests: KT receives grants and personal fees from AstraZeneca, Boehringer Ingelheim, Chugai, Eli Lilly, Kyorin, MSD, Nobelpharma, Novartis, Ono, Pfizer, and Teijin; grants from Astellas, GlaxoSmithKline, Kyowa Hakko Kirin, MiZ, Mochida, Nipro, Nippon Shinyaku, Taiho, Toyama Chemical, Tsumura, Sanofi, Shionogi, and Torii; and personal fees from Bristol-Myers, Eisai, Meiji Seika, Mitsubishi Tanabe, Otsuka, Parexel, and Sumitomo Dainippon outside the submitted work. The remaining authors have no conflicts of interest to declare.

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- [4 figures](#)

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Emerg Med J

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. 2024 Dec 18:emermed-2024-213893.

doi: 10.1136/emermed-2024-213893. Online ahead of print.

[Nebulised high-dose corticosteroids as add-on therapy for adults with asthma exacerbation: a randomised controlled trial](#)

[Kumpol Kornthatchapong¹, Nat Chatchairatanavej², Nattaya Chormai², Winchana Srivilaithon², Chitlada Limjindaporn², Narongkorn Saiphoklang³, Jiraporn Sri-On⁴](#)

Affiliations Expand

- PMID: 39694823
- DOI: [10.1136/emermed-2024-213893](#)

Abstract

Background: Evidence regarding high-dose inhaled corticosteroids (HDICS) in asthma exacerbations in adults is insufficient. This study compares the treatment outcomes of HDICS as add-on therapy to the outcomes of standard treatment in adult patients with acute asthma exacerbation in the ED.

Methods: This was a single-centre, triple-blind, randomised controlled trial conducted in the ED in Thailand between March 2022 and April 2023. Adult patients with asthma exacerbation were randomly assigned to receive either a placebo (normal saline) or HDICS (budesonide 9000 µg) nebulisation combined with beta agonist and ipratropium within the first hour. The primary endpoints were length of ED stay, hospital admission and ED revisit. The secondary endpoints were dyspnoea scale, pulmonary functions, length of hospital stay and home exacerbation after ED discharge.

Results: A total of 88 patients were randomly assigned to one of two groups: 44 patients received a HDICS and 44 patients were placed in the control group. The HDICS group had a significantly shorter ED length of stay (adjusted mean difference -133.6 min; 95% CI -242.4 to -24.8 min; p=0.016), and a higher proportion of ED discharged home within 8 and 16 hours compared with the control group. However, there were no significant differences between the two groups in hospital admission

rates, ED revisit, dyspnoea scale, pulmonary functions, length of hospital stay or home exacerbation after ED discharge.

Conclusions: HDICS may be useful as an add-on therapy to standard treatment for asthma exacerbation in adults to reduce ED stay.

Trial registration number: TCTR20201214001.

Keywords: Clinical Trial; asthma; clinical management; management.

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Conflict of interest statement

Competing interests: None declared.

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Multicenter Study

BMJ Open Respir Res

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. 2024 Dec 18;11(1):e002702.

doi: 10.1136/bmjresp-2024-002702.

[What is the true target population for biologics in real-life COPD or asthma-COPD overlap patients?](#)

[Maéva Zysman](#)^{1,2}, [Fanchon Herman](#)³, [Léo Grassion](#)⁴, [Camille Taillé](#)⁵, [Jesus Gonzalez-Bermejo](#)^{6,7}, [Marina Guecamburu](#)⁸, [Nicolas Roche](#)⁹, [Arthur Pavot](#)², [Pierre-Olivier Girodet](#)¹⁰, [Arnaud Bourdin](#)¹¹, [Nicolas Molinari](#)¹¹, [Patrick Berger](#)^{12,13}; [COBRA Study Group](#)

Affiliations Expand

- PMID: 39694677

- DOI: [10.1136/bmjresp-2024-002702](https://doi.org/10.1136/bmjresp-2024-002702)

Free article

Abstract

Introduction: Biologics provide significant benefits in asthma, reducing exacerbations and symptoms. Some biologics have shown promising results in small subgroups of patients with chronic obstructive pulmonary disease (COPD) and frequent exacerbations. Nevertheless, real-life data on the size of the COPD target population remain scarce.

Methods: We analysed the characteristics of COPD and coexisting asthma and COPD patients included in the prospective multicentre, French COhort of BRonchial obstruction and Asthma, between 2008 and 2023 and evaluated the number of patients who could correspond to the inclusion criteria of randomised controlled trials evaluating various biologics targeting interleukin 33 (IL-33) (-receptor), IL-5 (-receptor), IL-4R α or TSLP, in routine clinical practice.

Results: Among 434 COPD patients, only 21.7% met inclusion criteria for at least one biologic. Among patients with asthma, 54 (3.5%) had coexisting features of COPD in terms of age, smoking status and airflow obstruction and met inclusion criteria for at least one biologic. Notably, these patients were predominantly female, with worse lung function. Globally, the target chronic airway diseases population of the eagerly awaited biologics remains limited to a small part (ie, 1.3%-8%, depending on the biologic).

Conclusion: In a real-life COPD and asthma population (including asthmatic patients with features of COPD), the proportion of patients satisfying selection criteria applied in randomised controlled trials assessing the efficacy of biologics remains limited to less than 10% of the whole population.

Keywords: Asthma Pharmacology; Asthma in primary care; COPD Pharmacology; Eosinophil Biology.

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Conflict of interest statement

Competing interests: MZ reports grants and personal fees from Menarini, personal fees from Sanofi, personal fees from Chiesi, personal fees from AstraZeneca, personal fees from CSLBehring and personal fees from GSK outside the submitted work, grants from AVAD, grants from FRM. FH has no conflict of interest to declare related to the present work. LG has no conflict of interest to declare related to the present work. He received grants from AADAIRC. He received speaker or advisory board fees from GSK, ASTEN, Air Liquide Medical System, Sanofi Genzyme, SOS Oxygene, AstraZeneca, ASV, Boehringer, VIVISOL and RESMED. CT has no conflict of interest to declare related to the present work. She received grants from GSK to INSERM UMR 1152. She received speaker or advisory board fees from AstraZeneca, GSK, Novartis, Sanofi, Stallergenes, Leo Pharma outside the submitted work. JG-B has no conflict of interest to declare related to the present work. MG has no

conflicts of interest to disclose. NR has no conflict of interest to declare related to the present work. He received grants from Boehringer Ingelheim, Novartis, GSK and Pfizer to Institution. He received speaker or advisory board fees from Boehringer Ingelheim, AstraZeneca, GSK, Novartis, Sanofi, Chiesi, Pfizer, Novartis, Teva, Bayer, Austral, Biosency, Zambon, MSD, Menarini outside the submitted work. AP has no conflict of interest to declare related to the present work. P-OG has no conflict of interest to declare related to the present work. He received grants from AstraZeneca. He received speaker or advisory board fees from AstraZeneca, GSK, Sanofi, Chiesi, outside the submitted work. AB has no conflict of interest to declare related to the present work. NM has no conflict of interest to declare related to the present work. PB reports grants and personal fees from AstraZeneca, Menarini, personal fees from Sanofi, personal fees from Chiesi, grants from AVAD, grants from FRM, grants from AstraZeneca.

Supplementary info

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Review

Eur Respir Rev

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. 2024 Dec 18;33(174):240221.

doi: 10.1183/16000617.0221-2024. Print 2024 Oct.

[The epithelial era of asthma research: knowledge gaps and future direction for patient care](#)

[Christopher E Brightling](#)^{1,2}, [Gianni Marone](#)^{3,4,2}, [Helena Aegerter](#)^{5,6}, [Pascal Chanez](#)⁷, [Enrico Heffler](#)^{8,9}, [Ian D Pavord](#)¹⁰, [Klaus F Rabe](#)^{11,12}, [Lena Uller](#)¹³, [Del Dorscheid](#)¹⁴; [Epithelial Science Expert Group](#)

Collaborators, Affiliations Expand

- PMID: 39694589
- PMCID: [PMC11653196](#)
- DOI: [10.1183/16000617.0221-2024](#)

Abstract

The Epithelial Science Expert Group convened on 18-19 October 2023, in Naples, Italy, to discuss the current understanding of the fundamental role of the airway epithelium in asthma and other respiratory diseases and to explore the future direction of patient care. This review summarises the key concepts and research questions that were raised. As an introduction to the epithelial era of research, the evolution of asthma management throughout the ages was discussed and the role of the epithelium as an immune-functioning organ was elucidated. The role of the bronchial epithelial cells in lower airway diseases beyond severe asthma was considered, as well as the role of the epithelium in upper airway diseases such as chronic rhinosinusitis. The biology and application of biomarkers in patient care was also discussed. The Epithelial Science Expert Group also explored future research needs by identifying the current knowledge and research gaps in asthma management and ranking them by priority. It was identified that there is a need to define and support early assessment of asthma to characterise patients at high risk of severe asthma. Furthermore, a better understanding of asthma progression is required. The development of new treatments and diagnostic tests as well as the identification of new biomarkers will also be required to address the current unmet needs. Finally, an increased understanding of epithelial dysfunction will determine if we can alter disease progression and achieve clinical remission.

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Conflict of interest statement

Conflict of interest: C.E. Brightling has received grants and consultancy fees from 4D Pharma, Areteia, AstraZeneca, Chiesi, Genentech, GSK, Mologic, Novartis, Regeneron Pharmaceuticals, Roche and Sanofi. G. Marone has received consulting fees from AstraZeneca. H. Aegerter has received fees from AstraZeneca and speaker fees from GSK. P. Chanez has received consultancy fees from AstraZeneca, Boehringer Ingelheim, Boston Scientific, Chiesi, GSK, Novartis, Sanofi, SNCF and Teva Pharmaceuticals; has received fees for advisory boards from AB Science, ALK, Argenx, AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, Novartis, Sanofi and Teva Pharmaceuticals; has received fees from ALK, AstraZeneca, Boehringer Ingelheim, Boston Scientific, Chiesi, GSK, Novartis and Teva Pharmaceuticals; and has received grants from ALK, AstraZeneca, Boehringer Ingelheim, Boston Scientific, Novartis and Roche. E. Heffler has received speaker fees from Almirall, AstraZeneca, Celltrion, Chiesi, GSK, Novartis, Regeneron Pharmaceuticals, Sanofi and Stallergenes Greer. I.D. Pavord has received speaker's fees from Aerocrine, AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, Novartis, Sanofi and Regeneron Pharmaceuticals; has received fees for attending advisory panels from Almirall, AstraZeneca, Boehringer Ingelheim, Dey Pharma, GSK, MSD, Napp Pharmaceuticals, Novartis, Regeneron Pharmaceuticals, Sanofi and Schering-

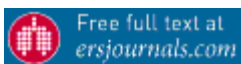
Plough; and has received sponsorship from AstraZeneca, Boehringer Ingelheim, Chiesi, GSK and Napp Pharmaceuticals. K.F. Rabe has received fees for lectures, presentations, manuscript writing, attendance at speakers' bureaus, and educational events from AstraZeneca, Berlin-Chemie, Boehringer Ingelheim, Chiesi, GSK, Novartis, Regeneron Pharmaceuticals, Roche Pharma and Sanofi; and has received fees for advisory board participation from AstraZeneca, Boehringer Ingelheim, Regeneron Pharmaceuticals and Sanofi. L. Uller has received fees for activities within AstraZeneca Nordic; is part of the UPSTEAM investigator-driven study and has received research funding for Epitez explorative study. D. Dorscheid is supported by the following grants and clinical trials: AstraZeneca, British Columbia Lung Association, Canadian Institutes of Health Research, Michael Smith Foundation for Health Research, Teva Pharmaceuticals and Sanofi Regeneron. He has received speaking fees, travel grants, unrestricted project grants and writing fees and is a paid consultant via ad boards and other mechanisms for AstraZeneca, GSK, Novartis Canada, Sanofi Regeneron and Valeo Pharma.

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Thorax

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. 2024 Dec 18:thorax-2024-221977.

doi: 10.1136/thorax-2024-221977. Online ahead of print.

[Effects of azithromycin in severe eosinophilic asthma with concomitant monoclonal antibody treatment](#)

[Gabriel Lavoie](#)¹, [Imran Howell](#)¹, [James Melhorn](#)¹, [Catherine Borg](#)¹, [Laura Bermejo-Sanchez](#)¹, [Jack Seymour](#)¹, [Maisha F Jabeen](#)¹, [Anastasia Fries](#)¹, [Gareth Hynes](#)¹, [Ian D Pavord](#)¹, [Nayia Petousi](#)¹, [Timothy Sc Hinks](#)²

Affiliations Expand

- PMID: 39694544
- DOI: [10.1136/thorax-2024-221977](https://doi.org/10.1136/thorax-2024-221977)

Free article

Abstract

Macrolides reduce exacerbations when added to inhaled therapy in severe asthma. However, there is little published evidence for effectiveness in patients treated with biologics. We conducted a retrospective audit of all patients who started azithromycin while on biologics in our centre. Compared with those that did not start azithromycin, these individuals had more exacerbations and a phenotype of chronic bronchitis and/or frequent purulent exacerbations. The addition of azithromycin to biologics was associated with reduced annual rates of steroid-treated and antibiotic-treated exacerbations and improved symptom scores (Asthma Control Questionnaire-5) but not with any improvement in lung function. Data support testing azithromycin in clinical trials in patients on biologics with residual exacerbations.

Keywords: Asthma; Asthma Pharmacology; Bacterial Infection; Respiratory Infection.

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Conflict of interest statement

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J Asthma

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. 2024 Dec 18:1-14.

doi: 10.1080/02770903.2024.2444319. Online ahead of print.

[Comparison of Airway Inflammation Characteristics Detected by Lower Exhaled Nitric Oxide in Cough Variant Asthma, Non-Asthmatic Eosinophilic Bronchitis, and Classic Asthma](#)

[Li Zhang](#)¹, [Alimire Aierken](#)¹, [Ran Dong](#)¹, [Mengru Zhang](#)^{1,2}, [Qiang Chen](#)¹, [Zhongmin Qiu](#)¹

Affiliations Expand

- PMID: 39693523
- DOI: [10.1080/02770903.2024.2444319](#)

Abstract

Objective: To investigate the inflammatory profiles of non-asthmatic eosinophilic bronchitis (NAEB), cough variant asthma (CVA), and classic asthma (CA) using fractional exhaled nitric oxide (FeNO) analysis to identify their unique inflammatory phenotypes.

Methods: This study involved cough patients newly diagnosed, corticosteroid-naïve with CVA (n = 68), NAEB (n = 53), and CA (n = 49). FeNO measurements at exhalation flow rates of 50 mL/s (FeNO₅₀) and 200 mL/s (FeNO₂₀₀) were conducted. The concentration of alveolar nitric oxide (CaNO) was calculated using a two-compartment model. Inflammatory mediators in induced sputum were also analyzed across the groups.

Results: Significant differences in FeNO₅₀, FeNO₂₀₀, and CaNO levels were observed among the three groups (all $P < 0.001$). Compared to NAEB, CVA patients demonstrated significantly higher FeNO₅₀ levels (27.5 [interquartile range, IQR: 12.0 - 33.0] ppb vs. 16.0 [IQR: 12.5 - 22.0] ppb; $P = 0.008$) but lower CaNO levels (2.6 [IQR: 1.0 - 4.3] ppb vs. 3.7 [IQR: 2.3 - 6.1] ppb; $P = 0.009$). CA exhibited the highest levels of FeNO₅₀, FeNO₂₀₀, and CaNO compared to both NAEB and CVA (all $P < 0.01$). In CVA, FeNO₅₀ positively correlated with sputum eosinophils, IL-4, and LTC₄, whereas NAEB showed elevated CaNO levels with higher sputum eosinophils, IL-5, and PGE₂ (all $P < 0.05$).

Conclusions: Inflammation predominantly affects the central airways in CVA and the peripheral airways in NAEB, with a more uniform distribution across the airway in CA. These discrepancies in airway inflammation may suggest distinct cough mechanisms in CVA, NAEB, and CA.

Keywords: Airway inflammation; classic asthma; cough variant asthma; fractional exhaled nitric oxide; non-asthmatic eosinophilic bronchitis.

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. 2024 Dec 17:100277.

doi: 10.1016/j.clinme.2024.100277. Online ahead of print.

[Management of asthma in pregnancy](#)

[C E Jones](#)¹, [Y Jamil](#)²

Affiliations Expand

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- DOI: [10.1016/j.clinme.2024.100277](https://doi.org/10.1016/j.clinme.2024.100277)

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Abstract

Asthma is the most common chronic disease to affect pregnant women and can have a significant effect on pregnancy outcomes with increased rates of preterm birth, premature delivery and caesarean section observed if poorly controlled. Pregnancy can also influence asthma control. Prescribing in pregnancy causes

anxiety for patients and healthcare professionals and can result in alteration or undertreatment of asthma. Good asthma control with prompt and adequate management of exacerbations is key to reducing adverse pregnancy outcomes for both mother and fetus. The majority of asthma treatment can be continued as normal in pregnancy and there is emerging evidence of the safety of biologic medications also. This article aims to summarise the current evidence about asthma in pregnancy and guide the appropriate management of this population.

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Conflict of interest statement

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

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Respir Investig

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. 2024 Dec 16;63(1):118-126.

doi: 10.1016/j.resinv.2024.12.010. Online ahead of print.

[Assessing the utility of fractional exhaled nitric oxide-guided management in adult patients with asthma: A systematic review and meta-analysis](#)

[Hiroaki Tsurumaki¹](#), [Yuki Abe²](#), [Keiji Oishi³](#), [Tadao Nagasaki⁴](#), [Tomoko Tajiri⁵](#)

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- DOI: [10.1016/j.resinv.2024.12.010](https://doi.org/10.1016/j.resinv.2024.12.010)

Abstract

Background: Fractional exhaled nitric oxide (FeNO) has been utilized as a reliable biomarker for diagnosis, treatment response, and prediction of future risks in asthma care, that potentially ensures the efficacy of FeNO-guided asthma management. As previous systematic reviews reported limited efficacy with this approach, we evaluated the efficacy of FeNO-guided management in monitoring adults with asthma.

Methods: In this systematic review and meta-analysis according to the Preferred Reporting Items for Systematic Review and Meta-Analyses Statement and the Minds Manual for Guideline Development, we updated a Cochrane systematic review in 2016 by adding six papers reporting randomized controlled trials with a treatment duration ≥ 12 weeks published between June 2016 and July 2022, and conducted a sub-analysis of two groups stratified by the strategy used: the FeNO-alone and FeNO with symptom score groups.

Results: In thirteen RCTs included, FeNO-guided management improved the numbers of participants with one or more asthma exacerbations and the number of exacerbations per 52 weeks. Compared with conventional management, FeNO-guided management marginally improved asthma control questionnaire scores and decreased inhaled corticosteroid doses. In contrast, FeNO-guided management did not improve severe exacerbations requiring oral corticosteroids or hospitalization, percent predicted forced expiratory volume in 1 s, FeNO levels, or asthma-related quality of life scores. Subgroup analysis revealed that, compared with conventional management, both FeNO-symptom score- and FeNO alone-based management decreased the number of asthma exacerbations.

Conclusion: FeNO-guided management can effectively reduce exacerbations in adults with asthma.

Keywords: Asthma; Exacerbation; Fractional exhaled nitric oxide; Meta-analysis; Systematic review.

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Conflict of interest statement

Declaration of competing interest The authors have no conflict of interest to declare.

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. 2024 Dec 16;10(6):00222-2024.

doi: 10.1183/23120541.00222-2024. eCollection 2024 Nov.

[Association of blood inflammatory phenotypes and asthma burden in children with moderate-to-severe asthma](#)

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Affiliations Expand

- PMID: 39687398
- PMCID: [PMC11647938](#)
- DOI: [10.1183/23120541.00222-2024](#)

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Abstract

Background: Underlying immunological mechanisms in children with moderate-to-severe asthma are complex and unclear. We aimed to investigate the association between blood inflammatory parameters and asthma burden in children with moderate-to-severe asthma.

Methods: Blood inflammatory parameters (eosinophil and neutrophil counts and inflammatory mediators using multiplex immunoassay technology) were measured

in children (6-17 years) with moderate-to-severe asthma from the SysPharmPediA cohort across four European countries. Based upon low/high blood eosinophil (LBE/HBE) counts of $</\geq 0.3 \times 10^9 \cdot L^{-1}$, respectively and low/high blood neutrophil (LBN/HBN) counts of $</\geq 4 \times 10^9 \cdot L^{-1}$, respectively, mixed (HBE-HBN), eosinophilic (HBE-LBN), neutrophilic (LBE-HBN) and paucigranulocytic (LBE-LBN) phenotypes were defined. Inflammatory mediator profiles and burden of disease (asthma control status, exacerbations and school days missed in the past year) were compared between phenotypes using adjusted logistic regression models.

Results: Among 126 included children (41% girls and mean (sd) age of 11.94 (2.76)), 22%, 44%, 11% and 23% were classified as mixed, eosinophilic, neutrophilic and paucigranulocytic phenotypes, respectively. Neutrophilic children had the lowest lung function (forced expiratory volume in 1 s % predicted pre-salbutamol) compared with other groups. Children with mixed asthma were most often uncontrolled and had the highest asthma-related school absence in the past year. Interleukin (IL)-6 and matrix metalloproteinase-9 levels were significantly higher in patients with mixed or neutrophilic asthma, whereas tissue inhibitor of metalloproteinase-2 was lower in patients with neutrophilic asthma compared with eosinophilic or paucigranulocytic asthma. IL-5 was increased in eosinophilic group compared with the neutrophilic and paucigranulocytic groups, irrespective of the chosen cut-off for eosinophilia.

Conclusion: Differences in asthma burden-related clinical expression and distinct blood inflammatory mediator profiles were found between phenotypes, highlighting implications for optimising personalised treatment and management strategies in children with moderate-to-severe asthma.

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Conflict of interest statement

Conflict of interest: A.H. Alizadeh Bahrani, S.J.H. Vijverberg, S. Hashimoto, C. Wolff, C. Almqvist, S. Brandstetter, P. Corcuera-Elosegui, S. Harner, A.M. Hedman, L. López-Fernández, A.D. Kraneveld, O. Sardón-Prado, B.S. Dierdop, T. Dekker, N.K.A. Metwally, R. Lutter and P. Brinkman have no conflicts of interest to disclose. L.D. Bloemsmma received funding from partners in the Precision Medicine for More Oxygen (P4O2) consortium, which are the Amsterdam UMC, Leiden University Medical Center, Maastricht UMC+, Maastricht University, UMC Groningen, UMC Utrecht, Utrecht University, TNO, Aparito, Boehringer Ingelheim, Breathomix, Clear, Danone Nutricia Research, Fluida, MonitAir, Ncardia, Ortec Logiqcare, Philips, Proefdiervrij, Quantib-U, RespiQ, Roche, Smartfish, SODAQ, Thirona, TopMD, Lung Alliance Netherlands, the Lung Foundation Netherlands (Longfonds), PPP Allowance made available by Health~Holland, and Top Sector Life Sciences and Health (LSHM20104 and LSHM20068), to stimulate public-private partnerships and by Novartis. M. Gorenjak received SysPharmPediA grant, cofinanced by the Ministry of Education, Science and Sport Slovenia (MIZS) (contract number C3330-16-500106) and funded by the Slovenian Research Agency (research core funding number P3-0427), and by the Ministry of Education, Science and Sport of the Republic of Slovenia grant PERMEABLE (contract number C3330-19-252012). M. Kabesch received funding from Bundesministerium für Bildung und Forschung (BMFB) grant SysPharmPediA, European Union, BMFB, German Research Foundation, Infectopharm, Bavarian Minsitry of Education and Research, and Bavarian Ministry of Health. He received consulting fees from Bionorica, Sanofi,

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Review

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. 2024 Dec 16;10(6):00014-2024.

doi: 10.1183/23120541.00014-2024. eCollection 2024 Nov.

[Digital markers of asthma exacerbations: a systematic review](#)

[Brenda Cokorudy¹](#), [Jeff Harrison¹](#), [Amy Hai Yan Chan¹](#)

Affiliations Expand

- PMID: 39687395

- PMID: [PMC11647917](#)
- DOI: [10.1183/23120541.00014-2024](#)

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Abstract

Background and objective: With the increase in use of digital technologies, there is growing interest in digital markers, where technology is used to detect early markers of disease deterioration. The aim of this systematic review is to summarise the evidence relating to digital markers of asthma exacerbations.

Methods: A systematic search of the following databases was conducted, using key search terms relating to asthma, digital and exacerbations: Ovid MEDLINE, EMBASE, Psycinfo, Cochrane Database of Systematic Reviews and Cochrane Central Register of Controlled Trials. Studies that aimed to explore the relationship between any digitally measured marker and asthma exacerbations using any form of portable digital sensor technology were included.

Results: 23 papers were included. The digital markers related to five key categories: environmental, physiological, medication, lung function and breath-related parameters. The most commonly studied marker was lung function, which was reported in over half (13 out of 23) of the papers. However, studies were conflicting in terms of the use of lung function parameters as a predictor of asthma exacerbations. Medication parameters were measured in over a third of the studies (10 out of 23) with a focus on short-acting β -agonist (SABA) use as a marker of exacerbations. Only four and two studies measured heart rate and cough, respectively; however, both parameters were positively associated with exacerbations in all reported studies.

Conclusion: Several digital markers are associated with asthma exacerbations. This suggests a potential role for using parameters such as heart rate, SABA use and, potentially, cough as digital markers of asthma exacerbations.

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Conflict of interest statement

Conflict of interest: A.H.Y. Chan reports research grants from the Health Research Council of New Zealand, Asthma UK, the University of Auckland, the Oakley Mental Health Foundation, Chorus Ltd, the World Health Organization and Hong Kong University, and consultancy fees from Breathing and Medical Ltd, outside the submitted work and all paid to her institution (the University of Auckland). She is the previous holder of a Robert Irwin Postdoctoral Fellowship and current recipient of the Auckland Medical Research Foundation Senior Research Fellowship. A.H.Y. Chan is affiliated with the Asthma UK Centre of Applied Research, and also reports consultancy fees from AcademyeX and Spoonful of Sugar Ltd, and is a Board member of Asthma NZ, an international member of the Pharmacy Respiratory Task Force Australia, a member of the Respiratory Effectiveness Group and working

group lead for ERS “CONNECT”. Conflict of interest: All other authors declare no relevant conflicts of interest.

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. 2024 Dec 16;10(6):00568-2024.

doi: 10.1183/23120541.00568-2024. eCollection 2024 Nov.

[Maintenance oral steroids are not required in severe asthma](#)

[Emma Rebecca Graham](#)¹, [Chellan Eames](#)¹, [Wint Soe](#)¹, [Lauren Fox](#)¹, [Ciara Whitfield](#)¹, [Sumita Kerley](#)¹, [Ma Pantaleon](#)¹, [Jodi McCreery](#)¹, [Peter Cook](#)¹, [Anna Freeman](#)^{1,2}, [Hans Michael Haitchi](#)^{1,2,3,4}, [Ramesh Kurukulaaratchy](#)^{1,2,3}, [Paddy Dennison](#)¹, [Anneliese Day](#)¹, [J J Hudson-Colby](#)¹, [Nadia Zarif](#)⁵, [Hitasha Rupani](#)^{1,2,3}

Affiliations Expand

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- PMCID: [PMC11647928](#)
- DOI: [10.1183/23120541.00568-2024](#)

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Abstract

Protocol-guided multidisciplinary team supported steroid weaning is effective in reducing maintenance OCS use in most biologic-naïve patients with severe asthma, supporting the concept that maintenance OCS are inappropriate treatments for severe asthma <https://bit.ly/4cgrJEL>.

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Conflict of interest statement

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. 2024 Dec 16;10(6):00188-2024.

doi: 10.1183/23120541.00188-2024. eCollection 2024 Nov.

[Long-term dupilumab efficacy in type 2 asthma regardless of baseline characteristics](#)

[Michael E Wechsler](#)¹, [Linda Rogers](#)², [G Walter Canonica](#)^{3,4}, [Arnaud Bourdin](#)⁵, [Arman Altincatal](#)⁶, [Megan Hardin](#)⁶, [Xavier Soler](#)⁷, [Paul J Rowe](#)⁸, [Yamo Deniz](#)⁷, [Harry Sacks](#)⁷, [Juby A Jacob-Nara](#)⁸

Affiliations Expand

- PMID: 39687390
- PMCID: [PMC11647966](#)
- DOI: [10.1183/23120541.00188-2024](#)

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Abstract

The TRAVERSE study demonstrated the long-term efficacy of dupilumab for the treatment of patients with uncontrolled, moderate-to-severe, type 2 asthma across a range of baseline demographics and disease characteristics up to 96 weeks <https://bit.ly/3XSwX62>.

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Conflict of interest statement

Conflict of interest: M.E. Weschler reported personal fees from AstraZeneca, Boehringer Ingelheim, Equillium, Gala Therapeutics, Genentech, Genzyme, Mylan, Novartis, Pulmatrix, Regeneron Pharmaceuticals Inc., resTORbio, Sentien Biotechnologies and Teva; and grants and personal fees from GSK and Sanofi. **Conflict of interest:** L. Rogers reported research support from American Lung Association, NIH and Sanofi; consultancy for AstraZeneca, Genentech, Novartis and Sanofi; and payments for organising educational events from AstraZeneca and Genentech. **Conflict of interest:** G.W. Canonica reported speaker fees from ALK, AstraZeneca, Boehringer Ingelheim, GSK, HAL Allergy, Menarini, Mundipharma, Novartis, Regeneron Pharmaceuticals Inc., Sanofi, Stallergenes Greer and Uriach; and advisory board membership for ALK, AstraZeneca, Boehringer Ingelheim, GSK, HAL Allergy, Menarini, Mundipharma, Novartis, Regeneron Pharmaceuticals Inc., Sanofi, Stallergenes Greer and Uriach. **Conflict of interest:** A. Bourdin reported nonfinancial support during the conduct of the study from GSK; other support from Acceleron Pharma, Actelion, Galapagos, Merck Sharp & Dohme, Nuaira, Pulmonx, United Therapeutics and Vertex Pharmaceuticals; grants and personal fees from Boehringer Ingelheim; and personal fees from AstraZeneca, Chiesi, GSK, Regeneron Pharmaceuticals Inc. and Sanofi. **Conflict of interest:** A. Altincatal, M. Hardin, P.J. Rowe and J.A. Jacob-Nara are employees of Sanofi, and may hold stock and/or stock options in the company. **Conflict of interest:** X. Soler and Y. Deniz are employees and shareholders of Regeneron Pharmaceuticals Inc. **Conflict of interest:** H. Sacks is an employee of Regeneron Pharmaceuticals Inc. and a shareholder in Optimose.

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Review

Allergy Asthma Clin Immunol

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. 2024 Dec 16;20(Suppl 3):66.

doi: 10.1186/s13223-024-00935-2.

[Allergen immunotherapy](#)

[Jean-Nicolas Boursiquot](#)¹, [Rémi Gagnon](#)², [Jaclyn Quirt](#)³, [Anne K Ellis](#)⁴

Affiliations Expand

- PMID: 39681846
- DOI: [10.1186/s13223-024-00935-2](#)

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Abstract

Allergen immunotherapy (AIT) is a potentially disease-modifying therapy that is effective for the treatment of allergic rhinitis/conjunctivitis, allergic asthma and stinging insect hypersensitivity. The decision to proceed with AIT should be made on a case-by-case basis, based on a comprehensive evaluation of the patient, allergy testing and a thorough discussion with the patient about treatment goals, risks vs. benefits, and long-term commitment to the treatment plan. For those with allergic rhinitis and/or asthma, it is also important to consider individual patient factors, such as the degree to which symptoms can be reduced by avoidance measures and pharmacological therapy, the amount and type of medication required to control symptoms, the adverse effects of pharmacological treatment, and patient preferences. Since AIT is associated with a risk of anaphylaxis, it should only be prescribed by physicians who are adequately trained in the treatment of allergic conditions. Furthermore, for subcutaneous therapy, injections must be given under medical supervision in clinics that are equipped to manage anaphylaxis. In this article, we review the indications and contraindications, patient selection criteria, and details regarding the administration, safety and efficacy of AIT for allergens other than foods. Immunotherapy for food allergy will be discussed in the Oral Immunotherapy article in this supplement.

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Conflict of interest statement

Declarations. Ethics approval and consent to participate: Not applicable. Consent to publish: Not applicable. Competing interests: Dr. Jean-Nicolas Boursiquot has received consulting fees or honoraria for continuing education from AstraZeneca, Pfizer, Medexus and Bausch & Lomb. Dr. Rémi Gagnon has served as a speaker and/or advisor for ALK-Abello, AstraZeneca, Aralez, CSL Behring, GlaxoSmithKline, Merck, Novartis, Pediapharm, Pfizer, Sanofi, and Shire and as an investigator for AstraZeneca, Biocryst, DBV, GlaxoSmithKline, Green Cross Pharmaceuticals, Merck, Novartis, Regeneron, Shire, Stallergenes, and Sanofi Genzyme/Regeneron.

Dr. Jaclyn Quirt has participated in advisory boards for Aralez and Sanofi. Dr. Anne K. Ellis has participated in advisory boards for ALK-Abello, AstraZeneca, Bausch Health, LEO Pharma, Miravo, Merck, Novartis, has been a speaker for ALK-Abello, AstraZeneca, Bausch, Miravo, Medexus, Mylan, Novartis, Pfizer, Sanofi, StallergenesGreer and Regeneron. Her institution has received research grants from ALK Abello, Aralez, AstraZeneca, Bayer LLC, Medexus, Novartis, Sanofi and Regeneron. She has also served as an independent consultant to Bayer LLC, Pharming, and Regeneron. About this supplement: This article has been published as part of Allergy, Asthma & Clinical Immunology, Volume 20 Supplement 03, 2024: Practical Guide for Allergy and Immunology in Canada 2024. The full contents of the supplement are available at <https://aacijournal.biomedcentral.com/articles/supplements/volume-20-supplement-3>

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Am J Respir Crit Care Med

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. 2024 Dec 16.

doi: 10.1164/rccm.202411-2236LE. Online ahead of print.

[Limitations in the Study of Vitamin D Supplementation and Severe Asthma Exacerbations](#)

[Kuan-Po Cheng](#)¹, [James Cheng-Chung Wei](#)^{2 3 4 5}

Affiliations Expand

- PMID: 39680958

- DOI: [10.1164/rccm.202411-2236LE](https://doi.org/10.1164/rccm.202411-2236LE)

No abstract available

Keywords: Environmental Medicine; PM2.5 Exposure; Pediatric Asthma; Severe Asthma Exacerbation; Vitamin D Supplementation.

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Allergy

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. 2024 Dec 16.

doi: 10.1111/all.16436. Online ahead of print.

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

[I Agache¹](#), [I M Adcock²](#), [C A Akdis³](#), [M Akdis³](#), [G Bentabol-Ramos⁴](#), [M van den Berge⁵](#), [C Boccabella⁶](#), [W G Canonica^{7,8}](#), [C Caruso⁹](#), [M Couto¹⁰](#), [I Davila¹¹](#), [D Drummond¹²](#), [J Fonseca¹³](#), [A Gherasim¹⁴](#), [S Del Giacco¹⁵](#), [D J Jackson¹⁶](#), [M Jutel^{17,18}](#), [A Licari¹⁹](#), [S Loukides²⁰](#), [A Moreira^{21,22,23}](#), [M Mukherjee²⁴](#), [I Ojanguren²⁵](#), [O Palomares²⁶](#), [A Papi²⁷](#), [L Perez de Llano²⁸](#), [O J Price^{29,30}](#), [M Rukhazde^{31,32}](#), [M H Shamji^{33,34}](#), [D Shaw³⁵](#), [S Sanchez-Garcia³⁶](#), [A Testera-Montes³⁷](#), [M J Torres³⁷](#), [I Equiluz-Gracia³⁷](#)

Affiliations Expand

- PMID: 39676750
- DOI: [10.1111/all.16436](https://doi.org/10.1111/all.16436)

Abstract

As cholinergic innervation is a major contributor to increased vagal tone and mucus secretion, inhaled long-acting muscarinic antagonists (LAMA) are a pillar for the treatment of chronic obstructive pulmonary disease and asthma. By blocking the

muscarinic receptors expressed in the lung, LAMA improve lung function and reduce exacerbations in asthma patients who remained poorly controlled despite treatment with inhaled corticosteroids and long-acting β 2 agonists. Asthma guidelines recommend LAMA as a third controller to be added on before the initiation of biologicals. In addition to bronchodilation, LAMA also exert anti-inflammatory and anti-fibrotic effects by inhibiting muscarinic receptors present in neutrophils, macrophages, fibroblasts and airway smooth muscle cells. Thus, besides bronchodilation, LAMA might provide additional therapeutic effects, thereby supporting an endotype-driven approach to asthma management. The Position Paper, developed by the Asthma Section of the European Academy of Allergy and Clinical Immunology, discusses the main cholinergic pathways in the lung, reviews the findings of significant clinical trials and real-life studies on LAMA use in asthma, examines the placement of these drugs in asthma clinical guidelines, and considers the potential for personalised medicine with LAMA in both adult and paediatric asthma patients.

Keywords: acetylcholine; asthma; bronchodilator; endotype; long-acting muscarinic antagonists; precision medicine.

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J Pharm Pract

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. 2024 Dec 15:8971900241308623.

doi: 10.1177/08971900241308623. Online ahead of print.

[Letter re: Why Bisoprolol? A Neglected Beta-Blocker in the U.S](#)

[Kazuhiko Kido](#)¹, [Maya Guglin](#)²

Affiliations Expand

- PMID: 39675838
- DOI: [10.1177/08971900241308623](https://doi.org/10.1177/08971900241308623)

No abstract available

Keywords: COPD; asthma; bisoprolol; erectile dysfunction; heart failure.

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Environ Res

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. 2024 Dec 15;263(Pt 1):120068.

doi: [10.1016/j.envres.2024.120068](https://doi.org/10.1016/j.envres.2024.120068). Epub 2024 Sep 27.

[Does living close to allergenic street trees affect lung function in German adults?](#)

[Clemens Baumbach](#)¹, [Ursula Berger](#)², [Katja Radon](#)¹, [Dennis Nowak](#)³, [Joachim Heinrich](#)⁴

Affiliations Expand

- PMID: 39341534
- DOI: [10.1016/j.envres.2024.120068](https://doi.org/10.1016/j.envres.2024.120068)

Free article

Abstract

Introduction: Studies on greenspace and lung function in adults produced divergent results. Some of the adverse findings could be due to long-term exposure to allergenic tree pollen. We investigated whether having more birch trees or more allergenic trees around home is related to worse lung function and whether these exposures confound the association between greenspace and lung function.

Methods: The analytic sample consisted of 874 adults aged 20-44 years at baseline from the German study centers, Erfurt and Hamburg, of the ECRHS cohort study. Spirometric lung function was measured in 1991/92, 2000/01, and 2011/12. We counted trees based on tree registries and classified them into allergenic and non-allergenic. We assessed exposure to greenspace with the normalized difference vegetation index (NDVI), tree cover density, and total number of trees in a 300 m buffer around home. Linear mixed models were used.

Results: The forced expiratory volume in 1 s (FEV₁) and the forced vital capacity (FVC) were decreased in the presence of more birch trees after adjusting for confounders and co-exposures. For every 10 additional birch trees in a 300 m buffer around home, the average change in FEV₁ was -27.6 mL (95% confidence interval (CI): [-58.7, 3.5]). For FVC the average change was -28.2 mL (95% CI: [-62.0, 5.6]). No consistent associations were found for allergenic trees, total trees, tree cover density, or NDVI. Unlike other associations, those of birch trees with FEV₁ and FVC were not moderated by allergic sensitization to birch pollen, history of asthma symptoms or nasal allergies including hay fever, ozone, NO₂, or age.

Discussion: Living close to birch trees had an adverse long-term association with lung function. That tree registries were limited to street trees prevented us from answering the question of a potential confounding of greenspace effects by allergenic neighborhood trees.

Keywords: Birch trees; Epidemiology; Greenness; NDVI; Spirometry; Tree cover density.

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Conflict of interest statement

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

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Editorial

Am J Respir Crit Care Med

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. 2024 Dec 15;210(12):1389-1390.

doi: 10.1164/rccm.202406-1244ED.

[Breaking up Mucus Plugs in Asthma](#)

[William W Busse](#)¹, [Nizar N Jarjour](#)¹

Affiliations Expand

- PMID: 39093594
- DOI: [10.1164/rccm.202406-1244ED](https://doi.org/10.1164/rccm.202406-1244ED)

No abstract available

Comment on

- [Increased Muc5AC and Decreased Ciliated Cells in Severe Asthma Partially Restored by Inhibition of IL-4R \$\alpha\$ Receptor.](#)

Boomer J, Choi J, Alsup A, McGregor MC, Lieu J, Johnson C, Hall C, Shi X, Kim T, Goss C, Lew D, Christensen S, Woodruff P, Hastie A, Mauger D, Wenzel SE, Hoffman E, Schechtman KB, Castro M. Am J Respir Crit Care Med. 2024 Dec 15;210(12):1409-1420. doi: 10.1164/rccm.202307-1266OC. PMID: 38935626

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Am J Respir Crit Care Med

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. 2024 Dec 15;210(12):1409-1420.

doi: 10.1164/rccm.202307-1266OC.

[Increased Muc5AC and Decreased Ciliated Cells in Severe Asthma Partially Restored by Inhibition of IL-4R \$\alpha\$ Receptor](#)

[Jonathan Boomer](#)¹, [Jiwoong Choi](#)¹, [Alexander Alsup](#)¹, [Mary Clare McGregor](#)², [Julia Lieu](#)², [Cooper Johnson](#)², [Chase Hall](#)¹, [Xiaosong Shi](#)¹, [Taewon Kim](#)¹, [Charles Goss](#)³, [Daphne Lew](#)³, [Stephanie Christensen](#)⁴, [Prescott Woodruff](#)⁴, [Annette Hastie](#)⁵, [David Mauger](#)⁶, [Sally E Wenzel](#)⁷, [Eric Hoffman](#)⁸, [Kenneth B Schechtman](#)³, [Mario Castro](#)¹

Affiliations Expand

- PMID: 38935626
- DOI: [10.1164/rccm.202307-1266OC](#)

Abstract

Rationale: The role of IL-13 on the airway epithelium in severe asthma leading to airway remodeling remains poorly understood. **Objectives:** To study IL-13-induced airway remodeling on goblet cells and cilia in the airway epithelium in severe asthma and the impact of an anti-IL4R α antibody, dupilumab, *in vitro*. **Methods:** Quantitative computed tomography of the lungs and endobronchial biopsies and brushings were obtained in 51 participants (22 with severe asthma, 11 with nonsevere asthma, and 18 healthy participants) in SARPIII (Severe Asthma Research Program III) and measured for mucin and cilia-related proteins. Epithelial cells were differentiated at air-liquid interface (ALI) with IL-13 with or without dupilumab and assessed for mucin, cilia, cilia beat frequency (CBF), and epithelial integrity (transepithelial electrical resistance [TEER]). **Measurements and Main Results:** Increased Muc5AC (mucin 5AC) ($\Delta + 263.2 \pm 92.7$ luminosity/epithelial area) and decreased ciliated cells ($\Delta - 0.07 \pm 0.03$ Foxj1⁺ cells/epithelial area) were observed in biopsies from patients with severe asthma when compared with healthy control subjects ($P < 0.01$ and $P = 0.047$, respectively). RNA sequencing of endobronchial cell brushings confirmed a *Muc5AC* increase with a decrease in a five-gene cilia-related mean in patients with severe asthma compared with healthy subjects (all $P < 0.05$). IL-13 (5 ng/ml)-differentiated ALI cultures of healthy and asthmatic samples (from participants with severe and nonsevere asthma) increased Muc5AC, decreased cilia (α -aceyt-tubulin) in samples from healthy participants ($\Delta +$

6.5% ± 1.5%, Δ - 14.1% ± 2.7%; all $P < 0.001$ respectively) and participants with asthma (Δ + 4.4% ± 2.5%, Δ - 13.1% ± 2.7%; $P = 0.084$, $P < 0.001$ respectively), and decreased epithelial integrity (TEER) in samples from healthy participants (-140.9 ± 21.3 [ohms], $P < 0.001$), while decreasing CBF in samples from participants with asthma (Δ - 4.4 ± 1.7 [Hz], $P < 0.01$). When dupilumab was added to ALI with IL-13, there was no significant decrease in Mu5AC, but there was restoration of cilia in healthy participants and participants with asthma (absolute increase of 67.5% and 32.5% cilia, all $P < 0.05$, respectively), whereas CBF increased (Δ + 3.6 ± 1.1 [Hz], $P < 0.001$) and TEER decreased (only in asthma, Δ - 37.8 ± 16.2 [ohms], $P < 0.05$). Conclusions: IL-13 drives features of airway remodeling in severe asthma, which are partially reversed by inhibiting the IL-4Rα receptor *in vitro*.

Keywords: airway remodeling; dupilumab; severe asthma.

Comment in

- [Breaking up Mucus Plugs in Asthma.](#)

Busse WW, Jarjour NN. Am J Respir Crit Care Med. 2024 Dec 15;210(12):1389-1390. doi: 10.1164/rccm.202406-1244ED. PMID: 39093594 No abstract available.

Supplementary info

MeSH terms, Substances, Grants and funding Expand

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

1

Review

Allergy

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. 2024 Dec 19.

doi: 10.1111/all.16429. Online ahead of print.

[Food Allergy Genetics and Epigenetics: A Review of Genome-Wide Association Studies](#)

[Aleix Arnau-Soler](#)¹²³⁴, [Bénédicte L Tremblay](#)⁵, [Yidan Sun](#)⁶⁷, [Anne-Marie Madore](#)⁵, [Mathieu Simard](#)⁵, [Elin T G Kersten](#)⁶⁷, [Ahla Ghauri](#)¹²³⁴, [Ingo](#)

[Marenholz](#)^{1 2 3}, [Thomas Eiwegger](#)^{8 9 10 11 12}, [Elinor Simons](#)¹³, [Edmond S Chan](#)¹⁴, [Kari Nadeau](#)¹⁵, [Vanitha Sampath](#)¹⁵, [Bruce D Mazer](#)¹⁶, [Susan Elliott](#)¹⁷, [Christine Hampson](#)¹⁸, [Lianne Soller](#)¹⁴, [Andrew Sandford](#)^{19 20}, [Philippe Begin](#)^{21 22}, [Jennie Hui](#)²³, [Bethany F Wilken](#)²⁴, [Jennifer Gerdtz](#)²⁵, [Adrienn Bourkas](#)²⁴, [Anne K Ellis](#)²⁶, [Denitsa Vasileva](#)^{19 20}, [Ann Clarke](#)²⁷, [Aida Eslami](#)²⁸, [Moshe Ben-Shoshan](#)²⁹, [David Martino](#)³⁰, [Denise Daley](#)^{19 20}, [Gerard H Koppelman](#)^{6 7}, [Catherine Laprise](#)⁵, [Young-Ae Lee](#)^{1 2 3 4}, [Yuka Asai](#)³¹

Affiliations Expand

- PMID: 39698764
- DOI: [10.1111/all.16429](https://doi.org/10.1111/all.16429)

Abstract

In this review, we provide an overview of food allergy genetics and epigenetics aimed at clinicians and researchers. This includes a brief review of the current understanding of genetic and epigenetic mechanisms, inheritance of food allergy, as well as a discussion of advantages and limitations of the different types of studies in genetic research. We specifically focus on the results of genome-wide association studies in food allergy, which have identified 16 genetic variants that reach genome-wide significance, many of which overlap with other allergic diseases, including asthma, atopic dermatitis, and allergic rhinitis. Identified genes for food allergy are mainly involved in epithelial barrier function (e.g., FLG, SERPINB7) and immune function (e.g., HLA, IL4). Epigenome-wide significant findings at 32 loci are also summarized as well as 14 additional loci with significance at a false discovery of $< 1 \times 10^{-4}$. Integration of epigenetic and genetic data is discussed in the context of disease mechanisms, many of which are shared with other allergic diseases. The potential utility of genetic and epigenetic discoveries is deliberated. In the future, genetic and epigenetic markers may offer ways to predict the presence or absence of clinical IgE-mediated food allergy among sensitized individuals, likelihood of development of natural tolerance, and response to immunotherapy.

Keywords: allergy; epigenetics; food allergy; genetics; inheritance.

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BMC Pulm Med

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. 2024 Dec 16;24(1):607.

doi: 10.1186/s12890-024-03414-x.

[The assessment of dupilumab in children with moderate-to-severe asthma and comorbid type 2 inflammatory diseases](#)

[Tingting Shi](#)^{#1}, [Shuning Wu](#)^{#2}, [Rongshan Chen](#)¹, [Yaping Xie](#)¹, [Genquan Yin](#)¹, [Chunhui He](#)¹, [Cuiping Liang](#)³, [Gen Lu](#)^{4 5}

Affiliations Expand

- PMID: 39681861
- DOI: [10.1186/s12890-024-03414-x](#)

Free article

Abstract

Background: Dupilumab inhibiting the signaling of interleukin(IL)-4 and IL-13 was recommended for the treatment of severe asthma in children ≥ 6 years old according to the Global Initiative for Asthma (GINA,2024).This study aimed to analyse the efficacy and safety of dupilumab in paediatric patients with moderate-to-severe asthma and comorbid type 2 inflammatory disease in a real-world population.

Methods: We evaluated the medical records of paediatric patients with moderate-to-severe asthma and comorbid type 2 inflammatory diseases, such as atopic dermatitis (AD) and allergic rhinitis (AR), receiving dupilumab treatment.

Results: Twenty-five children (16 boys; mean age, 9.32 ± 2.58 years) were included. All the patients were diagnosed with moderate-to-severe asthma, 92% (23/25) with AR, and 64.0% (16/25) with AD. Among the 25 patients, no severe adverse reactions occurred, the times of severe asthma exacerbation were significantly lower, and the Asthma Control Test (ACT) / Child-Asthma Control Test (C-ACT) scores were significantly higher than those before the 24-week dupilumab treatment (all $P = 0.00$). The Patient-Oriented Eczema Measure(POEM) and Peak Pruritus Numerical Rating Scale(NRS), Rhinitis Four-point, and Rhinitis Visual Analogue Scale(VAS) scores were significantly lower than those at baseline (all $P < 0.05$). After receiving

24-week dupilumab treatment, the serum total immunoglobulin E (tIgE) and fractional exhaled nitric oxide (FeNO) level were reduced by 56.54% and 70.47% respectively at the 24th week ($P = 0.00$); the lung function parameters including large airways such as percent predicted forced expiratory volume in one second ($FEV_{1\% \text{ pred}}$) and small airways like percent predicted forced expiratory flow at 25-75%, were significantly higher than those before dupilumab (all $P < 0.05$).

Conclusions: Dupilumab reduced asthma exacerbations and improved symptom control without severe adverse reactions in paediatric patients with moderate-to-severe asthma and comorbid type 2 inflammatory diseases. It also decreased biomarkers of type 2 inflammation and improved lung function parameters, including both large and small airways. Considering the racial diversity, a large real-world study in China is required to confirm the role of dupilumab in paediatric patients with moderate-to-severe asthma and comorbid type 2 inflammatory diseases.

Keywords: Asthma; Children; Comorbid type 2 inflammatory diseases; Dupilumab.

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Conflict of interest statement

Declarations. Ethical approval and consent to participate: The Clinical Trial Number: NCT02948959(Registration Date:2016-10-31) which is retrospectively registered. This study was conducted in accordance with the Declaration of Helsinki and approved by the ethics committee of the Guangzhou Women and Children's Medical Center, Guangzhou Medical University, Ethics number: [2024]162A01.Written informed consent to participate in this study was obtained from their parents/guardians. The datasets generated and/or analyzed during the current study are not publicly available due individual privacy of patients could be compromised, but are available from the corresponding author on reasonable request. Consent for publication: Not applicable. Competing interests: The authors declare no competing interests.

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Review

Allergy Asthma Clin Immunol

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. 2024 Dec 16;20(Suppl 3):66.

doi: [10.1186/s13223-024-00935-2](https://doi.org/10.1186/s13223-024-00935-2).

[Allergen immunotherapy](#)

[Jean-Nicolas Boursiquot](#)¹, [Rémi Gagnon](#)², [Jaclyn Quirt](#)³, [Anne K Ellis](#)⁴

Affiliations Expand

- PMID: 39681846
- DOI: [10.1186/s13223-024-00935-2](https://doi.org/10.1186/s13223-024-00935-2)

Free article

Abstract

Allergen immunotherapy (AIT) is a potentially disease-modifying therapy that is effective for the treatment of allergic rhinitis/conjunctivitis, allergic asthma and stinging insect hypersensitivity. The decision to proceed with AIT should be made on a case-by-case basis, based on a comprehensive evaluation of the patient, allergy testing and a thorough discussion with the patient about treatment goals, risks vs. benefits, and long-term commitment to the treatment plan. For those with allergic rhinitis and/or asthma, it is also important to consider individual patient factors, such as the degree to which symptoms can be reduced by avoidance measures and pharmacological therapy, the amount and type of medication required to control symptoms, the adverse effects of pharmacological treatment, and patient preferences. Since AIT is associated with a risk of anaphylaxis, it should only be prescribed by physicians who are adequately trained in the treatment of allergic conditions. Furthermore, for subcutaneous therapy, injections must be given under medical supervision in clinics that are equipped to manage anaphylaxis. In this article, we review the indications and contraindications, patient selection criteria, and details regarding the administration, safety and efficacy of AIT for allergens other than foods. Immunotherapy for food allergy will be discussed in the Oral Immunotherapy article in this supplement.

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Conflict of interest statement

Declarations. Ethics approval and consent to participate: Not applicable. Consent to publish: Not applicable. Competing interests: Dr. Jean-Nicolas Boursiquot has received consulting fees or honoraria for continuing education from AstraZeneca,

Pfizer, Medexus and Bausch & Lomb. Dr. Rémi Gagnon has served as a speaker and/or advisor for ALK-Abello, AstraZeneca, Aralez, CSL Behring, GlaxoSmithKline, Merck, Novartis, Pediapharm, Pfizer, Sanofi, and Shire and as an investigator for AstraZeneca, Biocryst, DBV, GlaxoSmithKline, Green Cross Pharmaceuticals, Merck, Novartis, Regeneron, Shire, Stallergenes, and Sanofi Genzyme/Regeneron. Dr. Jaclyn Quirt has participated in advisory boards for Aralez and Sanofi. Dr. Anne K. Ellis has participated in advisory boards for ALK-Abello, AstraZeneca, Bausch Health, LEO Pharma, Miravo, Merck, Novartis, has been a speaker for ALK-Abello, AstraZeneca, Bausch, Miravo, Medexus, Mylan, Novartis, Pfizer, Sanofi, StallergenesGreer and Regeneron. Her institution has received research grants from ALK Abello, Aralez, AstraZeneca, Bayer LLC, Medexus, Novartis, Sanofi and Regeneron. She has also served as an independent consultant to Bayer LLC, Pharming, and Regeneron. About this supplement: This article has been published as part of Allergy, Asthma & Clinical Immunology, Volume 20 Supplement 03, 2024: Practical Guide for Allergy and Immunology in Canada 2024. The full contents of the supplement are available at <https://aacijournal.biomedcentral.com/articles/supplements/volume-20-supplement-3>

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Environ Pollut

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. 2024 Dec 15;363(Pt 2):125206.

doi: 10.1016/j.envpol.2024.125206. Epub 2024 Oct 30.

[Associations of exposure to outdoor PM_{2.5} and NO₂ during pregnancy with childhood asthma, rhinitis, and eczema in a predominantly rural French mother-child cohort](#)

[Alan R Patlán-Hernández](#)¹, [Marine Savouré](#)², [Etienne Audureau](#)³, [Christine Monfort](#)², [Montserrat de Castro](#)⁴, [Ralph Epaud](#)⁵, [Kees de Hoogh](#)⁶, [Ian Hough](#)⁷, [Itai Kloog](#)⁸, [Sophie Lanone](#)⁹, [Johanna Lepeule](#)¹⁰, [Mark Nieuwenhuijsen](#)⁴, [Danielle Vienneau](#)⁶, [Charline Warembourg](#)², [Cécile Chevrier](#)², [Bénédicte Jacquemin](#)¹¹

Affiliations Expand

- PMID: 39486676
- DOI: [10.1016/j.envpol.2024.125206](https://doi.org/10.1016/j.envpol.2024.125206)

Free article

Abstract

Uncertainty remains regarding the effects of outdoor air pollution in rural areas on childhood asthma, rhinitis, and eczema. Although these diseases often coexist, few studies have examined the effects of air pollution on their multimorbidity. The objective of this study was to investigate the associations of pregnancy exposure to outdoor fine particulate matter (PM_{2.5}) and nitrogen dioxide (NO₂) with childhood asthma, rhinitis, eczema, and their multimorbidity. We included children from the 6-year (n = 1322) and 12-year (n = 1118) follow-up of the Pélagie mother-child cohort in Brittany, France where 64% of the participants lived in rural areas. Asthma, rhinitis, eczema, and a multimorbidity phenotype (concomitant presence of ≥2 diseases) were defined by validated questionnaires. PM_{2.5} and NO₂ concentrations during pregnancy were modeled at residential address using land use regression. We assessed associations using logistic regressions per interquartile range (PM_{2.5}: 3 µg/m³; NO₂: 10 µg/m³). We also performed stratification by type of area (urban and rural). Asthma, rhinitis, eczema, and the multimorbidity phenotype prevalence were 12%, 20%, 22% and 12% at 6-years, and 10%, 23%, 19% and 11% at 12-years of follow-up. At 6-years, for eczema, a tendency of an association was observed with NO₂ (OR = 1.15, 95% CI = 0.97-1.36, p-value = 0.10), and stratification by type of area showed statistically significant associations for PM_{2.5} (1.49 (1.03-2.13), p = 0.03) and NO₂ (1.40 (1.08-1.82), p = 0.01) in the urban stratum. At 12-years, main analyses showed a tendency of associations of PM_{2.5} (1.38 (0.98-1.93), p = 0.07) and NO₂ (1.25 (0.98-1.59), p = 0.07) with asthma, and of NO₂ with the multimorbidity phenotype (1.23 (0.97-1.56), p = 0.09). While overall results were not statistically significant, associations in urban settings were stronger than in rural ones at 6-years suggesting that possible differences between the effects in urban and rural areas should be further explored.

Keywords: Asthma; Children; Eczema; Outdoor air pollution; Rhinitis; Urbanization degree.

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Conflict of interest statement

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

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chronic cough

1

Case Reports

J Cardiothorac Surg

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. 2024 Dec 19;19(1):648.

doi: 10.1186/s13019-024-03189-6.

[Unexplained disabling and long-lasting cough: a case report](#)

[Francesco Ferrante](#)¹, [Ilaria Onorati](#)², [Dana Mihaela Radu](#)², [Aur lie Herve-Carrega](#)³, [Morgane Didier](#)³, [Olivier Huet](#)⁴, [Emmanuel Martinod](#)²

Affiliations Expand

- PMID: 39702483
- DOI: [10.1186/s13019-024-03189-6](https://doi.org/10.1186/s13019-024-03189-6)

Abstract

Background: A 51-year-old woman was referred to our department due to chronic dry cough lasting six years without an etiological diagnosis. The patient suffered from chronic deterioration in her quality of life due to a persistent cough that sounded like a barking seal.

Case presentation: A severe form of malacia involving the inferior third of trachea and the main bronchi was diagnosed. According to our protocol, a self-expandable prosthesis was placed in the distal portion of the trachea via rigid bronchoscopy with excellent results in cough relief. The patient was subsequently scheduled for tracheobronchoplastic surgery

with a polypropylene matrix. Two and a half years after surgery the patient had a significant improvement in quality of life with a complete resolution of her symptoms.

Conclusion: This report demonstrated that tracheobronchomalacia can be difficult to diagnose with a serious impact on the patient's life. Referral to a specialized center is essential in the diagnostic and therapeutic management of this disease. Surgical treatment by tracheobronchoplasty may represent a good solution in selected patients.

Keywords: EDAC; Rigid bronchoscopy; Tracheobronchomalacia; Tracheobronchoplasty; Tracheomalacia.

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Conflict of interest statement

Declarations. Ethics approval and consent to participate: Not applicable Consent for publication: The patient provided her written informed consent to participate in this study and to publish the video. Competing interests: The authors declare no competing interests.

- [9 references](#)

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J Allergy Clin Immunol Pract

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. 2024 Dec 17:S2213-2198(24)01254-6.

doi: 10.1016/j.jaip.2024.12.012. Online ahead of print.

[Non-pharmacological approaches to chronic cough](#)

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Affiliations Expand

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- DOI: [10.1016/j.jaip.2024.12.012](https://doi.org/10.1016/j.jaip.2024.12.012)

Abstract

While cough is a protective reflex it can occur in the absence of any physical need to clear the airway. In chronic cough, cough can be triggered by innocuous stimuli and persist despite medical treatment. Non-pharmacological interventions such as cough control therapy, provided by speech pathologists, have gained popularity in recent years. Intervention targets refractory or unexplained chronic cough and efficacy has been studied in randomised controlled trials. Key elements of cough control therapy include education, anticipation and control of the urge to cough, reducing laryngeal irritation and psychoeducational counselling. Our understanding of the mechanisms behind the success of non-pharmacological treatment is developing. It is likely the mechanisms of action are multi-factorial across peripheral, central and higher cortical regions. Non-pharmacological cough control therapy interventions are now included in international cough guidelines. However, approach to service delivery is not standardised and varies between regions and countries.

Keywords: Chronic cough; cough hypersensitivity; cough suppression; non-pharmacological; refractory chronic cough; unexplained chronic cough.

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Ther Adv Musculoskelet Dis

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. 2024 Dec 16:16:1759720X241305218.

doi: 10.1177/1759720X241305218. eCollection 2024.

[The analysis of the pulmonary domain involvement in Sjögren's disease](#)

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- DOI: [10.1177/1759720X241305218](#)

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Abstract

Background: The EULAR Sjögren's syndrome (SS) disease activity index (ESSDAI) pulmonary domain is used to assess the activity of respiratory system involvement in Sjögren's disease (SjD). The most unfavorable form of respiratory involvement in SjD, after lymphomas, is interstitial lung disease (ILD).

Objectives: The aim of the study was to assess the involvement of the respiratory system in SjD patients and the occurrence of ILD in high-resolution computed tomography (HRCT), depending on immunological markers, the influence of cigarette smoking, and the age of the patients.

Design: Single-center, registry, cohort study.

Methods: Among all SjD patients, a group with involvement in the pulmonary domain was distinguished. This group was later subjected to a detailed analysis of immunological and serological markers and chest imaging tests.

Results: In all, 64 patients out of 299 with SjD had involvement in the pulmonary domain defined according to the ESSDAI definition. The most frequently reported clinical symptoms of respiratory system involvement included dryness and chronic cough (over 80% of patients), followed by shortness of breath. Nine percent of patients with changes in lungs were asymptomatic. Patients with pulmonary involvement were older (54 vs 48 years, $p < 0.05$). In the subpopulation of patients with SjD and pulmonary involvement, the presence of rheumatoid factor (73% vs 60%, $p < 0.05$), and hematological domain involvement according to ESSDAI (54% vs 37%, $p < 0.05$) were more common. In the group of 64 patients with a positive pulmonary domain, 34 (53%) had ILD on HRCT. A higher incidence of comorbidities was found in the population of patients with ILD. No correlation

was found between the type of lung involvement and the immunological profile, inflammatory markers, age, and smoking habit.

Conclusion: Involvement of the pulmonary domain is common in patients with SjD. However, the clinical picture is very heterogeneous, which determines the subsequent personalization of treatment.

Keywords: ESSDAI; Sjögren syndrome; interstitial lung disease; pulmonary domain.

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Conflict of interest statement

The authors declare that there is no conflict of interest.

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Am J Respir Crit Care Med

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. 2024 Dec 15;210(12):1432-1440.

doi: 10.1164/rccm.202310-1825OC.

Association of Ground-Glass Opacities with Systemic Inflammation and Progression of Emphysema

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Affiliations Expand

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Abstract

Rationale: Ground-glass opacities (GGOs) in the absence of interstitial lung disease are understudied. **Objectives:** To assess the association of GGOs with white blood cells (WBCs) and progression of quantified chest computed tomography emphysema. **Methods:** We analyzed data of participants in the SPIROMICS study (Subpopulations and Intermediate Outcome Measures in COPD Study). Chest radiologists and pulmonologists labeled regions of the lung as GGOs, and the adaptive multiple feature method (AMFM) trained the computer to assign those labels to image voxels and quantify the volume of the lung with GGOs (%GGO_{AMFM}). We used multivariable linear regression, zero-inflated negative binomial, and proportional hazards regression models to assess the association of %GGO_{AMFM} with WBCs, changes in percentage emphysema, and clinical outcomes. **Measurements and Main Results:** Among 2,714 participants, 1,680 had chronic obstructive pulmonary disease (COPD) and 1,034 had normal spirometry. Among participants with COPD, on the basis of multivariable analysis, current smoking and chronic productive cough were associated with higher %GGO_{AMFM}. Higher %GGO_{AMFM} was cross-sectionally associated with higher WBC and neutrophil concentrations. Higher %GGO_{AMFM} per interquartile range at visit 1 (baseline) was associated with an increase in emphysema at 1-year follow-up visit by 11.7% (relative increase; 95% confidence interval, 7.5-16.1%; $P < 0.001$). We found no association between %GGO_{AMFM} and 1-year FEV₁ decline, but %GGO_{AMFM} was associated with exacerbations and all-cause mortality during a median follow-up of 1,544 days (interquartile interval, 1,118-2,059). Among normal spirometry participants, we found similar results, except that %GGO_{AMFM} was associated with progression to COPD at 1-year follow-up. **Conclusions:** Our findings suggest that GGO_{AMFM} is associated with increased systemic inflammation and emphysema progression.

Keywords: chronic obstructive pulmonary disease; emphysema; ground-glass opacity; inflammation.

Comment in

- [Ground-Glass Opacities on Computed Tomography of the Thorax to Predict Progression of Emphysema: Are We There Yet?](#)

Ko FWS, Hui DSC. Am J Respir Crit Care Med. 2024 Dec 15;210(12):1392-1394. doi: 10.1164/rccm.202405-1066ED. PMID: 38990733 No abstract available.

Supplementary info

MeSH terms, Grants and fundingExpand

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

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BMC Pulm Med

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doi: [10.1186/s12890-024-03402-1](https://doi.org/10.1186/s12890-024-03402-1).

[Risk factors for readmission within one year after acute exacerbations of bronchiectasis in a Chinese tertiary hospital: a retrospective cohort study](#)

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Affiliations Expand

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Abstract

Background: Frequent exacerbations of bronchiectasis lead to poor quality of life, impaired lung function, and higher mortality rates. This study aims to evaluate the risk factors associated with readmission within one year due to acute exacerbation of bronchiectasis (AEB).

Methods: A retrospective cohort study was performed on 260 patients with bronchiectasis who were hospitalized in the respiratory and critical care department of a tertiary hospital in China. Univariate and multivariate Cox analyses were used to evaluate the risk factors for readmission within one year.

Results: Readmission within one year was found in 44.6% of 260 patients hospitalized with acute exacerbation of bronchiectasis. The risk factors associated with readmission included age over 65 years (HR = 3.66; 95% CI: 2.30 to 5.85), BMI < 18.5 kg/m² (HR = 1.71; 95% CI: 1.16 to 2.51), respiratory intensive care unit (RICU) stay during admission (HR = 2.06, 95% CI: 1.16-3.67), involvement of 3 or more lobes on chest high-resolution computed tomography (HRCT) (HR = 1.85; 95% CI, 1.22 to 2.80), chronic *Pseudomonas aeruginosa* (PA) colonization (HR = 2.29; 95% CI: 1.54 to 3.38), and positive sputum culture results within 24 h after admission (HR = 1.93; 95% CI: 1.27 to 2.94). Long-term oral antibiotics use after discharge was associated with decreased hazard of readmission (HR = 0.34; 95% CI: 0.20 to 0.59).

Conclusions: Patients with bronchiectasis have a high rate of readmission, which is linked to varieties of risk factors, and identifying these risk factors is importance for effectively managing patients with bronchiectasis.

Keywords: Bronchiectasis; Hospitalization; Readmission; Risk factors.

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Conflict of interest statement

Declarations. Ethics approval and consent to participate: This study was approved by the Institutional Review Board of Longhua Hospital Affiliated to Shanghai University of Traditional Chinese Medicine, which waived the requirement for patient informed consent because of the anonymous nature of the data. The Clinical Trial Number was NO. ChiCTR2000033494. Consent for publication: Not applicable. **Competing interests:** The authors declare no competing interests.

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Supplementary info

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Intern Med

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. 2024 Dec 15;63(24):3403.

doi: 10.2169/internalmedicine.3387-23. Epub 2024 Apr 16.

[ABPA-CPA Overlap: Fallitur Identitatis](#)

[Inderpaul Singh Sehgal¹](#), [Ritesh Agarwal¹](#)

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- PMID: 38631857
- DOI: [10.2169/internalmedicine.3387-23](#)

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No abstract available

Keywords: allergic bronchopulmonary mycosis; aspergillosis; aspergillus; asthma; biologics; bronchiectasis.

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