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

1

Randomized Controlled Trial

COPD

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. 2024 Dec;21(1):2425157.

doi: 10.1080/15412555.2024.2425157. Epub 2024 Nov 11.

[Beclometasone Dipropionate/Formoterol Fumarate is Similarly Effective to Budesonide/Formoterol Fumarate in Chinese Patients with COPD: The FORSYYN Double-Blind, Randomised Study](#)

[Fuqiang Wen¹, Yanmin Wu², Chunyan Xing³, Yinggun Zhu⁴, Yongxing Chen⁵, Xiaodong Mei⁶, Massimo Corradi⁷, Glauco Cappellini⁸, Emanuele Calabro⁸, Sergio Amodio⁹, Cissy Zhu¹⁰, Dmitry Galkin¹¹](#)

Affiliations Expand

- PMID: 39529298
- DOI: [10.1080/15412555.2024.2425157](#)

Free article

Abstract

The fixed-dose combination of beclometasone dipropionate/formoterol fumarate (BDP/FF) delivered *via* pressurised metered-dose inhaler (pMDI) has demonstrated efficacy in chronic obstructive pulmonary disease (COPD), in studies predominantly conducted in Caucasian adults. The current study evaluated the efficacy and safety of BDP/FF pMDI in Chinese patients with COPD, as part of registration for COPD in China. This double-blind, double-dummy, randomised, parallel-group study was conducted in patients with COPD of Chinese ethnicity aged ≥ 40 years. After a 4-week open-label budesonide/formoterol fumarate (BUD/FF) run-in period, patients were randomised to BUD/FF or BDP/FF for 24 weeks. The primary objective was to demonstrate non-inferiority of BDP/FF to BUD/FF in terms of change from baseline in pre-dose morning forced expiratory volume in 1 sec (FEV₁) at Week 24 (i.e. the lower 95% CI limit of the difference was above the pre-defined non-inferiority margin of -0.07 L). Of 750 patients randomised (377 BDP/FF; 373 BUD/FF), 87.6% completed the study. The primary endpoint was met in both the per-protocol (adjusted mean difference -0.001 L [95% CI: -0.025, 0.022], non-inferiority $p < 0.001$) and intention-to-treat populations (-0.001 L [-0.024, 0.022]; non-inferiority $p < 0.001$). There were no statistically significant BDP/FF-BUD/FF differences for the secondary endpoints, and a similar proportion of patients had adverse events (BDP/FF, 51.7%; BUD/FF, 51.2%), with most mild/moderate in severity. In conclusion, BDP/FF pMDI was non-inferior to BUD/FF in terms of pre-dose morning FEV₁, supported by a range of secondary endpoints. Both treatments were similarly tolerated. The study supports the use of BDP/FF pMDI in Chinese patients with COPD.

Study registration: China Centre for Drug Evaluation (CTR20180475).

Keywords: China; Chronic obstructive pulmonary disease; adrenergic beta-2 receptor agonists; inhaled corticosteroid; non-inferiority.

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. 2024 Nov 15;210(10):1269-1272.

doi: 10.1164/rccm.202311-2059LE.

Validation of Systemic Complement Signatures in the Progression of Chronic Obstructive Pulmonary Disease

Katarina M DiLillo¹, Lisa Ruvuna², Katherine A Pratte³, Karina A Serban⁴, Wassim W Labaki⁵, MeiLan K Han⁵, Christine M Freeman^{5,6,7}, Russell P Bowler², Jeffrey L Curtis^{6,8}, Kelly B Arnold¹

Affiliations Expand

- PMID: 39311978
- DOI: [10.1164/rccm.202311-2059LE](https://doi.org/10.1164/rccm.202311-2059LE)

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J Infect Dis

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. 2024 Nov 15;230(5):e1092-e1100.

doi: 10.1093/infdis/jiae382.

Validation of Lung Ultrasound for Coronavirus Disease 2019 Prognostication in an International Multicenter Cohort Study

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Characteristics of Emerging Infectious Diseases with Pandemic Potential (EPICC) Research Group

Collaborators, Affiliations Expand

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- DOI: [10.1093/infdis/jiae382](https://doi.org/10.1093/infdis/jiae382)

Abstract

Background: Despite many studies evaluating lung ultrasound (LUS) for coronavirus disease 2019 (COVID-19) prognostication, the generalizability and utility across clinical settings are uncertain.

Methods: Adults (≥ 18 years of age) with COVID-19 were enrolled at 2 military hospitals, an emergency department, home visits, and a homeless shelter in the United States, and in a referral hospital in Uganda. Participants had a 12-zone LUS scan performed at time of enrollment and clips were read off-site. The primary outcome was progression to higher level of care after the ultrasound scan. We calculated the cross-validated area under the curve for the validation cohort for individual LUS features.

Results: We enrolled 191 participants with COVID-19 (57.9% female; median age, 45.0 years [interquartile range, 31.5-58.0 years]). Nine participants clinically deteriorated. The top predictors of worsening disease in the validation cohort measured by cross-validated area under the curve were B-lines (0.88 [95% confidence interval {CI}, .87-.90]), discrete B-lines (0.87 [95% CI, .85-.88]), oxygen saturation (0.82 [95% CI, .81-.84]), and A-lines (0.80 [95% CI, .78-.81]).

Conclusions: In an international multisite point-of-care ultrasound cohort, LUS parameters had high discriminative accuracy. Ultrasound can be applied toward triage across a wide breadth of care settings during a pandemic.

Keywords: COVID-19; SARS-CoV-2; diagnostic imaging; triage; ultrasonography.

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Conflict of interest statement

Potential conflicts of interest. S. D. P. reports that the USUHS IDCRP, a US DOD institution, and HJF were funded under a cooperative research and development agreement to conduct an unrelated phase 3 COVID-19 monoclonal antibody immunoprophylaxis trial sponsored by AstraZeneca. The HJF, in support of the USUHS IDCRP, was funded by the DOD Joint Program Executive Office for Chemical, Biological, Radiological, and Nuclear Defense to augment the conduct of an unrelated phase 3 vaccine trial sponsored by AstraZeneca. Both of these trials were part of the US government COVID-19 response. Neither is related to the work presented here. T.S. receives consulting fees from Verona Pharmaceuticals, Apogee Therapeutics, and honoraria from American Thoracic Society and the COPD foundation. T.S. is an advisor to 4D Medical. C.C. receives consulting fees from Johnson & Johnson and Bayer AG regarding unrelated wearable devices. 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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J Infect Dis

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. 2024 Nov 15;230(5):e1112-e1120.

doi: 10.1093/infdis/jiae232.

[Cytokine Biomarkers of Exacerbations in Sputum From Patients With Chronic Obstructive Pulmonary Disease: A Prospective Cohort Study](#)

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Affiliations Expand

- PMID: 38836471
- DOI: [10.1093/infdis/jiae232](#)

Abstract

Background: We determined the relationships between cytokine expression in sputum and clinical data to characterize and understand chronic obstructive pulmonary disease (COPD) exacerbations in people with COPD.

Methods: We measured 30 cytokines in 936 sputum samples, collected at stable state and exacerbation visits from 99 participants in the Acute Exacerbation and Respiratory InfectionS in COPD (AERIS) study (ClinicalTrials.gov [NCT01360398](https://clinicaltrials.gov/ct2/show/study/NCT01360398)). We determined their longitudinal expression and examined differential expression based on disease status or exacerbation type.

Results: Of the cytokines, 17 were suitable for analysis. As for disease states, in exacerbation sputum samples, interleukin (IL) 17A, tumor necrosis factor alpha (TNF- α), IL-1 β , and IL-10 were significantly increased compared to stable state sputum samples, but a logistic mixed model could not predict disease state. As for exacerbation types, bacteria-associated exacerbations showed higher expression of IL-17A, TNF- α , IL-1 β , and IL-1 α . IL-1 α , IL-1 β , and TNF- α were identified as suitable biomarkers for bacteria-associated exacerbation. Bacteria-associated exacerbations also formed a cluster separate from other exacerbation types in principal component analysis.

Conclusions: Measurement of cytokines in sputum from COPD patients could help identify bacteria-associated exacerbations based on increased concentrations of IL-1 α , IL-1 β , or TNF- α . This finding may provide a point-of-care assessment to distinguish a bacterial exacerbation of COPD from other exacerbation types.

Keywords: biomarkers; chronic obstructive pulmonary disease; cytokine signature; exacerbation; sputum.

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Conflict of interest statement

Potential conflicts of interest. S. B., M. T., M. S., S. A., F. S., M. Ba., C. L., S. R., V. W., M. C., M. Br., and S. R. P. are employees of GSK; M. Ba., C. L., S. R., V. W., M. C., M. Br., and S. R. P. also hold financial equities in GSK. S. B., M. T., M. S., F. S., M. Ba., S. R., and S. R. P. declare a patent filing on cytokines as biomarkers. C. L. declares a patent filing relating to SARS-CoV-2, and is the co-leader for AVDTIG subgroup as GSK representative. V. W. declares patents related to vaccine development in the field of COPD. T. M. A. W. discloses payment of a grant to his institution by GSK for the conduct of this study. He also declares payment of grants to his institution by AstraZeneca (AZ), Bergenbio, UCB, Synairgen, Janssen, Sanofi, National Institute for Health and Care Research (NIHR), and UK Research and Innovation, outside this study. T. M. A. W. received consulting fees from AZ, GSK, Synairgen, my mhealth ltd, Sanofi, Janssen, and OM pharm; payment from AZ, GSK, and Roche for lectures, presentations, speakers' bureaus, manuscript writing, and educational events; and support from AZ for travel to meeting(s). T. M. A. W. also discloses a patent filed by university on lung imaging platform; participation on a data and safety monitoring board or advisory board for Synairgen and NIHR; payment to institution for his role of national clinical lead for National Respiratory Audit Programme (NRAP), Royal College of Physicians; medical writing support from AZ, UCB, and Sanofi Pfizer; and stocks in my mhealth ltd. Authors declare no other financial and non-financial relationships and activities. 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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Editorial

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. 2024 Nov 15;210(10):1173-1174.

doi: [10.1164/rccm.202404-0667ED](https://doi.org/10.1164/rccm.202404-0667ED).

[The Impact of the Chronic High-Altitude Environment on Chronic Obstructive Pulmonary Disease Outcomes](#)

[Brooks Thomas Kuhn](#)¹

Affiliations Expand

- PMID: 38656771
- DOI: [10.1164/rccm.202404-0667ED](https://doi.org/10.1164/rccm.202404-0667ED)

No abstract available

Comment on

- [The Effect of Chronic Altitude Exposure on Chronic Obstructive Pulmonary Disease Outcomes in the SPIROMICS Cohort: An Observational Cohort Study.](#)

Suri R, Markovic D, Woo H, Arjomandi M, Barr RG, Bowler RP, Criner G, Curtis JL, Dransfield MT, Drummond MB, Fortis S, Han MK, Hoffman EA, Kaner RJ, Kaufman JD, Krishnan JA, Martinez FJ, Ohar J, Ortega VE, Paine R 3rd, Soler X, Woodruff PG, Hansel NN, Cooper CB, Tashkin DP, Buhr RG, Barjaktarevic IZ. Am J Respir Crit Care

Med. 2024 Nov 15;210(10):1210-1218. doi: 10.1164/rccm.202310-1965OC.PMID: 38507607

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Editorial

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. 2024 Nov 15;210(10):1174-1176.

doi: 10.1164/rccm.202403-0560ED.

[Piece of Cake: Slicing through the Complex Layers of Chronic Obstructive Pulmonary Disease with Lung Tissue Network Analysis](#)

[Matthew Moll](#) ^{1 2 3 4 5}, [John McDonough](#) ^{6 7}

Affiliations Expand

- PMID: 38631039
- DOI: [10.1164/rccm.202403-0560ED](https://doi.org/10.1164/rccm.202403-0560ED)

No abstract available

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- [Lung Tissue Multilayer Network Analysis Uncovers the Molecular Heterogeneity of Chronic Obstructive Pulmonary Disease.](#)

Olvera N, Sánchez-Valle J, Núñez-Carpintero I, Rojas-Quintero J, Noell G, Casas-Recasens S, Faiz A, Hansbro P, Guirao A, Lepore R, Cirillo D, Agustí A, Polverino F, Valencia A, Faner R. Am J Respir Crit Care Med. 2024 Nov 15;210(10):1219-1229. doi: 10.1164/rccm.202303-0500OC.PMID: 38626356

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Am J Respir Crit Care Med

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. 2024 Nov 15;210(10):1219-1229.

doi: 10.1164/rccm.202303-0500OC.

[Lung Tissue Multilayer Network Analysis Uncovers the Molecular Heterogeneity of Chronic Obstructive Pulmonary Disease](#)

[Nuria Olvera](#)^{1 2 3}, [Jon Sánchez-Valle](#)², [Iker Núñez-Carpintero](#)², [Joselyn Rojas-Quintero](#)⁴, [Guillaume Noell](#)³, [Sandra Casas-Recasens](#)^{1 3}, [Alen Faiz](#)⁵, [Philip Hansbro](#)^{5 6}, [Angela Guirao](#)^{1 3 7}, [Rosalba Lepore](#)^{2 8}, [Davide Cirillo](#)², [Alvar Agustí](#)^{1 3 7 9}, [Francesca Polverino](#)⁴, [Alfonso Valencia](#)^{2 10}, [Rosa Faner](#)^{1 3 11}

Affiliations Expand

- PMID: 38626356
- DOI: [10.1164/rccm.202303-0500OC](https://doi.org/10.1164/rccm.202303-0500OC)

Abstract

Rationale: Chronic obstructive pulmonary disease (COPD) is a heterogeneous condition. **Objectives:** We hypothesized that the unbiased integration of different COPD lung omics using a novel multilayer approach might unravel mechanisms associated with clinical characteristics. **Methods:** We profiled mRNA, microRNA and

methylome in lung tissue samples from 135 former smokers with COPD. For each omic (layer), we built a patient network on the basis of molecular similarity. The three networks were used to build a multilayer network, and optimization of multiplex modularity was used to identify patient communities across the three distinct layers. Uncovered communities were related to clinical features. **Measurements and Main Results:** We identified five patient communities in the multilayer network that were molecularly distinct and related to clinical characteristics, such as FEV₁ and blood eosinophils. Two communities (C#3 and C#4) had both similarly low FEV₁ values and emphysema but were molecularly different: C#3, but not C#4, presented B- and T-cell signatures and a downregulation of secretory (SCGB1A1/SCGB3A1) and ciliated cells. A machine learning model was set up to discriminate C#3 and C#4 in our cohort and to validate them in an independent cohort. Finally, using spatial transcriptomics, we characterized the small airway differences between C#3 and C#4, identifying an upregulation of T-/B-cell homing chemokines and bacterial response genes in C#3. **Conclusions:** A novel multilayer network analysis is able to identify clinically relevant COPD patient communities. Patients with similarly low FEV₁ and emphysema can have molecularly distinct small airways and immune response patterns, indicating that different endotypes can lead to similar clinical presentation.

Keywords: chronic bronchitis; emphysema; endotypes; multiomics; networks.

Comment in

- [Piece of Cake: Slicing through the Complex Layers of Chronic Obstructive Pulmonary Disease with Lung Tissue Network Analysis.](#)

Moll M, McDonough J. *Am J Respir Crit Care Med.* 2024 Nov 15;210(10):1174-1176. doi: 10.1164/rccm.202403-0560ED.PMID: 38631039 No abstract available.

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. 2024 Nov 15;210(10):1210-1218.

doi: 10.1164/rccm.202310-1965OC.

[The Effect of Chronic Altitude Exposure on Chronic Obstructive Pulmonary Disease Outcomes in the SPIROMICS Cohort: An Observational Cohort Study](#)

[Rajat Suri](#)¹, [Daniela Markovic](#)², [Han Woo](#)³, [Mehrdad Arjomandi](#)^{4 5}, [R Graham Barr](#)^{6 7}, [Russell P Bowler](#)⁸, [Gerard Criner](#)⁹, [Jeffrey L Curtis](#)^{10 11}, [Mark T Dransfield](#)¹², [M Bradley Drummond](#)¹³, [Spyridon Fortis](#)^{14 15}, [MeiLan K Han](#)¹⁰, [Eric A Hoffman](#)^{16 17 18}, [Robert J Kaner](#)¹⁹, [Joel D Kaufman](#)²⁰, [Jerry A Krishnan](#)²¹, [Fernando J Martinez](#)¹⁹, [Jill Ohar](#)²², [Victor E Ortega](#)²³, [Robert Paine 3rd](#)^{24 25}, [Xavier Soler](#)²⁶, [Prescott G Woodruff](#)⁴, [Nadia N Hansel](#)³, [Christopher B Cooper](#)^{27 28}, [Donald P Tashkin](#)²⁷, [Russell G Buhr](#)^{27 29}, [Igor Z Barjaktarevic](#)²⁷

Affiliations Expand

- PMID: 38507607
- DOI: [10.1164/rccm.202310-1965OC](https://doi.org/10.1164/rccm.202310-1965OC)

Abstract

Rationale: Individuals with chronic obstructive pulmonary disease (COPD) have airflow obstruction and maldistribution of ventilation. For those living at high altitude, any gas exchange abnormality is compounded by reduced partial pressures of inspired oxygen. **Objectives:** Does residence at higher altitude exposure affect COPD outcomes, including lung function, imaging characteristics, symptoms, health status, functional exercise capacity, exacerbations, and mortality? **Methods:** From the SPIROMICS (Subpopulation and Intermediate Outcome Measures in COPD Study) cohort, we identified individuals with COPD living below 1,000 ft (305 m) elevation ($n = 1,367$) versus above 4,000 ft (1,219 m) elevation ($n = 288$). Multivariable regression models were used to evaluate associations of exposure to high altitude with COPD-related outcomes. **Measurements and Main Results:** Living at higher altitude was associated with reduced functional exercise capacity as defined by 6-minute-walk distance (-32.3 m [95% confidence interval, -49.8 to -14.8 m]). There were no differences in patient-reported outcomes as defined by symptoms (COPD Assessment Test and modified Medical Research Council dyspnea scale), or health status (St. George's Respiratory Questionnaire). Higher altitude was not associated with a different rate of FEV₁ decline. Higher altitude was associated with lower odds of severe exacerbations (incidence rate ratio, 0.65 [95% confidence interval, 0.46 to 0.90]). There were no differences in small airway disease, air trapping, or emphysema. In longitudinal analyses, higher altitude was associated with increased mortality (hazard ratio, 1.25 [95% confidence interval, 1.0 to 1.55]); however, this association was no longer significant when accounting for air pollution. **Conclusions:** Long-term altitude exposure is associated with reduced functional exercise capacity in individuals with COPD, but this did not translate into differences in symptoms or health status. In addition, long-term high-altitude exposure did not affect progression of disease as defined by longitudinal changes in spirometry. Clinical trial registered with www.clinicaltrials.gov ([NCT01969344](https://www.clinicaltrials.gov/ct2/show/study?term=NCT01969344)).

Keywords: altitude; chronic obstructive pulmonary disease; longitudinal outcomes; patient-centered outcomes.

Comment in

- [The Impact of the Chronic High-Altitude Environment on Chronic Obstructive Pulmonary Disease Outcomes.](#)

Kuhn BT. Am J Respir Crit Care Med. 2024 Nov 15;210(10):1173-1174. doi: 10.1164/rccm.202404-0667ED. PMID: 38656771 No abstract available.

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Review

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. 2024 Nov 14;25(1):410.

doi: 10.1186/s12931-024-03033-4.

[Prognostic risk prediction model for patients with acute exacerbation of chronic obstructive pulmonary disease \(AECOPD\): a systematic review and meta-analysis](#)

[Zihan Xu](#)¹, [Fan Li](#)¹, [You Xin](#)¹, [Ye Wang](#)², [Yuping Wang](#)³

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- PMID: 39543648
- DOI: [10.1186/s12931-024-03033-4](#)

Abstract

Background: Chronic obstructive pulmonary disease (COPD) is a prevalent respiratory condition and a leading cause of mortality, with acute exacerbations (AECOPD) significantly complicating its management and prognosis. Despite the development of various prognostic prediction models for patients with AECOPD, their performance and clinical applicability remain unclear, necessitating a systematic review to evaluate these models and provide guidance for their future improvement and clinical use.

Method: PubMed, Web of Science, CINAHL, Scopus, EMBASE, and Medline were searched for studies published from their inception until February 5, 2024. Data extraction and evaluation were conducted using the Checklist for Critical Appraisal and Data Extraction for Systematic Reviews of Prediction Modelling Studies (CHARMS). The Prediction model Risk Of Bias Assessment Tool (PROBAST) was employed to assess the risk of bias and applicability of the models.

Results: After deduplication and screening 5942 retrieved articles, 46 studies comprising 53 models were included. Of these, 17 (37.0%) studies developed from studies conducted in China. All models were based on cohort studies. Mortality was the predicted outcome in 27 (50.9%) models. Logistic regression was used in 41 (77.4%) models, while machine learning methods were employed in 9 (17.0%) models. The median (minimum, maximum) sample size for model development was 672 (106, 150,035). The median (minimum, maximum) number of predictors per model was 5 (2, 42). Frequently used predictors included age (n = 28), dyspnea severity scores (n = 12), and PaCO₂ (n = 11). The pooled AUC was 0.80 for mortality prediction models and 0.84 for hospitalization-related outcomes. 52 models have a high overall risk of bias, and all models were judged to have low concern regarding applicability. Major sources of bias included insufficient sample sizes (83.0%), reliance on univariate analysis for predictor selection (73.6%), inappropriate internal and external validation methods (54.7%), inappropriate inclusion and exclusion criteria for study subjects (50.9%) and so on. The only model with low bias was the PEARL score.

Conclusion: Current prognostic risk prediction models for patients with AECOPD generally exhibit high bias. Future efforts should standardize model development and validation methods, and develop widely usable clinical models.

Keywords: Acute exacerbation; Chronic obstructive pulmonary disease; Prediction model; Prognostic risk; Systematic review.

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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.

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. 2024 Nov 14;14(1):28030.

doi: 10.1038/s41598-024-79818-w.

[Diagnosis and evaluation of small airway disease and COPD using impulse oscillometry](#)

[Heemoon Park](#)¹, [Hyo Jin Lee](#)¹, [Hyun Woo Lee](#)¹, [Tae Yun Park](#)¹, [Eun Young Heo](#)¹, [Deog Kyeom Kim](#)¹, [Jung-Kyu Lee](#)²

Affiliations Expand

- PMID: 39543228
- DOI: [10.1038/s41598-024-79818-w](https://doi.org/10.1038/s41598-024-79818-w)

Free article

Abstract

Impulse oscillometry (IOS) is a sensitive tool for assessing small airway function in patients with chronic obstructive pulmonary disease (COPD). This study aimed to differentiate between COPD, small airway disease (SAD), and normal groups using IOS, and to evaluate the clinical applicability of IOS. This retrospective cohort study was conducted from January 2020 to February 2022. The eligible population comprised adult patients who simultaneously underwent IOS and pulmonary function tests. The diagnostic value of IOS in differentiating SAD and/or COPD from control was analyzed, and the correlations among IOS parameters, lung function, and radiological assessment results were determined. Among the enrolled 306 patients, 38 (12.4%) had SAD and 134 (43.8%) had COPD. The remainder comprised the control group without COPD and/or SAD. Abnormal airway resistance according to IOS parameters was detected in 17.2% of the patients in the control group, 47.2% of those in the SAD group, and 55.2% of those in the COPD group. Airway resistance estimated by IOS were significantly higher in the SAD and COPD groups than in the control group and correlated with lung function and radiological airway wall thickness. We developed a composite index called the IOS severity index

(IOSsi) using IOS parameters that can predict SAD and COPD, and IOSsi showed significantly differentiation of SAD and/or COPD from control. Especially, IOSsi value ≥ 4 was associated with an increased risk of SAD and/or COPD and also with risk for moderate-to-severe exacerbation in patients with COPD. IOS may be a useful tool to differentiate disease status and evaluate disease severity and prognosis in patients with SAD and/or COPD, and a prognostic factor of COPD.

Keywords: Airway resistance; Chronic obstructive pulmonary disease; Impulse oscillometry system; Small airway disease.

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Conflict of interest statement

Declarations Ethics approval and consent to participate The Institutional Review Board of Seoul Metropolitan Government–Seoul National University Boramae Medical Center approved this study (no: 10-2022-37) and waived the requirement for informed consent due to the retrospective study design without participant intervention or interaction, and this study was conducted in accordance with the principles stated in the Declaration of Helsinki. **Competing interests** The authors declare no competing interests. **Confidentiality** The interim findings of this paper were presented in a poster discussion at the 26th Congress of the Asian Pacific Society of Respiriology on November 2022.

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Thorax

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. 2024 Nov 14;79(12):1116-1123.

doi: 10.1136/thorax-2024-221874.

[Air pollution and respiratory health in patients with COPD: should we focus on indoor or outdoor sources?](#)

[Dimitris Evangelopoulos](#)^{1,2}, [Hanbin Zhang](#)^{1,2,3}, [Lia Chatzidiakou](#)⁴, [Heather Walton](#)^{1,2}, [Klea Katsouyanni](#)^{1,2,5}, [Roderic L Jones](#)⁴, [Jennifer K Quint](#)^{6,7}, [Benjamin Barratt](#)^{8,2}

Affiliations Expand

- PMID: 39375040
- DOI: [10.1136/thorax-2024-221874](https://doi.org/10.1136/thorax-2024-221874)

Free article

Abstract

Introduction: While associations between ambient air pollution and respiratory health in chronic obstructive pulmonary disease (COPD) patients are well studied, little is known about individuals' personal exposure to pollution and associated health effects by source.

Aim: To separate measured total personal exposure into indoor-generated and outdoor-generated pollution and use these improved metrics in health models for establishing more reliable associations with exacerbations and respiratory symptoms.

Methods: We enrolled a panel of 76 patients with COPD and continuously measured their personal exposure to particles and gaseous pollutants and location with portable monitors for 134 days on average. We collected daily health information related to respiratory symptoms through diary cards and peak expiratory flow (PEF). Mixed-effects models were applied to quantify the relationship between total, indoor-generated and outdoor-generated personal exposures to pollutants with exacerbation and symptoms occurrence and PEF.

Results: Exposure to nitrogen dioxide from both indoor and outdoor sources was associated with exacerbations and respiratory symptoms. We observed an increase of 33% (22%-45%), 19% (12%-18%) and 12% (5%-20%) in the odds of exacerbation for an IQR increase in total, indoor-generated and outdoor-generated exposures. For carbon monoxide, health effects were mainly attributed to indoor-generated pollution. While no associations were observed for particulate matter_{2.5} with COPD exacerbations, indoor-generated particles were associated with a significant decrease in PEF.

Conclusions: Indoor-generated and outdoor-generated pollution can deteriorate COPD patients' health. Policy-makers, physicians and patients with COPD should note the importance of decreasing exposure equally to both source types to decrease risk of exacerbation.

Keywords: COPD Exacerbations; COPD epidemiology; Respiratory Measurement.

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Conflict of interest statement

Competing interests: None declared.

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Respirology

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. 2024 Nov 13.

doi: 10.1111/resp.14852. Online ahead of print.

[Environmental impact of inhaled medicines: A Thoracic Society of Australia and New Zealand position statement](#)

[Danielle F Wurzel](#)^{1,2}, [Brett D Montgomery](#)³, [Natalie Anderson](#)^{4,5,6,7}, [Elena K Schneider-Futschik](#)⁸, [Johnson George](#)⁹, [Sinthia Bosnic-Anticevich](#)¹⁰, [Emily Stone](#)¹¹, [Robert J Hancox](#)¹², [James Fingleton](#)¹³, [Stephanie Kuek](#)¹, [Helen Tope](#)¹⁴, [John Blakey](#)^{5,15}

Affiliations Expand

- PMID: 39536776
- DOI: [10.1111/resp.14852](https://doi.org/10.1111/resp.14852)

Abstract

Globally, more than 1.2 billion inhalers are purchased for asthma and chronic obstructive pulmonary disease (COPD) annually. In Australia and New Zealand, pressurized metered dose inhalers (pMDIs) are the leading delivery device prescribed and pMDI salbutamol can be purchased over the counter in Australia. These inhalers are a major contributor to healthcare related greenhouse gases. This is due to the propellants that they currently contain which have extremely high global warming potential (GWP). In this position paper, we report the findings of a Thoracic Society of Australia and New Zealand (TSANZ) working group on the environmental impact of inhaled respiratory medicines. We reviewed the use of inhaled medicines in Australia and New Zealand and their contribution to climate

change and other environmental degradation. We propose strategies for health professionals and consumers to reduce environmental impact in the management of airway diseases. These include accurate diagnosis to avoid unnecessary treatment, better disease control to minimize the need for reliever therapy and actively choosing inhaler devices with lower environmental impacts when clinically appropriate. Inhaler selection should be tailored to the individual, aiming to achieve the best possible clinical outcome. Choosing an appropriate inhaler for an individual involves consideration of factors such as dexterity, inspiratory capacity and cost. In our current climate emergency and with the availability of lower carbon alternatives, health professionals should also consider environmental impact.

Keywords: COPD; air pollution; asthma; climate change; clinical respiratory medicine.

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- [87 references](#)

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Review

J Allergy Clin Immunol

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. 2024 Nov 12:S0091-6749(24)01184-9.

doi: 10.1016/j.jaci.2024.11.006. Online ahead of print.

[Asthma and Respiratory Co-Morbidities](#)

[Dennis K Ledford](#)¹, [Tae-Bum Kim](#)², [Victor E Ortega](#)³, [Juan Carlos Cardet](#)⁴

Affiliations Expand

- PMID: 39542142

- DOI: [10.1016/j.jaci.2024.11.006](https://doi.org/10.1016/j.jaci.2024.11.006)

Abstract

Asthma is a common respiratory condition with various phenotypes, non-specific symptoms and variable clinical course. The occurrence of other respiratory conditions with asthma, respiratory co-morbidities (RCs), is not unusual. A literature search was performed for asthma and a variety of respiratory co-morbidities using Pub-Med for the years 2019-2024. The 5 conditions with the largest number of references, other than rhinitis and rhinosinusitis addressed in another paper in this issue, or which are the most problematic in the authors' clinical experience are summarized. Others are briefly discussed. The diagnosis and treatment of both asthma and RCs are complicated by the overlap of symptoms and signs. Recognizing RCs is especially problematic in adult onset, non-type 2 asthma as there are no biomarkers to assist in confirming non-type 2 asthma. Treatment decisions in subjects with suspected asthma and RCs are complicated by the potential similarities between the symptoms or signs of the RC and asthma, the absence of a sine quo non for the diagnosis of asthma, the likelihood that many RCs improve with systemic corticosteroids, and the possibility that the manifestations of the RCs are misattributed to asthma or vice versa. Recognition of RCs is critical to the effective management of asthma, particularly severe or difficult to treat asthma.

Keywords: allergic bronchopulmonary aspergillosis (ABPA); asthma; asthma COPD overlap; bronchiectasis; chronic obstructive lung disease; co-morbid; cystic fibrosis; diffuse idiopathic pulmonary neuroendocrine cell hyperplasia (DIPNECH); eosinophilic bronchitis; eosinophilic pneumonia; laryngeal dysfunction; obstructive sleep apnea; rhinitis; rhinosinusitis.

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Review

Breathe (Sheff)

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. 2024 Nov 12;20(3):230229.

doi: 10.1183/20734735.0229-2023. eCollection 2024 Oct.

[Type 2 inflammation in COPD: is it just asthma?](#)

[Augusta Beech](#)^{1 2 3}, [Andrew Higham](#)^{1 3}, [Sophie Booth](#)^{1 2}, [Vickram Tejwani](#)⁴, [Frederik Trinkmann](#)^{5 6}, [Dave Singh](#)^{1 2}

Affiliations Expand

- PMID: 39534492
- PMCID: [PMC11555586](#)
- DOI: [10.1183/20734735.0229-2023](#)

Abstract

COPD is a heterogeneous condition, with tobacco smoking being the main environmental risk factor. The presence of type 2 (T2) inflammation is a well-recognised feature of asthma; however, it is now apparent that a subset of COPD patients also displays evidence of T2 inflammation with respect to elevated eosinophil counts and altered gene and protein expression of several T2 inflammatory mediators. T2 inflammatory mediators represent an attractive therapeutic target in both COPD and asthma; however, the efficacy of pharmaceutical interventions varies between diseases. Furthermore, the nature of some shared clinical features also differs. We provide a narrative review of differences in the nature of T2 inflammation between COPD and asthma, which may partly explain phenotypic differences between diseases. We focus on evidence from studies of pulmonary histopathology, sputum and epithelial gene and protein expression, and response to pharmacological interventions targeted at T2 inflammation.

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Conflict of interest statement

Conflict of interest: D. Singh has received sponsorship to attend and speak at international meetings, honoraria for lecturing or attending advisory boards from the following companies: Aerogen, AstraZeneca, Boehringer Ingelheim, Chiesi, Cipla, CSL Behring, Epiendo, Genentech, GlaxoSmithKline, Glenmark, Gossamerbio, Kinaset, Menarini, Novartis, Pulmatrix, Sanofi, Teva, Theravance and Verona. F. Trinkmann reports grants from AstraZeneca, Bayer Boehringer Ingelheim, Chiesi, Novartis, Roche, BMBF, DZL, Markedsmodningsfonden and E+H Knorr Stiftung, as well as consulting fees and honoraria from AstraZeneca, Berlin

Chemie, Boehringer Ingelheim, Bristol-Myers Squibb, Chiesi, Fisher & Paykel, GlaxoSmithKline, Janssen-Cilag, Merck Healthcare, Novartis, Omron, OM-Pharma, Roche, Sanofi, Aventis and Thorasys, and travel support from AstraZeneca, Actelion, Bayer, Berlin Chemie, Boehringer Ingelheim, Chiesi, Mundipharma, Novartis, Pfizer and TEVA. V. Tejwani reports grants from NIH NHLBI and payment or honoraria from Thermofisher. A. Beech, A. Higham and S. Booth have no conflicts of interest to declare.

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. 2024 Nov 12;20(3):240105.

doi: 10.1183/20734735.0105-2024. eCollection 2024 Oct.

[Highlights from the Respiratory Failure and Mechanical Ventilation Conference 2024](#)

[Clara Bianquis¹](#), [Giancarlo De Leo²](#), [Giorgio Morana³](#), [Marta Duarte-Silva⁴](#), [Santi Nolasco^{3,5}](#), [Rūdolfs Vilde^{6,7}](#), [Athiwat Tripipitsiriwat⁸](#), [Pedro Viegas⁹](#), [Martins Purenkovs^{10,11}](#), [Marieke Duiverman^{12,13}](#), [Christian Karagiannids¹⁴](#), [Christoph Fisser¹⁵](#)

Affiliations Expand

- PMID: 39534488
- PMCID: [PMC1155592](#)
- DOI: [10.1183/20734735.0105-2024](#)

Abstract

The Respiratory Intensive Care Assembly of the European Respiratory Society gathered in Berlin to organise the third Respiratory Failure and Mechanical Ventilation Conference in February 2024. The conference covered key points of acute and chronic respiratory failure in adults. During the 3-day conference ventilatory strategies, patient selection, diagnostic approaches, treatment and health-related quality of life topics were addressed by a panel of international experts. In this article, lectures delivered during the event have been summarised by early career members of the Assembly and take-home messages highlighted.

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Conflict of interest statement

Conflict of interest: C. Bianquis reports grants from ASTEN santé and support for attending meetings from Vitalaire. G. De Leo, G. Morana, M. Duarte-Silva and S. Nolasco have nothing to disclose. R. Vilde reports support for attending meetings from Chiesi and has a leadership role with Latvian Junior doctors' association as a Board member. A. Tripipitsiriwat and P. Viegas have nothing to disclose. M. Purenkovs reports leadership roles with the Latvian Society of Sleep Medicine (Board member), Latvian Society of Innovative Pneumonology and Respiratory Medicine (board member), and Latvian Society of Tuberculosis and Lung Diseases doctors (board member). M. Duiverman reports grants from Fisher & Paykel (High-TeC trial), Vivisol BV (High-TeC trial and Noctivent trial), RESMED Ltd (RECAPTURE trial), Löwenstein BV (Noctivent trial), and Secure BV (Noctivent trial), payment or honoraria for lectures from Vivisol BV, Chiesi, Breas, and AstraZeneca, and a leadership role with ERS as the chair of the NIV group of Assembly 2. C. Karagiannidis and C. Fisser have nothing to disclose.

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

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Am J Respir Crit Care Med

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. 2024 Nov 12.

doi: 10.1164/rccm.202410-2081ED. Online ahead of print.

[Mucus Plugs: A Treatable Trait for Preventing COPD Exacerbations](#)

[Meghan Koo](#)¹, [Miranda Kirby](#)²

Affiliations Expand

- PMID: 39531627
- DOI: [10.1164/rccm.202410-2081ED](#)

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Zhonghua Jie He He Hu Xi Za Zhi

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. 2024 Nov 12;47(11):1048-1068.

doi: 10.3760/cma.j.cn112147-20240816-00488.

[\[Guidelines for peri-discharge management and follow-up of acute exacerbations of chronic obstructive pulmonary disease\(2024 edition\)\]](#)

[Article in Chinese]

[Chinese Thoracic Society](#); [Respiratory Disease Prevention and Control Specialty Societies of Chinese Preventive Medicine Association](#); [Chronic Obstructive Pulmonary Disease Committee of Chinese Association of Chest Physician](#); [County Respiratory Professional Committee of China Association of Health Promotion and Education](#)

- PMID: 39271191
- DOI: [10.3760/cma.j.cn112147-20240816-00488](#)

Abstract

in [English, Chinese](#)

Acute exacerbations of chronic obstructive pulmonary disease (AECOPD) are important events in the course of chronic obstructive pulmonary disease (COPD), and its diagnosis, treatment and prevention are the focus of disease management. Optimizing the peri-discharge management of AECOPD will help to improve continuity of care, prevent recurrence of acute events in the short time, and improve long-term prognosis. In recent years, evidence on the peri-discharge period and the cluster management of AECOPD has accumulated, and confirming the benefit of early follow-up and management after discharge. By reviewing the available evidence, this guideline aims to standardize discharge management and follow-up pathways for AECOPD patients. This guideline is intended for physicians and nursing staff involved in the clinical practice of COPD.

Supplementary info

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Respir Care

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. 2024 Nov 12:respcare.11876.

doi: 10.4187/respcare.11876. Online ahead of print.

[Efficacy of Noninvasive Ventilation With Expiratory Washout in Stable COPD Patients](#)

[Stacey Kung](#)¹, [Alex C Semprini](#)², [Louis W Kirton](#)³, [Jess R Fogarin](#)⁴, [Sascha K Zoellner](#)⁴, [Richard Beasley](#)², [Allie Eathorne](#)¹, [Ruth Ac Semprini](#)¹

Affiliations [Expand](#)

- PMID: 39134364

- DOI: [10.4187/respcare.11876](https://doi.org/10.4187/respcare.11876)

Abstract

Background: A noninvasive ventilation (NIV) mask has been designed to deliver NIV with expiratory washout to improve efficacy of ventilation by optimizing clearance of expired gases from the anatomic dead space. This study compared the performance and comfort of a novel investigational mask with expiratory washout with a conventional mask during NIV therapy.

Methods: In this pilot crossover study, participants with severe stable COPD attended a single visit to receive bi-level NIV through 2 masks; the investigational mask with expiratory washout and a conventional mask. The order of mask use was randomly allocated, and each mask was used for 60 min with a 30-60-min washout in between. The primary outcome was transcutaneous carbon dioxide at 60 min. Other physiologic and NIV device variables were also assessed.

Results: The mean difference (95% CI) in the transcutaneous carbon dioxide between the investigational and conventional masks at 60 min, adjusted for baseline, was -0.74 mm Hg, 95% CI -2.81 to 1.33 mm Hg ($P = .45$). The investigational mask with expiratory washout elicited a lower tidal volume (-128.7 mL, 95% CI -190.0 to -67.3 mL; $P < .001$) and minute ventilation (-2.28 L/min, 95% CI -3.12 to -1.43 L/min; $P < .001$), and a higher leak (7.96 L/min, 95% CI 4.39-11.54 L/min; $P < .001$) than the conventional mask. There were no differences in other physiologic responses or ratings of dyspnea or comfort.

Conclusions: NIV therapy delivered by using a novel mask with expiratory washout was similarly effective at reducing transcutaneous carbon dioxide, whereas the delivered tidal volume and minute ventilation were significantly lower when compared with a conventional mask in participants with severe COPD.

Keywords: capnography; exhalation; mask; non invasive ventilation; respiratory dead space; respiratory insufficiency; tidal volume.

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ERJ Open Res

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. 2024 Nov 11;10(6):00185-2024.

doi: 10.1183/23120541.00185-2024. eCollection 2024 Nov.

[Characteristics of exacerbators in the US Bronchiectasis and NTM Research Registry: a cross-sectional study](#)

[Nicole C Lapinel](#)^{1,2}, [Radmila Choate](#)³, [Timothy R Aksamit](#)⁴, [Joseph Feliciano](#)⁵, [Kevin L Winthrop](#)⁶, [Andreas Schmid](#)⁷, [Sebastian Fucile](#)⁵, [Mark L Metersky](#)⁸

Affiliations Expand

- PMID: 39534769
- PMCID: [PMC11551853](#)
- DOI: [10.1183/23120541.00185-2024](#)

Abstract

Background: Exacerbations of noncystic fibrosis bronchiectasis (bronchiectasis) are associated with reduced health-related quality of life and increased mortality, likelihood of hospitalisation and lung function decline. This study investigated patient clinical characteristics associated with exacerbation frequency.

Methods: A cross-sectional cohort study of patients ≥ 18 years with bronchiectasis enrolled in the US Bronchiectasis and Nontuberculous Mycobacteria (NTM) Research Registry (BRR) September 2008-March 2020. Patients were stratified by exacerbation frequency in their 2 years before enrolment. Patient demographics, respiratory symptoms, healthcare resource utilisation, microbiology, modified bronchiectasis severity index (mBSI) and select comorbidities were collected at enrolment. Patient characteristics associated with exacerbation frequency were assessed using a negative binomial model.

Results: The study included 2950 patients (mean age 65.6 years; 79.1% female). Frequency of moderate to severe airway obstruction (forced expiratory volume in 1 s (FEV₁) % predicted $< 50\%$; most recent measure) was 15.9%, 17.8%, and 24.6% in patients with 1, 2, and ≥ 3 exacerbations *versus* 8.9% in patients with 0 exacerbations; severe disease (mBSI) was 27.8%, 24.2% and 51.1% *versus* 13.2%; respiratory hospitalisation was 24.5%, 33.0% and 36.5% *versus* 4.1%; and *Pseudomonas aeruginosa* infection was 18.8%, 23.4% and 35.2% *versus* 11.9%. In multivariable model analysis, respiratory hospitalisation, cough, haemoptysis, *P. aeruginosa*, younger age, lower FEV₁% predicted, asthma, and gastro-oesophageal reflux disease were associated with more exacerbations.

Conclusions: These findings demonstrate a high disease burden, including increased respiratory symptoms, healthcare resource utilisation,

and *P. aeruginosa* infection in patients with bronchiectasis and multiple exacerbations.

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Conflict of interest statement

Conflict of interest: N.C. Lapinel reports receiving consulting fees and serving on the advisory board panel for Insmmed Incorporated and that Louisiana State University Health Sciences Center received clinical trial support from Insmmed Incorporated. R. Choate and A. Schmid have nothing to disclose. T.R. Aksamit reports no personal grant/research support from Insmmed Incorporated or other pharma; clinical trial design and participation with AstraZeneca, Insmmed Incorporated, Johnson & Johnson, Redhill Biopharma, Spero Therapeutics and Zambon, with all support going to the Mayo Foundation for Medical Education and Research; and is the Medical Director of Bronchiectasis and NTM 360 for the COPD Foundation. J. Feliciano and S. Fucile are employees and shareholders of Insmmed Incorporated. K.L. Winthrop reports grant/research support and consulting fees from AN2 Therapeutics, Insmmed Incorporated, Paratek, Red Hill Biopharma, Renovion, and Spero Therapeutics and participation on a data safety monitoring board or advisory board for Red Hill Biopharma. M.L. Metersky reports receiving consulting fees from AN2 Therapeutics, Boehringer Ingelheim, Insmmed Incorporated, Renovion, and Zambon.

- [16 references](#)
- [6 figures](#)

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. 2024 Nov 11;10(6):00193-2024.

doi: 10.1183/23120541.00193-2024. eCollection 2024 Nov.

[The noninvasive ventilation outcomes score in patients requiring NIV for COPD exacerbation without prior evidence of airflow obstruction](#)

[Nicholas D Lane](#)^{1,2}, [Tom M Hartley](#)³, [John Steer](#)^{2,4}, [Stephen C Bourke](#)^{2,4}

Affiliations Expand

- PMID: 39534768
- PMCID: [PMC11551854](#)
- DOI: [10.1183/23120541.00193-2024](#)

Abstract

Introduction: Exacerbation of COPD complicated by respiratory acidaemia is the commonest indication for noninvasive ventilation (NIV). The NIV outcomes (NIVO) score offers the best estimate of survival for those ventilated. Unfortunately, two-thirds of cases of COPD are unrecognised, and patients may present without COPD having been confirmed by spirometry.

Methods: In the 10-centre NIVO validation study there was no pre-admission spirometry in 111 of 844 consecutive patients (termed "clinical diagnosis" patients). We compared the performance of the NIVO, DECAF and CURB-65 scores for in-hospital mortality in the clinical diagnosis cohort. Usual clinical practice was not influenced, but confirmation of COPD in the year following discharge was captured.

Results: In the clinical diagnosis cohort, in-hospital mortality was 19.8% and rose incrementally across the NIVO risk categories, consistent with the NIVO validation cohort. NIVO showed good discrimination in the clinical diagnosis cohort: area under the receiver operating curve 0.724, *versus* 0.79 in the NIVO validation cohort. At 1 year after discharge, 41 of 89 clinical diagnosis patients had undertaken diagnostic spirometry; 33 of 41 had confirmation of airflow obstruction (forced expiratory volume in 1 s/(forced) vital capacity <0.7), meaning the diagnosis of COPD was incorrect in 19.5% of cases.

Discussion: These data support the use of the NIVO score in patients with a "clinical diagnosis" of COPD. NIVO can help guide shared decision-making, assess risk-adjusted outcomes by centre and challenge prognostic pessimism. Accurate diagnosis is critical to ensure that acute and long-term treatment is optimised; this study highlights failings in the follow-up of such patients.

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Conflict of interest statement

Conflict of interest: N.D. Lane reports support for attending meetings and/or travel from Chiesi, and nonfinancial support from BREAS. **Conflict of interest:** T.M. Hartley has nothing to disclose. **Conflict of interest:** J. Steer reports grants from Chiesi outside of the current study; honoraria from AstraZeneca; support for attending meetings and/or travel from AstraZeneca; and personal fees for committee work in the UK Cardiopulmonary Taskforce. **Conflict of interest:** S.C. Bourke reports research grants from GSK, Chiesi and Radiometer, outside the current study; consulting fees from AstraZeneca; support for attending meetings and/or travel from AstraZeneca; and advisory board fees from GSK.

- [15 references](#)
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Intern Emerg Med

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. 2024 Nov 11.

doi: 10.1007/s11739-024-03795-1. Online ahead of print.

[Final diagnoses and mortality rates in ambulance patients administered nebulized \$\beta\$ 2-agonists bronchodilators](#)

[Victor Hagenau](#)¹, [Mathilde G Mulvad](#)¹, [Jan B Valentin](#)², [Arne S R Jensen](#)¹, [Martin F Gude](#)^{3 4}

Affiliations Expand

- PMID: 39527233
- DOI: [10.1007/s11739-024-03795-1](#)

Abstract

To assess final diagnoses and mortality rates (30 day and 1 year) in patients treated with the inhaled bronchodilator salbutamol by ambulance personnel, and to establish its role as an identifier of moderate to severe respiratory distress in the prehospital phase of treatment. In a descriptive retrospective observational study, patients experiencing respiratory distress and treated with inhaled bronchodilators, specifically salbutamol, in the prehospital setting within the Central Denmark Region during 2018-2019 were included. The study included 6318 ambulance transports, comprising 3686 cases of acute exacerbation of chronic obstructive pulmonary disease (AECOPD), 234 with community-acquired pneumonia (CAP), 320 with heart disease (HD), 233 adults with asthma, 1674 with various other primary ICD-10 diagnoses (other \geq 18 years), and 171 patients under 18 years. The 30 day mortality rate for all patients was 10.7% (95% CI 9.8-11.6), with zero deaths within 30 days among adults with asthma and those under 18. Excluding low mortality

groups, AECOPD patients had the lowest 30 day mortality at 10.2% (95% CI 9.1-11.3), and HD patients the highest at 15.3% (95% CI 10.6-19.9). The 1-year overall mortality rate increased to 32.1% (95% CI 30.2-34.0), with mortality staying low for asthma and under-18 groups, while differences between other groups lessened and became insignificant. Patients requiring inhaled bronchodilator treatment in ambulances exhibit notably high mortality rates at 30 days and 1 year, except for those with asthma or under 18. The need for prehospital bronchodilators could serve as a clear and unmistakable marker for moderate to severe respiratory distress, enabling early intervention.

Keywords: Bronchodilator agents; Chronic Obstructive; Emergency medical services; Lung diseases; Pulmonary Disease; Respiratory insufficiency.

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Conflict of interest statement

Declarations Conflict of interest The authors declare that the research was conducted in the absence of any commercial or financial relationships. The authors have no conflict of interest. Ethics approval and consent to participate The study received approval from the Legal Department of the Central Denmark Region (file no. 1-45-70-53-22), and patient consent requirements were formally waived. Storage of the data was approved by the Danish Data Protection Agency (file no. 1-16-02-231-22). Human and animal rights statement and Informed consent The study adhered to the ethical standards outlined in the 1964 Declaration of Helsinki and its subsequent revisions.

- [48 references](#)

Full text links



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

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Environ Health

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. 2024 Nov 14;23(1):99.

doi: 10.1186/s12940-024-01133-8.

[Insights into relationship of environmental inequalities and multimorbidity: a population-based study](#)

[Nina Rajovic](#)¹, [Nikola Grubor](#)¹, [Andja Cirkovic](#)¹, [Ravindra Maheswaran](#)², [Peter A Bath](#)³, [Dan Green](#)⁴, [Ilaria Bellantuono](#)⁵, [Ognjen Milicevic](#)¹, [Selma Kanazir](#)⁶, [Dragan Miljus](#)⁷, [Snezana Zivkovic](#)⁷, [Dragana Vidojevic](#)⁸, [Natasa Mickovski](#)⁷, [Ivana Rakocevic](#)⁷, [Ivan Ivanovic](#)⁷, [Aleksandra Mladenovic](#)⁶, [Elizabeth Goyder](#)^{2,5}, [Natasa Milic](#)^{9,10}

Affiliations Expand

- PMID: 39543597
- DOI: [10.1186/s12940-024-01133-8](https://doi.org/10.1186/s12940-024-01133-8)

Abstract

Background: Substantial inequalities in the overall prevalence and patterns of multimorbidity have been widely reported, but the causal mechanisms are complex and not well understood. This study aimed to identify common patterns of multimorbidity in Serbia and assess their relationship with air pollutant concentrations and water quality indicators.

Methods: This ecological study was conducted on a nationally representative sample of the Serbian population. Data were obtained from the European Health Interview (EHIS) Survey, a periodic study designed to assess population health using widely recognized standardized instruments. The study included 13,069 participants aged 15 and older, randomly selected through a multistage stratified sampling design. Multimorbidity was defined as having two or more self-reported diagnoses of chronic non-communicable diseases. Latent class analysis (LCA) was performed to identify clusters of multimorbidity. Concentrations of particulate matter (PM₁₀), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), carbon monoxide (CO), and ozone (O₃), as well as water quality indicators, were obtained from the Serbian Environmental Protection Agency.

Results: The overall prevalence of multimorbidity was 33.4% [32.6%-34.2%]. Six latent classes of multimorbidity were identified: Healthy, Multicondition, Cardiovascular, Metabolic syndrome, Respiratory, and Musculoskeletal. Annual increases in PM₁₀ and SO₂ concentrations, as well as daily increases in O₃ concentrations, significantly raised the odds of having multimorbidity (OR = 1.02, 95% CI 1.02-1.03; OR = 1.01, 95% CI 1.00-1.02 and OR = 1.03, 95% CI 1.02-1.03, respectively). A pattern of increased risk was observed with rising levels of water contamination. Exposure to physico-chemical, microbiological and combined contamination was associated with a 3.92%, 5.17% and 5.54% higher probability, respectively, of having multiple chronic conditions. There was strong evidence that air pollutants, as well as chemical and microbial water contamination, were significantly associated with higher odds of the most common clusters of multimorbidity identified by LCA.

Conclusion: There is compelling evidence of an association between multimorbidity and environmental pollution, suggesting that exposure to air pollutants and water contaminants may contribute to disease accumulation and help explain

geographically and socioeconomically patterned inequalities. These findings underscore the need for extensive studies that simultaneously measure both multimorbidity and pollution to explore their complex interrelationships.

Keywords: Air pollution; Disease clusters; Inequalities; Latent class analysis; Multimorbidity; Water pollution.

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Conflict of interest statement

Declarations Ethics approval and consent to participate This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of the Institute of Public Health of Serbia (date: 10.06.2021; n° 3607/1). Informed consent was obtained from all individual participants included in the study. Consent for publication Not applicable. Competing interests The authors declare no competing interests.

- [55 references](#)

Supplementary info

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Review

Proc Nutr Soc

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. 2024 Nov 11:1-8.

doi: 10.1017/S0029665124007420. Online ahead of print.

[Improving diets and multimorbidity prevention](#)

[Tazeem Bhatia](#)¹, [Adrienne Cullum](#)¹

Affiliations Expand

- PMID: 39523985

- DOI: [10.1017/S0029665124007420](https://doi.org/10.1017/S0029665124007420)

Abstract

In 2023, the UK government announced a Major Conditions Strategy, publishing 'The case for change and our strategic framework', which set out the focus on cancers, diabetes, dementia, mental ill health, musculoskeletal disorders, CVD and chronic respiratory diseases. Together, these conditions account for 60% of total disability-adjusted life years lost to early death or ill health in England, and one in four adults has at least two (multimorbidity). This review considers some of the key dietary risks for these major conditions and population policies that may improve diets and reduce risks. UK Government dietary recommendations, based on independent risk assessment and advice from the Scientific Advisory Committee on Nutrition, are encapsulated in the national food model, the Eatwell Guide. Based on key sources of dietary data - chiefly consumption data from the National Diet and Nutrition Survey and consumer purchase data from Kantar - most people do not meet dietary recommendations. This review considers how science and evidence inform health improvement policy. This includes policies that encourage healthier food choices, such as labelling and public procurement standards to those that minimise the impact of the less healthy choice such as sugar and salt reduction and reformulation. The review also considers nutritional approaches to managing some non-communicable diseases. Given the role nutrition and excess weight play in the onset, prognosis and quality of life for those living with one or more of the major conditions, there are huge potential gains from even small dietary improvements across population groups.

Keywords: Diet; Dietary policies; Dietary risk factors; Excess weight; Multimorbidity prevention.

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Br J Gen Pract

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. 2024 Nov 11:BJGP.2024.0286.

doi: 10.3399/BJGP.2024.0286. Online ahead of print.

Multimorbidity and person-centred care in a socioeconomically deprived community: a qualitative study

Marianne McCallum¹, Sara Macdonald¹, Frances S Mair¹

Affiliations Expand

- PMID: 39438047
- DOI: [10.3399/BJGP.2024.0286](https://doi.org/10.3399/BJGP.2024.0286)

Abstract

Background: People with multimorbidity (>2 long-term conditions) have poorer outcomes in areas of high socioeconomic deprivation (SED). High-quality person-centred care (PCC) is important in those with multimorbidity, but socially vulnerable populations have not, to our knowledge, informed current PCC models.

Aim: To explore how wider community factors influence management of multimorbidity in the context of high SED, how high-quality PCC is defined by patients, and whether this influences healthcare management.

Design and setting: Ethnographically informed case study in a community experiencing high SED in Scotland.

Method: Participant observation (138 h) was undertaken within four community groups who also took part in two participatory workshops. There were 25 in-depth interviews with people with multimorbidity, recruited from local general practices; emerging findings were discussed with interviewees in one focus group. Field notes/transcripts were analysed using inductive thematic analysis.

Results: Key aspects of PCC were 'patient as person', 'strong therapeutic relationship', 'coordination of care', and 'power sharing'; power sharing was particularly enabling but rarely happened (barriers often unseen by practitioners). Shared community experiences of 'being known', 'stigma', and 'none of the systems working' influenced how people approached health services and healthcare decisions. High-quality PCC may have been particularly effective in this setting because of its influence on ameliorating wider shared negative community experiences.

Conclusion: In a high SED setting PCC is important and can enhance engagement. Wider community factors have a critical influence on engagement with health care in areas of high SED and PCC may be particularly important in this context because of its influence ameliorating these. Policymakers should prioritise and resource PCC.

Keywords: multimorbidity; person-centered care; primary health care; qualitative research; socioeconomic factors; vulnerable populations.

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Review

Ageing Res Rev

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. 2024 Nov 10:102559.

doi: 10.1016/j.arr.2024.102559. Online ahead of print.

[Recommendations and quality of multimorbidity guidelines: a systematic review](#)

[Zijun Wang](#)¹, [Di Zhu](#)², [Huayu Zhang](#)³, [Ling Wang](#)⁴, [Hongfeng He](#)³, [Zhewei Li](#)³, [Bingyi Wang](#)⁵, [Jie Zhang](#)⁵, [Xiaoqing Li](#)⁶, [Hanna Tuinhof](#)⁷, [Barbara C van Munster](#)⁷, [Yaolong Chen](#)⁸, [Janne Estill](#)⁹

Affiliations Expand

- PMID: 39532235
- DOI: [10.1016/j.arr.2024.102559](https://doi.org/10.1016/j.arr.2024.102559)

Abstract

Background: As the population is aging, multimorbidity has become an increasingly important global health challenge. Clinical practice guidelines are essential references to guide daily practice for health care providers. This systematic review aims to assess whether existing multimorbidity guidelines adhered to the principles outlined in a previously developed framework for multimorbidity management recommendations, Ariadne, and evaluate their methodological and reporting quality.

Methods: We systematically searched six literature databases and nine guideline platforms from their inception until September 30, 2024. We included guidelines and

guideline-like documents on multimorbidity and polypharmacy. Language was limited to English and Chinese. We extracted data related to basic information and guideline development methodology, and categorized guideline recommendations based on the Ariadne framework. We used the Appraisal of Guidelines, Research and Evaluation II (AGREE II) instrument and Reporting Items for practice Guidelines in HealthCare (RIGHT) checklist to evaluate the methodological and reporting quality of the guidelines, respectively.

Result: Our systematic review identified 20 eligible guidelines, of which 10 focused on multimorbidity, eight on polypharmacy, and two covered both topics. The mean overall AGREE II score was 27.9% and the mean compliance rate to the RIGHT reporting checklist 35.1%. Individualized management was the most frequently addressed of the five steps of the Ariadne framework (n=18 guidelines, 90.0%), followed by interaction assessment (n=17, 85.0%).

Conclusion: The methodological and reporting quality of multimorbidity guidelines were suboptimal. The recommendations of these guidelines covered primarily the management process of multimorbid patients. Future guidelines should pay more attention to the scientific quality of the development methodology and the feasibility of implementing the guidelines in practice.

Funding: Research Unit of Evidence-Based Evaluation and Guidelines (2021RU017), Chinese Academy of Medical Sciences, School of Basic Medical Sciences, Lanzhou University, Lanzhou, Gansu, China.

Keywords: Guidelines; Multimorbidity; Polypharmacy; Systematic review.

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

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Review

Eur Ann Allergy Clin Immunol

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. 2024 Nov 15.

doi: 10.23822/EurAnnACI.1764-1489.376. Online ahead of print.

[The added value of targeting airway hyperresponsiveness by blocking TSLP in the management of severe asthma](#)

[A Vaghi](#)¹, [M B Bilò](#)^{2,3}, [F Bini](#)⁴, [L Cecchi](#)⁵, [C Micheletto](#)⁶, [A Musarra](#)⁷

Affiliations Expand

- PMID: 39545827
- DOI: [10.23822/EurAnnACI.1764-1489.376](#)

Abstract

Airways hyperresponsiveness (AHR) is a pathognomonic event of asthma in which the airways are reactive to various bronchoconstrictor stimuli at 'doses' that normally have no bronchoconstrictor effect in non-asthmatics. AHR is an objective measure of clinical efficacy, and the introduction of biologics revived interest as a marker of disease and its pathophysiologic mechanism. This article aims to discuss the mechanisms of AHR, focusing on the role of epithelial damage and TSLP production, and promote its correct assessment for the evaluation of patients with severe asthma, to predict the risk of exacerbations and outcomes, and the eligibility for treatment with an anti-TSLP agent. AHR is a complex trait of asthma, induced by the concurrence of many pathophysiological factors and related to different clinical manifestations. Recent evidence demonstrates the important role of airway epithelial damage and TSLP production in many of these events. A therapeutic response based on AHR control could be considered as a condition of disease remission and seems a promising new goal for the management of patients with severe asthma.

Keywords: Severe asthma; TSLP; Tezepelumab; airway epithelium; airway hyperresponsiveness.

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Am J Respir Crit Care Med

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. 2024 Nov 15;210(10):1186-1200.

doi: 10.1164/rccm.202406-1166SO.

[Obesity-related Asthma: A Pathobiology-based Overview of Existing and Emerging Treatment Approaches](#)

[Meghan D Althoff](#)¹, [Kristina Gaietto](#)², [Fernando Holguin](#)¹, [Erick Forno](#)³

Affiliations Expand

- PMID: 39311907
- DOI: [10.1164/rccm.202406-1166SO](#)

Abstract

Although obesity-related asthma is associated with worse asthma outcomes, optimal treatment approaches for this complex phenotype are still largely unavailable. This state-of-the-art review article synthesizes evidence for existing and emerging treatment approaches for obesity-related asthma and highlights pathways that offer potential targets for novel therapeutics. Existing treatments targeting insulin resistance and obesity, including metformin and GLP-1 (glucagon-like-peptide 1) receptor agonists, have been associated with improved asthma outcomes, although GLP-1R agonist data in asthma are limited to individuals with comorbid obesity. Monoclonal antibodies approved for treatment of moderate to severe asthma generally appear to be effective in individuals with obesity, although this is based on retrospective or secondary analysis of clinical trials; moreover, although most of these asthma biologics are approved for use in the pediatric population, the impact of obesity on their efficacy has not been well studied in youth. Potential therapeutic targets being investigated include IL-6, arginine metabolites, nitro-fatty acids, and mitochondrial antioxidants, with clinical trials for each currently underway. Potential therapeutic targets include adipose tissue eosinophils and the GLP-1-arginine-advanced glycation end products axis, although data in humans are still needed. Finally, transcriptomic and epigenetic studies of "obese asthma" demonstrate enrichment of IFN-related signaling pathways, Rho-GTPase pathways, and integrins, suggesting that these too could represent future treatment targets. We advocate for further study of these potential therapeutic mechanisms and continued investigation of the distinct inflammatory pathways characteristic of obesity-related asthma, to facilitate effective treatment development for this unique asthma phenotype.

Keywords: obesity; obesity-related asthma; treatments.

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Am J Respir Crit Care Med

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. 2024 Nov 15;210(10):1201-1209.

doi: 10.1164/rccm.202309-1702OC.

[The Legacy of Redlining: Increasing Childhood Asthma Disparities through Neighborhood Poverty](#)

[Patrick H Ryan](#)^{1,2}, [Antonella Zanobetti](#)³, [Brent A Coull](#)^{3,4}, [Howard Andrews](#)⁵, [Leonard B Bacharier](#)⁶, [Dakota Bailey](#)⁷, [Paloma I Beamer](#)^{8,9}, [Jeff Blossom](#)⁷, [Cole Brokamp](#)^{1,2}, [Soma Datta](#)¹⁰, [Tina Hartert](#)¹¹, [Gurjit K Khurana Hershey](#)^{1,12}, [Daniel J Jackson](#)¹³, [Christine C Johnson](#)¹⁴, [Christine Joseph](#)¹⁴, [Jorja Kahn](#)¹⁰, [Nathan Lothrop](#)^{8,9}, [Margee Louisias](#)¹⁵, [Heike Luttmann-Gibson](#)³, [Fernando D Martinez](#)^{8,16}, [Eneida A Mendonça](#)^{1,17}, [Rachel L Miller](#)¹⁸, [Dennis Ownby](#)¹⁹, [Sima Ramratnam](#)¹³, [Christine M Seroogy](#)¹³, [Cynthia M Visness](#)²⁰, [Anne L Wright](#)^{8,16}, [Edward M Zoratti](#)¹⁴, [James E Gern](#)¹³, [Diane R Gold](#)^{3,10}

Affiliations Expand

- PMID: 38869320
- DOI: [10.1164/rccm.202309-1702OC](#)

Abstract

Rationale: Identifying the root causes of racial disparities in childhood asthma is critical for health equity. **Objectives:** To determine whether the racist policy of redlining in the 1930s led to present-day disparities in childhood asthma by increasing community-level poverty and decreasing neighborhood socioeconomic position (SEP). **Methods:** We categorized census tracts at the birth address of participants from the Children's Respiratory and Environmental Workgroup birth

cohort consortium into categories A, B, C, and D as defined by the Home Owners Loan Corporation, with D being the highest perceived risk. Surrogates of present-day neighborhood-level SEP were determined for each tract, including the percentage of low-income households, the CDC's Social Vulnerability Index, and other tract-level variables. We performed causal mediation analysis, which, under the assumption of no unmeasured confounding, estimates the direct and mediated pathways by which redlining may cause asthma disparities through tract-level mediators adjusting for individual-level covariates. **Measurements and Main Results:** Of 4,849 children, the cumulative incidence of asthma through age 11 was 26.6%, and 13.2% resided in census tracts with a Home Owners Loan Corporation grade of D. In mediation analyses, residing in Grade-D tracts (adjusted odds ratio = 1.03 [95% confidence interval = 1.01, 1.05]) was significantly associated with childhood asthma, with 79% of this increased risk mediated by percentage of low-income households; results were similar for the Social Vulnerability Index and other tract-level variables. **Conclusions:** The historical structural racist policy of redlining led to present-day asthma disparities in part through decreased neighborhood SEP. Policies aimed at reversing the effects of structural racism should be considered to create more just, equitable, and healthy communities.

Keywords: asthma; mediation analysis; racism; redlining.

Comment in

- [An Unfortunate Inheritance: Child Asthma in the Aftermath of Redlining.](#)

Bose S, Carroll K. *Am J Respir Crit Care Med.* 2024 Nov 15;210(10):1171-1173. doi: 10.1164/rccm.202406-1225ED. PMID: 39078197 No abstract available.

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Mol Psychiatry

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. 2024 Nov 14.

doi: 10.1038/s41380-024-02793-1. Online ahead of print.

[Respiratory disease in people with bipolar disorder: a systematic review and meta-analysis](#)

[David Laguna-Muñoz](#) ^{#1 2 3}, [Ana Jiménez-Peinado](#) ^{#1 2 3}, [María José Jaén-Moreno](#) ^{1 2 3}, [Cristina Camacho-Rodríguez](#) ¹, [Gloria Isabel Del Pozo](#) ^{1 2 3}, [Eduard Vieta](#) ^{4 5 6 7 8}, [Javier Caballero-Villarraso](#) ^{1 2 9}, [Muhammad Ijlal Khan](#) ¹⁰, [Fernando Rico-Villademoros](#) ¹¹, [Fernando Sarramea](#) ^{1 2 3 12}

Affiliations Expand

- PMID: 39543369
- DOI: [10.1038/s41380-024-02793-1](https://doi.org/10.1038/s41380-024-02793-1)

Abstract

People with bipolar disorder (BD) have an increased risk of premature mortality and the respiratory mortality rate is higher than those of the general population. To date, however, the evidence on respiratory disease in this population has not been meta-analyzed. We systematically review and meta-analyze the frequency of respiratory diseases in patients with BD and to compare prevalence and odds ratio (OR) with the general population. The systematic literature search was conducted in Pubmed, PsycINFO, Scielo and Scopus, with snowball search of reference and citation lists. Inclusion criteria were studies reporting diagnoses of respiratory diseases (asthma, chronic obstructive pulmonary disease (COPD), pneumonia, lung cancer and tuberculosis) in people with BD according to operationalized criteria and where possible, control group. Of the 2158 articles screened, 20 including 962,352 people with BD and 37,340,405 control group, met the inclusion criteria. In people with BD, the prevalence of COPD was 9.14% (95%CI: 6.61-12.5%), asthma 6.4% (95%CI: 4.56-8.91%), pneumonia 2.78% (95%CI: 2.51-3.08%) and lung cancer 0.44% (95%CI:0.23-0.84%). Compared to the general population, people with BD had significantly higher rates of COPD (OR: 1.73; 95% CI: 1.40-2.14), showing an increased rate in younger and female patients; asthma (OR: 1.91, 95% CI: 1.25-2.94), with a greater rate in younger patients; and pneumonia (OR: 2.82, 95% CI: 1.33-5.99). In the first meta-analysis on the topic, BD was associated with an increased risk of respiratory illness versus the general population. In COPD and asthma, young people and women are at particular risk. Prevention programs are urgently needed.

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Conflict of interest statement

Competing interests EV has received grants and served as consultant, advisor or CME speaker for the following entities: AB-Biotics, AbbVie, Adamed, Angelini, Biogen, Beckley-Psytech, Biohaven, Boehringer-Ingelheim, Celon Pharma, Compass, Dainippon Sumitomo Pharma, Ethypharm, Ferrer, Gedeon Richter, GH Research, Glaxo-Smith Kline, HMNC, Idorsia, Johnson & Johnson, Lundbeck, Luye Pharma, Medincell, Merck, Newron, Novartis, Orion Corporation, Organon, Otsuka, Roche, Rovi, Sage, Sanofi-Aventis, Sunovion, Takeda, Teva, and Viartis, outside the

submitted work. FS during the last 5 years has been speaker for Rovi and Janssen-Cilag. DL-M during the last 5 years has been speaker for Lundbeck. All other authors report no biomedical financial interests or potential conflicts of interests related with this manuscript.

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J Asthma

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. 2024 Nov 14:1-20.

doi: [10.1080/02770903.2024.2430368](https://doi.org/10.1080/02770903.2024.2430368). Online ahead of print.

[Allergic Diseases and T2DM:A Bidirectional Multivariable Mendelian Randomization Study and Mediation Analysis](#)

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- PMID: [39541335](#)
- DOI: [10.1080/02770903.2024.2430368](https://doi.org/10.1080/02770903.2024.2430368)

Abstract

Background: Clinical studies involving observation have uncovered a mutual relationship between allergic disorders and diabetes, yet the precise causal link remains undetermined.

Methods: We conducted two-sample bidirectional Mendelian randomization analyses using single nucleotide polymorphisms (SNPs) associated with allergic

conditions (asthma, allergic rhinitis, atopic dermatitis) from genome-wide studies and SNPs related to type 2 diabetes from FinnGen. Initially, we evaluated the causal link between allergic disorders and type 2 diabetes through a univariate Mendelian randomization study, incorporating inverse variance weighting, MR-Egger, and the weighted median estimator. To address potential confounding, we employed multivariate Mendelian randomization. Finally, we validated mediators influencing the correlation between asthma and type 2 diabetes.

Results: The Inverse variance weight method showed that asthma genetically increased the risk of type 2 diabetes (Asthma- type 2 diabetes: $\beta(95\%CI)=0.892(0.152\sim1.632)$, $P = 0.018$). Allergic rhinitis and type 2 diabetes exhibit a mutual protective effect: $\beta(95\% CI)=-1.333(-2.617 \text{ to } -0.049)$, $P = 0.042$; type 2 diabetes - Allergic rhinitis: $\beta(95\%CI)=-0.002(-0.004 \text{ to } -0.000)$, $P = 0.018$). The Multivariable Mendelian randomization study results showed that after excluding confounding factors, asthma still demonstrates statistical significance in relation to type 2 diabetes. Through mediation analysis, it was discovered that lung function and the percentage of monocytes in leukocytes exert an inhibitory effect on the mediation between asthma and type 2 diabetes.

Conclusion: The Multivariable Mendelian randomization study indicates asthma as a risk factor for type 2 diabetes. Lung function, and the percentage of monocytes in leukocytes, play an inhibitory role in asthma and type 2 diabetes mediating effects.

Keywords: Asthma; Mediation analysis; Multivariable Mendelian randomization study; Type 2 diabetes.

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Allergy

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. 2024 Nov 14.

doi: 10.1111/all.16370. Online ahead of print.

[One-strength dose escalation of house dust mite depot product for subcutaneous immunotherapy is safe and tolerable](#)

[M Jutel](#)^{1,2}, [C Vogelberg](#)³, [K Duwensee](#)⁴, [D Troyke](#)⁴, [L Klimek](#)⁵

Affiliations Expand

- PMID: 39540587
- DOI: [10.1111/all.16370](#)

Abstract

Background: Allergen immunotherapy (AIT) aims at modulating the immune response by administration of allergen preparations at regular intervals over several years (1). For subcutaneous AIT (SCIT), the treatment is initiated with a dose escalation phase followed by a maintenance dose administration. Over the last decade, there has been a trend towards shortening dose escalation regimens to increase patient adherence. This open-label, phase II trial aimed to investigate the safety and tolerability of a house dust mites (HDMs) SCIT product when used in a newly designed one-strength dose escalation scheme.

Method: Patients, aged 12-65, suffering from HDM-allergic rhinitis/rhinoconjunctivitis ± asthma were included. Patients were randomized to the one-strength (6 injections from the highest strength 3) or the Standard dose escalation regimen (14 injections from strengths 1 to 3) using the HDMs-SCIT product. All adverse events were reported. Tolerability was assessed on the Likert scale.

Results: One hundred and forty-three patients were randomized, 79 adults and 64 adolescents. In total, the one-strength regimen caused more adverse drug reactions (ADRs) than the Standard regimen ($p = .0457$). With both regimens most ADRs were local reactions which occurred more often in the one-strength group ($p = .0393$). But there was no significant difference in the number of patients affected by systemic or serious ADRs between both regimens. No relevant differences occurred between the two age groups and no other risks were observed for adolescents compared to adults.

Conclusion: The safety and tolerability of both regimens can be considered comparable, as most ADRs were local reactions, primarily rated as mild in intensity. Nevertheless, the one-strength regimen caused more ADRs. Reducing the number of injections from 14 to 6 while using only one strength offers the potential to improve patient adherence which further might increase clinical efficacy. Future trials could confirm this hypothesis.

Keywords: house dust mites; one-strength dose escalation scheme; safety; subcutaneous allergen immunotherapy; tolerability.

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Int Heart J

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. 2024 Nov 14.

doi: 10.1536/ihj.24-384. Online ahead of print.

[Successful Treatment of Acute Eosinophilic Myocarditis due to Eosinophilic Granulomatosis with Polyangiitis in an Older Man, Followed by Dual Single Photon Emission Computed Tomography](#)

[Tomohito Inage](#)¹, [Toshio Katagiri](#)^{1,2}, [Masataka Kajiwara](#)¹, [Takashi Fujimura](#)^{1,2}, [Tadashi Yamamoto](#)^{1,2}, [Minh T Nguyen](#)², [Yukari Takase](#)³, [Yoshitaka Hirooka](#)^{4,2}

Affiliations Expand

- PMID: 39537159
- DOI: [10.1536/ihj.24-384](#)

Free article

Abstract

An 83-year-old man with a 5-month history of asthma presented to the emergency department with chest oppression and dyspnea. Electrocardiography showed ST-segment depression. Transthoracic echocardiography showed no asynergy with an ejection fraction of 62%. Coronary angiography revealed no stenosis. On day 3, he developed worsening dyspnea, cough, and rapidly progressive acute decompensated heart failure with abdominal purpura and lower extremity petechiae. Myocardial and skin biopsies revealed eosinophilic infiltration. He was diagnosed with acute eosinophilic myocarditis and heart failure due to eosinophilic granulomatosis with polyangiitis. Methylprednisolone pulse therapy dramatically

improved his symptoms and congestion. Dual single-photon emission computed tomography after 1 year demonstrated lesion improvement.

Keywords: Heart failure; Myocardial biopsy; Steroid therapy.

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Thorax

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. 2024 Nov 14;79(12):1145-1150.

doi: 10.1136/thorax-2024-221755.

[Variability in forced expiratory volume in 1 s in children with symptomatically well-controlled asthma](#)

[Nicole Filipow](#)¹, [Stephen Turner](#)^{2,3}, [Helen L Petsky](#)⁴, [Anne B Chang](#)^{5,6}, [Thomas Frischer](#)⁷, [Stanley Szefer](#)⁸, [Francoise Vermeulen](#)⁹, [Sanja Stanojevic](#)¹⁰

Affiliations Expand

- PMID: 39332902
- DOI: [10.1136/thorax-2024-221755](#)

Abstract

Aims: Spirometry is used by many clinicians to monitor asthma in children but relatively little is understood about its variability over time. The aim of this study was to determine the variability of forced expiratory volume in 1 s (FEV₁) in children with symptomatically well-controlled asthma by applying three different methods of expressing change in FEV₁ over 3-month intervals.

Methods: Data from five longitudinal studies of children with asthma which measured FEV₁ at 3-month intervals over 6 or 12 months were used. We analysed paired FEV₁ measurements when asthma symptoms were controlled. The variability

of FEV₁% predicted (FEV₁%), FEV₁ z-score (FEV_{1z}) and conditional z score for change (Zc) in FEV₁ was expressed as limits of agreement.

Results: A total of 881 children had 3338 FEV₁ measurements on occasions when asthma was controlled; 5184 pairs of FEV₁ measurements made at 3-month intervals were available. Each unit change in FEV₁ z score was equivalent to a Zc 1.45 and an absolute change in FEV₁% of 11.6%. The limits of agreement for change in FEV₁% were -20 and +21, absolute change in FEV₁ z were -1.7 and +1.7 and Zc were -2.6 and +2.1. Regression to the mean and increased variability in younger children were present for change in FEV₁% and FEV_{1z} comparisons, but not Zc.

Conclusion: Given the wide limits of agreement of paired FEV₁ measurements in symptomatically well-controlled children, asthma treatment should primarily be guided by symptoms and not by a change in spirometry.

Keywords: Asthma; Child; Paediatric asthma.

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Conflict of interest statement

Competing interests: None declared.

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Occup Environ Med

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. 2024 Nov 13:oemed-2024-109540.

doi: 10.1136/oemed-2024-109540. Online ahead of print.

[Long-term clinical follow-up of irritant-induced occupational asthma](#)

[Jussi Lantto](#)^{1,2}, [Hille Suojalehto](#)³, [Hanna Jantunen](#)³, [Irmeli Lindström](#)³

Affiliations Expand

- PMID: 39537354

- DOI: [10.1136/oemed-2024-109540](https://doi.org/10.1136/oemed-2024-109540)

Free article

Abstract

Background: Occupational exposure to irritants is associated with poor asthma control, but the long-term clinical characteristics of irritant-induced occupational asthma (IIA) are poorly known.

Objective: To evaluate whether any distinguishable features contribute to IIA patients' poor outcomes and whether clinical characteristics change over time.

Methods: We re-evaluated 28 IIA patients with a median of 6.8 years (IQR 4.6-11.1) after their diagnosis at the Finnish Institute of Occupational Health in 2004-2018. We measured their lung function, non-specific bronchial hyper-responsiveness, inflammation profile and exercise capacity using an ergometric bicycle test. The participants also underwent an Asthma Control Test (ACT) and responded to questionnaires assessing their laryngeal hypersensitivity (LHQ) and dysfunctional breathing (Nijmegen Questionnaires, NQ).

Results: At follow-up, 22 (79%) participants used inhaled corticosteroids, 4 (14%) had asthma exacerbation within 1 year, 11 (39%) had ACT<20 (ie, poor asthma symptom control), 7 (26%) had abnormal spirometry and 8 (36%) had a positive methacholine challenge test result. 17 (61%) participants showed at least one elevated eosinophilic inflammation marker. Six (23%) had an abnormal LHQ score and 7 (26%) had an abnormal NQ score. 15 (58%) participants showed reduced physical capacity that was related to extensive asthma medication, poor asthma symptom control and acute IIA phenotype. A higher ACT score was the only significant change between diagnosis and follow-up (p=0.014).

Conclusion: Most of the IIA patients had normal lung function at follow-up, which had only changed a little over time. Reduced physical capacity was a common finding and appears to be related to poor asthma symptom control.

Keywords: Allergy and Immunology; Asthma; Occupational Health.

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Conflict of interest statement

Competing interests: None declared.

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Comparative Study

J Dr Nurs Pract

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. 2024 Nov 13;17(3):157-162.

doi: 10.1891/JDNP-2023-0059.

[Metered-Dose Inhaler Versus Nebulizer Treatment for Acute Asthma Exacerbation: A Process Evaluation](#)

[Christopher Graybill](#)¹, [Colleen Paramesh](#)², [Jason Gray](#)², [Kelly Bosak](#)²

Affiliations Expand

- PMID: 39537328
- DOI: [10.1891/JDNP-2023-0059](#)

Abstract

Background: The prevalence of childhood asthma in the United States is 6.5%. During the COVID-19 pandemic, a Federally Qualified Health Center (FQHC) implemented metered-dose inhalers (MDIs) with spacers instead of nebulized albuterol to reduce aerosolization of pathogens and reduce costs. **Objective:** The objective of the study is to assess the safety, efficacy, and efficiency of a change to the asthma exacerbation protocol at an urban FQHC. **Methods:** A retrospective chart review compared nebulized albuterol versus an MDI with a spacer in pediatric patients experiencing asthma exacerbation. The evaluation aimed to measure (a) the 30-day return to care in either the emergency department (ED) or clinic, (b) the total number of treatments administered, and (c) the documented use of an oral steroid with albuterol treatments. **Results:** Return to clinic was the only statistically significant variable. Zero MDI patients returned, whereas 61% of those nebulized returned within 30 days ($p < .00001$). **Conclusions:** Albuterol MDI with a spacer was more effective than a nebulizer in reducing follow-up visits to the clinic and was effective at reducing ED visits within 30 days. **Implications for Nursing:** Treating asthma exacerbations in the primary care clinic with an MDI is effective and reduces cost and airborne exposure.

Keywords: asthma exacerbation; metered-dose inhaler; nebulizer; primary health care.

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Supplementary info

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Review

Eur Respir Rev

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. 2024 Nov 13;33(174):240118.

doi: 10.1183/16000617.0118-2024. Print 2024 Oct.

[Predicting paediatric asthma exacerbations with machine learning: a systematic review with meta-analysis](#)

[Martina Votto](#)^{1,2}, [Annalisa De Silvestri](#)³, [Lorenzo Postiglione](#)¹, [Maria De Filippo](#)^{4,2}, [Sara Manti](#)⁵, [Stefania La Grutta](#)⁶, [Gian Luigi Marseglia](#)^{1,2}, [Amelia Licari](#)^{1,2}

Affiliations Expand

- PMID: 39537241
- PMCID: [PMC11558535](#)
- DOI: [10.1183/16000617.0118-2024](#)

Abstract

Background: Asthma exacerbations in children pose a significant burden on healthcare systems and families. While traditional risk assessment tools exist, artificial intelligence (AI) offers the potential for enhanced prediction models.

Objective: This study aims to systematically evaluate and quantify the performance of machine learning (ML) algorithms in predicting the risk of hospitalisation and emergency department (ED) admission for acute asthma exacerbations in children.

Methods: We performed a systematic review with meta-analysis, following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The risk of bias and applicability for eligible studies was assessed according to the prediction model study risk of bias assessment tool (PROBAST). The protocol of our systematic review was registered in the International Prospective Register of Systematic Reviews.

Results: Our meta-analysis included seven articles encompassing a total of 17 ML-based prediction models. We found a pooled area under the curve (AUC) of 0.67 (95% CI 0.61-0.73; $I^2=99%$; $p<0.0001$ for heterogeneity) for models predicting ED admission, indicating moderate accuracy. Notably, models predicting child hospitalisation demonstrated a higher pooled AUC of 0.79 (95% CI 0.76-0.82; $I^2=95%$; $p<0.0001$ for heterogeneity), suggesting good discriminatory power.

Conclusion: This study provides the most comprehensive assessment of AI-based algorithms in predicting paediatric asthma exacerbations to date. While these models show promise and ML-based hospitalisation prediction models, in particular, demonstrate good accuracy, further external validation is needed before these models can be reliably implemented in real-life clinical practice.

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Conflict of interest statement

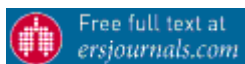
Conflict of interest: All authors have nothing to disclose.

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- [2 figures](#)

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Respirology

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. 2024 Nov 13.

doi: 10.1111/resp.14852. Online ahead of print.

[Environmental impact of inhaled medicines: A Thoracic Society of Australia and New Zealand position statement](#)

[Danielle F Wurzel](#)^{1,2}, [Brett D Montgomery](#)³, [Natalie Anderson](#)^{4,5,6,7}, [Elena K Schneider-Futschik](#)⁸, [Johnson George](#)⁹, [Sinthia Bosnic-Anticevich](#)¹⁰, [Emily Stone](#)¹¹, [Robert J Hancox](#)¹², [James Fingleton](#)¹³, [Stephanie Kuek](#)¹, [Helen Tope](#)¹⁴, [John Blakey](#)^{5,15}

Affiliations Expand

- PMID: 39536776
- DOI: [10.1111/resp.14852](https://doi.org/10.1111/resp.14852)

Abstract

Globally, more than 1.2 billion inhalers are purchased for asthma and chronic obstructive pulmonary disease (COPD) annually. In Australia and New Zealand, pressurized metered dose inhalers (pMDIs) are the leading delivery device prescribed and pMDI salbutamol can be purchased over the counter in Australia. These inhalers are a major contributor to healthcare related greenhouse gases. This is due to the propellants that they currently contain which have extremely high global warming potential (GWP). In this position paper, we report the findings of a Thoracic Society of Australia and New Zealand (TSANZ) working group on the environmental impact of inhaled respiratory medicines. We reviewed the use of inhaled medicines in Australia and New Zealand and their contribution to climate change and other environmental degradation. We propose strategies for health professionals and consumers to reduce environmental impact in the management of airway diseases. These include accurate diagnosis to avoid unnecessary treatment, better disease control to minimize the need for reliever therapy and actively choosing inhaler devices with lower environmental impacts when clinically appropriate. Inhaler selection should be tailored to the individual, aiming to achieve the best possible clinical outcome. Choosing an appropriate inhaler for an individual involves consideration of factors such as dexterity, inspiratory capacity and cost. In our current climate emergency and with the availability of lower carbon alternatives, health professionals should also consider environmental impact.

Keywords: COPD; air pollution; asthma; climate change; clinical respiratory medicine.

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- [87 references](#)

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J Investig Allergol Clin Immunol

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. 2024 Nov 13:0.

doi: 10.18176/jiaci.1035. Online ahead of print.

[Occupational Asthma and Rhinoconjunctivitis due to Soybean in a Bakery Worker](#)

[Ö Özdemir¹](#)

Affiliations Expand

- PMID: 39535895
- DOI: [10.18176/jiaci.1035](#)

No abstract available

Keywords: Occupational asthma; Soybean. Bakery.

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Clin Exp Pediatr

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. 2024 Nov 13.

doi: 10.3345/cep.2024.00360. Online ahead of print.

[Effect of metabolic syndrome on pulmonary dysfunction in children with asthma](#)

[Hyo-Bin Kim¹](#)

Affiliations Expand

- PMID: 39533729
- DOI: [10.3345/cep.2024.00360](https://doi.org/10.3345/cep.2024.00360)

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Review

J Allergy Clin Immunol

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. 2024 Nov 12:S0091-6749(24)01183-7.

doi: 10.1016/j.jaci.2024.11.005. Online ahead of print.

[Omalizumab Safety Concerns](#)

[Thanai Pongdee¹](#), [James T Li²](#)

Affiliations Expand

- PMID: 39542143
- DOI: [10.1016/j.jaci.2024.11.005](https://doi.org/10.1016/j.jaci.2024.11.005)

Abstract

IgE and mast cells play key roles in the pathophysiology of allergic diseases, and omalizumab was the first monoclonal anti-IgE antibody licensed in the U.S. when initially FDA-approved for the treatment of allergic asthma in 2003. Since that time, the number of FDA-approved indications for treatment with omalizumab has grown to include chronic spontaneous urticaria, chronic rhinosinusitis with nasal polyps, and food allergy. Although omalizumab is generally considered relatively safe and well-tolerated, a number of safety concerns have been raised since its initial approval. These concerns focus on specific adverse events of interest that include anaphylaxis, pregnancy, malignancy, cardiovascular events, and infections. For each of these issues, data from clinical trials and post-marketing surveillance has been extensively evaluated. In this review, we examine this safety data, provide context for safety and risk assessments, and summarize a safety profile for each of the adverse events of interest. In doing so, we aim to provide a resource for shared-decision making when treatment with omalizumab is being considered.

Keywords: anaphylaxis; cardiovascular; infection; malignancy; omalizumab; pregnancy; risk; safety.

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J Allergy Clin Immunol

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2024 Nov 12:S0091-6749(24)01184-9.

doi: 10.1016/j.jaci.2024.11.006. Online ahead of print.

[Asthma and Respiratory Co-Morbidities](#)

[Dennis K Ledford](#)¹, [Tae-Bum Kim](#)², [Victor E Ortega](#)³, [Juan Carlos Cardet](#)⁴

Affiliations Expand

- PMID: 39542142
- DOI: [10.1016/j.jaci.2024.11.006](#)

Abstract

Asthma is a common respiratory condition with various phenotypes, non-specific symptoms and variable clinical course. The occurrence of other respiratory conditions with asthma, respiratory co-morbidities (RCs), is not unusual. A literature search was performed for asthma and a variety of respiratory co-morbidities using Pub-Med for the years 2019-2024. The 5 conditions with the largest number of references, other than rhinitis and rhinosinusitis addressed in another paper in this issue, or which are the most problematic in the authors' clinical experience are summarized. Others are briefly discussed. The diagnosis and treatment of both asthma and RCs are complicated by the overlap of symptoms and signs. Recognizing RCs is especially problematic in adult onset, non-type 2 asthma as there are no biomarkers to assist in confirming non-type 2 asthma. Treatment decisions in subjects with suspected asthma and RCs are complicated by the potential similarities between the symptoms or signs of the RC and asthma, the absence of a sine quo non for the diagnosis of asthma, the likelihood that many RCs improve with systemic corticosteroids, and the possibility that the manifestations of the RCs are misattributed to asthma or vice versa. Recognition of RCs is critical to the effective management of asthma, particularly severe or difficult to treat asthma.

Keywords: allergic bronchopulmonary aspergillosis (ABPA); asthma; asthma COPD overlap; bronchiectasis; chronic obstructive lung disease; co-morbid; cystic fibrosis; diffuse idiopathic pulmonary neuroendocrine cell hyperplasia (DIPNECH); eosinophilic bronchitis; eosinophilic pneumonia; laryngeal dysfunction; obstructive sleep apnea; rhinitis; rhinosinusitis.

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. 2024 Nov 12;20(3):230229.

doi: 10.1183/20734735.0229-2023. eCollection 2024 Oct.

[Type 2 inflammation in COPD: is it just asthma?](#)

[Augusta Beech](#)^{1,2,3}, [Andrew Higham](#)^{1,3}, [Sophie Booth](#)^{1,2}, [Vickram Tejwani](#)⁴, [Frederik Trinkmann](#)^{5,6}, [Dave Singh](#)^{1,2}

Affiliations Expand

- PMID: 39534492
- PMCID: [PMC11555586](#)
- DOI: [10.1183/20734735.0229-2023](#)

Abstract

COPD is a heterogeneous condition, with tobacco smoking being the main environmental risk factor. The presence of type 2 (T2) inflammation is a well-recognised feature of asthma; however, it is now apparent that a subset of COPD patients also displays evidence of T2 inflammation with respect to elevated eosinophil counts and altered gene and protein expression of several T2 inflammatory mediators. T2 inflammatory mediators represent an attractive therapeutic target in both COPD and asthma; however, the efficacy of pharmaceutical interventions varies between diseases. Furthermore, the nature of some shared clinical features also differs. We provide a narrative review of differences in the nature of T2 inflammation between COPD and asthma, which may partly explain phenotypic differences between diseases. We focus on evidence from studies of pulmonary histopathology, sputum and epithelial gene and protein expression, and response to pharmacological interventions targeted at T2 inflammation.

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Conflict of interest statement

Conflict of interest: D. Singh has received sponsorship to attend and speak at international meetings, honoraria for lecturing or attending advisory boards from the following companies: Aerogen, AstraZeneca, Boehringer Ingelheim, Chiesi, Cipla, CSL Behring, Epiendo, Genentech, GlaxoSmithKline, Glenmark, Gossamerbio, Kinaset, Menarini, Novartis, Pulmatrix, Sanofi, Teva, Theravance and Verona. F. Trinkmann reports grants from AstraZeneca, Bayer Boehringer Ingelheim, Chiesi, Novartis, Roche, BMBF, DZL, Markedsmodningsfonden and E+H Knorr Stiftung, as well as consulting fees and honoraria from AstraZeneca, Berlin Chemie, Boehringer Ingelheim, Bristol-Myers Squibb, Chiesi, Fisher & Paykel, GlaxoSmithKline, Janssen-Cilag, Merck Healthcare, Novartis, Omron, OM-Pharma, Roche, Sanofi, Aventis and Thorasys, and travel support from AstraZeneca, Actelion, Bayer, Berlin Chemie, Boehringer Ingelheim, Chiesi, Mundipharma, Novartis, Pfizer and TEVA. V. Tejwani reports grants from NIH NHLBI and payment or honoraria from Thermofisher. A. Beech, A. Higham and S. Booth have no conflicts of interest to declare.

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- [2 figures](#)

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BMJ Open

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. 2024 Nov 12;14(11):e088849.

doi: 10.1136/bmjopen-2024-088849.

[Validating the recording of exacerbations of asthma in electronic health records: a systematic review protocol](#)

[Elizabeth Moore](#)¹, [Zakariah Z Gassasse](#)², [Jennifer K Quint](#)²

Affiliations Expand

- PMID: 39532362
- DOI: [10.1136/bmjopen-2024-088849](https://doi.org/10.1136/bmjopen-2024-088849)

Free article

Abstract

Introduction: Asthma exacerbations or 'attacks' can vary in severity from mild worsening of symptoms to life-threatening changes that require urgent hospital care. Understanding these exacerbations is crucial to improving treatment and support for patients. Electronic health records (EHR) using anonymised data from people with asthma in primary and secondary care can be used to understand exacerbations and outcomes. However, previous studies found significant heterogeneity in the algorithms used to define asthma exacerbations. Validating definitions of asthma exacerbations in EHR will lead to more robust and comparable evidence in future research.

Methods and analysis: Medline and Embase will be searched for the key concepts relating to asthma exacerbations, EHR and validation. All studies that validate exacerbations of asthma in EHR and administrative claims databases published before 30 May 2024 and written in English will be considered. Validated algorithms for asthma exacerbations or attacks must be compared against a reference or gold standard definition, and a measure of validity must be included. Articles will be screened for inclusion by two independent reviewers with any disagreements resolved by consensus or arbitration by a third reviewer. Study details will be extracted, and the risk of bias will be assessed using a QUADAS-2 tailored to this review.

Ethics & dissemination: No ethical approval is required as this is a review of previously published literature. Results will be disseminated in a peer-reviewed journal with the aim of being used in future research to help identify asthma exacerbation in EHR.

Prospero registration number: CRD42024545081.

Keywords: Asthma; EPIDEMIOLOGY; Electronic Health Records.

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Conflict of interest statement

Competing interests: The author JKQ has been supported by institutional research grants from the Medical Research Council, NIHR, Health Data Research, GSK, BI, AZ, Insmad and Sanofi and received personal fees for advisory board participation, consultancy or speaking fees from GlaxoSmithKline, Chiesi and AstraZeneca.

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J Investig Allergol Clin Immunol

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. 2024 Nov 12:0.

doi: 10.18176/jiaci.1021. Online ahead of print.

[Characteristics of Asthma Patients Admitted to the Intensive Care Unit of a Tertiary University Hospital in Madrid, Spain: A 5-Year Experience](#)

[M Lozano-Espinosa](#)¹, [N Rodríguez-Otero](#)², [D Antolín-Amérigo](#)², [F Gordo Vidal](#)³, [A Muriel](#)⁴, [R de Pablo](#)⁵, [S Quirce](#)⁶

Affiliations Expand

- PMID: 39531352
- DOI: [10.18176/jiaci.1021](#)

No abstract available

Keywords: Allergy; Critical care; Intensive care; Near fatal asthma; Severe asthma.

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J Asthma

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. 2024 Nov 12:1-13.

doi: 10.1080/02770903.2024.2425369. Online ahead of print.

[Maximal exercise capacity, peripheral muscle strength, sleep quality, and quality of life in adult patients with stable asthma](#)

[Furkan Özdemir](#)¹, [Meral Boşnak Güçlü](#)², [Hanım Eda Gökteş](#)², [I Kivılcım Oğuzülgen](#)³

Affiliations Expand

- PMID: 39498583
- DOI: [10.1080/02770903.2024.2425369](#)

Abstract

Objective: The prevalence of asthma is increasing gradually worldwide. The pathophysiological process of asthma causes some alterations in the respiratory system and decreases oxygen-carbon dioxide exchange and respiration volume. These alterations may affect maximal exercise capacity, peripheral muscle strength, sleep quality, and disease-specific quality of life but have yet to be comprehensively investigated. To compare maximal exercise capacity, pulmonary function, peripheral muscle strength, dyspnea, sleep quality, and quality of life in adult patients with asthma, healthy controls were aimed.

Methods: Forty-one adult stable asthmatic patients (GINA I-III) and 41 healthy subjects were compared. Exercise capacity (cardiopulmonary exercise test [CPET]), pulmonary function (spirometry), peripheral muscle strength (dynamometer), dyspnea (modified Medical Research Council [mMRC] dyspnea scale), quality of life (Asthma Quality of Life Questionnaire [AQLQ]) and sleep quality (Pittsburgh Sleep Quality Index [PSQI]) were evaluated.

Results: Peak VO₂, VO₂kg, MET, VE, HR, %VE, %HR, VCO₂ parameters of CPET, FVC, FEV₁, FEF_{25-75%}, and FEV₁/FVC and quadriceps femoris, shoulder abductors, and hand grip muscle strength were significantly decreased in patients with asthma ($p < 0.05$). mMRC dyspnea scale score was increased, and AQLQ and PSQI scores decreased in asthma patients ($p < 0.05$).

Conclusions: Cardiac and pulmonary system responses to peak exercise worsened, and maximal exercise capacity and peripheral muscle strength decreased in adult patients with stable asthma. In addition, dyspnea during daily activities increases, and quality of life and sleep quality are impaired. A variety of exercise training that would benefit asthmatic patients' outcomes should be investigated.

Keywords: Asthma; exercise capacity; muscle strength; oxygen consumption; quality of life.

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ERJ Open Res

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. 2024 Nov 11;10(6):00260-2024.

doi: 10.1183/23120541.00260-2024. eCollection 2024 Nov.

[Could cough hypersensitivity symptom profile differentiate phenotypes of chronic cough?](#)

[Mi-Yeong Kim](#)¹, [Ha-Kyeong Won](#)², [Ji-Yoon Oh](#)³, [Ji-Hyang Lee](#)³, [Eun-Jung Jo](#)⁴, [Sung-Yoon Kang](#)⁵, [Ji-Ho Lee](#)⁶, [Seung-Eun Lee](#)^{4,7}, [Noeul Kang](#)⁸, [Young-Chan Kim](#)⁹, [Hwa Young Lee](#)¹⁰, [Jin An](#)¹¹, [Youngsang Yoo](#)¹², [Ji-Su Shim](#)¹³, [So-Young Park](#)¹⁴, [Han-Ki Park](#)¹⁵, [Min-Hye Kim](#)¹³, [Sae-Hoon Kim](#)¹⁶, [Sang-Heon Kim](#)¹⁷, [Yoon-Seok Chang](#)¹⁶, [Sang-Hoon Kim](#)¹⁸, [Byung-Jae Lee](#)⁸, [Surinder S Birring](#)¹⁹, [Woo-Jung Song](#)³

Affiliations Expand

- PMID: 39534772
- PMCID: [PMC11551855](#)
- DOI: [10.1183/23120541.00260-2024](#)

Abstract

Background: Recently, cough reflex hypersensitivity has been proposed as a common underlying feature of chronic cough in adults. However, symptoms and clinical characteristics of cough hypersensitivity have not been studied amongst phenotypes of chronic cough. This study aimed to compare symptom features, such as cough triggers and associated throat sensations, of cough hypersensitivity in patients with asthmatic chronic cough and those with refractory chronic cough (RCC).

Methods: Patients with chronic cough from the Korean Chronic Cough Registry were prospectively evaluated over 6 months. Physicians determined the aetiological diagnosis based on clinical evaluations and responses to treatment at the 6-month follow-up visit. Symptoms of cough hypersensitivity and cough-specific quality of life were assessed using the Cough Hypersensitivity Questionnaire (CHQ) and the Leicester Cough Questionnaire (LCQ), respectively.

Results: The analysis included 280 patients who completed the follow-up: 79 with asthmatic cough (cough variant asthma or eosinophilic bronchitis) and 201 with RCC. Baseline CHQ scores were similar between the groups (8.3 ± 3.7 in asthmatic cough *versus* 8.9 ± 3.9 in RCC; $p=0.215$, adjusted for age, sex and LCQ score). There were no significant between-group differences in the LCQ and cough severity Visual Analog Scale scores. Both groups showed a similar negative correlation with LCQ scores (asthmatic cough: $r=-0.427$, $p<0.001$; RCC: $r=-0.306$, $p<0.001$).

Conclusions: The symptoms of cough hypersensitivity may not distinguish between asthmatic cough and RCC. This suggests that chronic cough is the primary diagnosis in both phenotypes. It indicates a shared mechanism in their cough pathogenesis, despite having potentially different treatable traits.

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Conflict of interest statement

Conflict of interest: S.S. Birring declares grants from Merck Sharp & Dohme Corp. and consulting fees from Merck, Shionogi, Bayer, Nerre, Genentech/Roche and Bellus. Conflict of interest: W-J. Song declares grants from Merck Sharp & Dohme Corp. and AstraZeneca; consulting fees from Merck, Bellus, AstraZeneca, Shionogi and GSK; and lecture fees from Merck, AstraZeneca, GSK, Sanofi and Novartis; and is deputy chief editor of this journal. Conflict of interest: The other authors declare that they have no competing interests.

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

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Intern Emerg Med

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. 2024 Nov 11.

doi: 10.1007/s11739-024-03795-1. Online ahead of print.

Final diagnoses and mortality rates in ambulance patients administered nebulized β 2-agonists bronchodilators

Victor Hagenau¹, Mathilde G Mulvad¹, Jan B Valentin², Arne S R Jensen¹, Martin F Gude^{3,4}

Affiliations Expand

- PMID: 39527233
- DOI: [10.1007/s11739-024-03795-1](https://doi.org/10.1007/s11739-024-03795-1)

Abstract

To assess final diagnoses and mortality rates (30 day and 1 year) in patients treated with the inhaled bronchodilator salbutamol by ambulance personnel, and to establish its role as an identifier of moderate to severe respiratory distress in the prehospital phase of treatment. In a descriptive retrospective observational study, patients experiencing respiratory distress and treated with inhaled bronchodilators, specifically salbutamol, in the prehospital setting within the Central Denmark Region during 2018-2019 were included. The study included 6318 ambulance transports, comprising 3686 cases of acute exacerbation of chronic obstructive pulmonary disease (AECOPD), 234 with community-acquired pneumonia (CAP), 320 with heart disease (HD), 233 adults with asthma, 1674 with various other primary ICD-10 diagnoses (other \geq 18 years), and 171 patients under 18 years. The 30 day mortality rate for all patients was 10.7% (95% CI 9.8-11.6), with zero deaths within 30 days among adults with asthma and those under 18. Excluding low mortality groups, AECOPD patients had the lowest 30 day mortality at 10.2% (95% CI 9.1-11.3), and HD patients the highest at 15.3% (95% CI 10.6-19.9). The 1-year overall mortality rate increased to 32.1% (95% CI 30.2-34.0), with mortality staying low for asthma and under-18 groups, while differences between other groups lessened and became insignificant. Patients requiring inhaled bronchodilator treatment in ambulances exhibit notably high mortality rates at 30 days and 1 year, except for those with asthma or under 18. The need for prehospital bronchodilators could serve as a clear and unmistakable marker for moderate to severe respiratory distress, enabling early intervention.

Keywords: Bronchodilator agents; Chronic Obstructive; Emergency medical services; Lung diseases; Pulmonary Disease; Respiratory insufficiency.

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Conflict of interest statement

Declarations Conflict of interest The authors declare that the research was conducted in the absence of any commercial or financial relationships. The authors have no conflict of interest. Ethics approval and consent to participate The study received approval from the Legal Department of the Central Denmark Region (file no. 1-45-70-53-22), and patient consent requirements were formally waived. Storage

of the data was approved by the Danish Data Protection Agency (file no. 1–16-02–231-22). Human and animal rights statement and Informed consent The study adhered to the ethical standards outlined in the 1964 Declaration of Helsinki and its subsequent revisions.

- [48 references](#)

Full text links



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

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Future Sci OA

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. 2024 Dec 31;10(1):2419779.

doi: 10.1080/20565623.2024.2419779. Epub 2024 Nov 14.

[Effect of house dust mite sublingual immunotherapy in patients with adult atopic dermatitis with rhinitis](#)

[Mayuko Mizuno](#)¹, [Shinya Imamura](#)^{1,2}, [Ai Yoshioka](#)¹, [Ken Washio](#)^{1,3}, [Yoshiko Oda](#)¹, [Hiroki Matsuhara](#)⁴, [Katsuyo Ohashi-Doi](#)⁴, [Atsushi Fukunaga](#)^{1,5}

Affiliations Expand

- PMID: 39539183
- DOI: [10.1080/20565623.2024.2419779](https://doi.org/10.1080/20565623.2024.2419779)

Free article

Abstract

Aim: Whether house dust mite (HDM) sublingual immunotherapy (SLIT) is effective for the skin symptoms of adult atopic dermatitis (AD) is unclear. **Methods:** HDM SLIT was added to conventional AD treatment for 10 HDM-sensitized AD patients with rhinitis for 2 years. **Results:** Seven out of ten enrolled patients completed the study. Eczema Area and Severity Index score was significantly reduced when comparing before treatment and at 24 months follow-up. CD203c ratio in the basophil activation test using HDM extract, skin prick test with HDM extract and *Dermatophagoides pteronyssinus*/*Dermatophagoides farinae* specific-IgG4 tended to improve when

comparing before treatment and after treatment. Conclusion: HDM SLIT might be a therapeutic option for AD patients with rhinitis who are sensitized to HDM.

Keywords: allergy immunotherapy; atopic dermatitis; dermatophagoides farinae; dermatophagoides pteronyssinus; sublingual immunotherapy.

Plain language summary

What is this article about? This study examined the effect of house dust mite (HDM) sublingual immunotherapy (SLIT), which is treatment to make the immune system work better to use medicine that is put under the tongue, as an add-on to conventional atopic dermatitis (AD) treatment on the improvement of skin symptoms and immunological response to HDM SLIT in patients with adult AD complicated with rhinitis. **What were the results?** Eczema Area and Severity Index score which is one of the AD assessment indices and represents AD severity, was significantly reduced when comparing before treatment and at 24 months follow-up. The immune response to HDM tended to improve when comparing before treatment and after treatment. **What do the results of the study mean?** HDM SLIT might be a therapeutic option for AD patients with rhinitis who are sensitized to HDM.

Supplementary info

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Int Arch Allergy Immunol

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. 2024 Nov 14:1-18.

doi: 10.1159/000541838. Online ahead of print.

[Depigmented, polymerized cat epithelium extract is safe and improves rhinitis and asthma symptoms in cat allergic patients: A real-world retrospective study](#)

[María Vázquez de la Torre](#), [Paula López-González](#), [Elisa Haroun-Díaz](#), [María Luisa Somoza](#), [María Desamparados Cervera](#), [Mónica Ruiz-García](#), [Francisco Javier Ruano](#)

- PMID: 39541958
- DOI: [10.1159/000541838](https://doi.org/10.1159/000541838)

Abstract

Introduction: Cat allergy is often difficult to avoid. Here, we evaluated the safety and effectiveness of a depigmented, polymerized cat epithelium extract (Dpg-pol-cat) for the treatment of allergic rhinoconjunctivitis and asthma.

Methods: Real-world, retrospective study of patients ≥ 12 years with cat allergy and moderate to severe allergic rhinitis/rhinoconjunctivitis, with or without asthma, who started allergen immunotherapy (AIT) with Dpg-pol-cat extract during routine visits to the Allergy Department. Safety and effectiveness (improvement in FEV1) of AIT were evaluated. The use of rescue medication and patient perceptions were also assessed.

Results: A total of 62 patients were included, of which 34 (54.8%) received at least 12 months of AIT. There were 15 adverse reactions, 8 local and 7 systemic, of which 3 led to AIT discontinuation. Patients with moderate to severe rhinitis decreased from 88.2% at baseline to 29.4% at 12 months ($p < 0.0001$), and patients with moderate asthma decreased from 76.5% to 38.2% ($p = 0.0004$). FEV1 improved from a mean (SD) of 3188.9 (771.4) ml to 3419.6 (878.4) ml ($p = 0.0023$). The use of rescue medications for rhinitis decreased from 94.1% to 23.5% ($p < 0.0001$), all patients requiring rescue medications for conjunctivitis (20.6%) were medication free at 12 months, and 97.1% and 92.6% of patients reported improvement in rhinitis and asthma symptoms, respectively.

Conclusion: AIT with Dpg-pol-cat extract shows a favorable safety and effectiveness profile in patients with allergic rhinitis/rhinoconjunctivitis, with or without allergic asthma, due to cat allergy, representing a valuable treatment option for these patients.

S. Karger AG, Basel.

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J Asthma

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. 2024 Nov 14:1-20.

doi: 10.1080/02770903.2024.2430368. Online ahead of print.

[Allergic Diseases and T2DM:A Bidirectional Multivariable Mendelian Randomization Study and Mediation Analysis](#)

[Shukun Zhan](#)¹, [Jinhua Chen](#)², [Lingxue Wei](#)¹, [Siyu Gan](#)¹, [Qi Zhang](#)¹, [Haiying Fu](#)³

Affiliations Expand

- PMID: 39541335
- DOI: [10.1080/02770903.2024.2430368](#)

Abstract

Background: Clinical studies involving observation have uncovered a mutual relationship between allergic disorders and diabetes, yet the precise causal link remains undetermined.

Methods: We conducted two-sample bidirectional Mendelian randomization analyses using single nucleotide polymorphisms (SNPs) associated with allergic conditions (asthma, allergic rhinitis, atopic dermatitis) from genome-wide studies and SNPs related to type 2 diabetes from FinnGen. Initially, we evaluated the causal link between allergic disorders and type 2 diabetes through a univariate Mendelian randomization study, incorporating inverse variance weighting, MR-Egger, and the weighted median estimator. To address potential confounding, we employed multivariate Mendelian randomization. Finally, we validated mediators influencing the correlation between asthma and type 2 diabetes.

Results: The Inverse variance weight method showed that asthma genetically increased the risk of type 2 diabetes (Asthma- type 2 diabetes: $\beta(95\%CI)=0.892(0.152\sim 1.632)$, $P = 0.018$). Allergic rhinitis and type 2 diabetes exhibit a mutual protective effect: $\beta(95\% CI)=-1.333(-2.617 \text{ to } -0.049)$, $P = 0.042$; type 2 diabetes - Allergic rhinitis: $\beta(95\%CI)=-0.002(-0.004 \text{ to } -0.000)$, $P = 0.018$). The Multivariable Mendelian randomization study results showed that after excluding confounding factors, asthma still demonstrates statistical significance in relation to type 2 diabetes. Through mediation analysis, it was discovered that lung function and the percentage of monocytes in leukocytes exert an inhibitory effect on the mediation between asthma and type 2 diabetes.

Conclusion: The Multivariable Mendelian randomization study indicates asthma as a risk factor for type 2 diabetes. Lung function, and the percentage of monocytes in leukocytes, play an inhibitory role in asthma and type 2 diabetes mediating effects.

Keywords: Asthma; Mediation analysis; Multivariable Mendelian randomization study; Type 2 diabetes.

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Allergy

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. 2024 Nov 14.

doi: 10.1111/all.16370. Online ahead of print.

[One-strength dose escalation of house dust mite depot product for subcutaneous immunotherapy is safe and tolerable](#)

[M Jutel](#)^{1,2}, [C Vogelberg](#)³, [K Duwensee](#)⁴, [D Troyke](#)⁴, [L Klimek](#)⁵

Affiliations Expand

- PMID: 39540587
- DOI: [10.1111/all.16370](#)

Abstract

Background: Allergen immunotherapy (AIT) aims at modulating the immune response by administration of allergen preparations at regular intervals over several years (1). For subcutaneous AIT (SCIT), the treatment is initiated with a dose escalation phase followed by a maintenance dose administration. Over the last decade, there has been a trend towards shortening dose escalation regimens to increase patient adherence. This open-label, phase II trial aimed to investigate the safety and tolerability of a house dust mites (HDMs) SCIT product when used in a newly designed one-strength dose escalation scheme.

Method: Patients, aged 12-65, suffering from HDM-allergic rhinitis/rhinoconjunctivitis ± asthma were included. Patients were randomized to the one-strength (6 injections from the highest strength 3) or the Standard dose escalation regimen (14 injections from strengths 1 to 3) using the HDMs-SCIT product. All adverse events were reported. Tolerability was assessed on the Likert scale.

Results: One hundred and forty-three patients were randomized, 79 adults and 64 adolescents. In total, the one-strength regimen caused more adverse drug reactions (ADRs) than the Standard regimen ($p = .0457$). With both regimens most ADRs were local reactions which occurred more often in the one-strength group ($p = .0393$). But there was no significant difference in the number of patients affected by systemic or serious ADRs between both regimens. No relevant differences occurred between the two age groups and no other risks were observed for adolescents compared to adults.

Conclusion: The safety and tolerability of both regimens can be considered comparable, as most ADRs were local reactions, primarily rated as mild in intensity. Nevertheless, the one-strength regimen caused more ADRs. Reducing the number of injections from 14 to 6 while using only one strength offers the potential to improve patient adherence which further might increase clinical efficacy. Future trials could confirm this hypothesis.

Keywords: house dust mites; one-strength dose escalation scheme; safety; subcutaneous allergen immunotherapy; tolerability.

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Review

Curr Allergy Asthma Rep

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. 2024 Nov 13;25(1):3.

doi: 10.1007/s11882-024-01185-3.

[Minimizing Indoor Allergen Exposure: What Works?](#)

[Ramin Beheshti](#)¹, [Torie L Grant](#)², [Robert A Wood](#)²

Affiliations Expand

- PMID: 39535667
- DOI: [10.1007/s11882-024-01185-3](#)

Abstract

Purpose of review: Allergic rhinitis and asthma morbidity has been linked to indoor allergen exposure. Common indoor allergens include dust mites, cats, dogs, rodents, and cockroaches. These allergens are ubiquitous and often difficult to remove from the home, making long-lasting reduction strategies difficult to achieve. Identifying strategies for reducing the presence of indoor allergens in homes could be utilized to decrease allergic disease burden, improve symptomology, reduce healthcare costs, and improve patients' quality of life.

Recent findings: Studies have yielded mixed results with regard to specific environmental control measures in reducing indoor allergen levels and in improving clinical outcomes of allergic disease. In this review, we assess the available evidence of the effectiveness of environmental control measures in reducing indoor allergens and the potential clinical impact of these measures.

Keywords: Allergen Exposure Reduction; Allergic Rhinitis; Allergies; Asthma; Indoor Allergens.

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Conflict of interest statement

Declarations Human and Animal Rights and Informed Consent This article does not contain any studies with human or animal subjects performed by any of the authors. **Conflict of Interest** TLG receives research support from NIAID. RAW receives research support from NIAID, Aimmune, ALK, DBV, FARE, Genentech, Novartis, and Siolta. **Competing Interests** The authors declare no competing interests.

- [92 references](#)

Supplementary info

Publication types, MeSH terms, Substances, Grants and funding Expand

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Int Forum Allergy Rhinol

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. 2024 Nov 13.

doi: 10.1002/alr.23483. Online ahead of print.

[Real-world predictors of dupilumab prescription in patients with chronic rhinosinusitis with nasal polyps](#)

[Christina Dorismond¹](#), [Mason R Kryszinski²](#), [Yash Trivedi¹](#), [Rory J Lubner¹](#), [Rakesh K Chandra¹](#), [Naweed I Chowdhury¹](#), [Justin H Turner²](#)

Affiliations Expand

- PMID: 39535333
- DOI: [10.1002/alr.23483](https://doi.org/10.1002/alr.23483)

Abstract

Background: Despite increasing dupilumab use for chronic rhinosinusitis with nasal polyps (CRSwNP), little is known about the factors influencing its use in real-world practice. We aimed to identify factors that may predict dupilumab prescription in CRSwNP patients who have undergone endoscopic sinus surgery (ESS).

Methods: A single-institution, retrospective cohort study of patients who underwent ESS for CRSwNP between 2015 and 2023 was conducted. Demographics, comorbidities, 22-item sinonasal outcome test (SNOT-22) scores, and dupilumab prescription date were extracted from patient records. Intraoperative nasal mucus cytokine levels were measured using a multiplex bead assay. Univariate logistic regression analysis was performed to identify factors associated with dupilumab prescription, and multivariate logistic regression was used to adjust for surgery date.

Results: A total of 299 CRSwNP patients were included, including seventy (23.4%) who were prescribed dupilumab postoperatively. Patients were more likely to be prescribed dupilumab if they had asthma (odds ratio [OR] 2.304), aspirin-exacerbated respiratory disease (AERD, OR 3.375), elevated tissue eosinophils (OR 1.005), and higher 3-month postoperative SNOT-22 scores (OR 1.027). Patients prescribed dupilumab also had greater odds of having elevated mucus interleukin

(IL)-5 (OR 1.128) and IL-13 (OR 1.213). When adjusting for surgery date, associated factors included: asthma (OR 2.444), AERD (OR 3.750), allergic rhinitis (OR 1.833), higher tissue eosinophils (OR 1.005), elevated 3-month SNOT-22 scores (OR 1.028), and higher IL-5 (OR 1.123) and IL-13 (OR 1.202) levels.

Conclusion: Asthma, AERD, allergic rhinitis, and elevated tissue eosinophil, IL-5, and IL-13 levels are predictive of dupilumab prescription in CRSwNP patients. These may serve as clinical and inflammatory biomarkers and can aid in counseling patients about expected disease trajectory.

Keywords: Dupixent; chronic rhinosinusitis; cytokine; dupilumab; nasal polyp; polyposis; predictors.

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Review

J Allergy Clin Immunol

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. 2024 Nov 12:S0091-6749(24)01184-9.

doi: 10.1016/j.jaci.2024.11.006. Online ahead of print.

[Asthma and Respiratory Co-Morbidities](#)

[Dennis K Ledford](#)¹, [Tae-Bum Kim](#)², [Victor E Ortega](#)³, [Juan Carlos Cardet](#)⁴

Affiliations Expand

- PMID: 39542142

- DOI: [10.1016/j.jaci.2024.11.006](https://doi.org/10.1016/j.jaci.2024.11.006)

Abstract

Asthma is a common respiratory condition with various phenotypes, non-specific symptoms and variable clinical course. The occurrence of other respiratory conditions with asthma, respiratory co-morbidities (RCs), is not unusual. A literature search was performed for asthma and a variety of respiratory co-morbidities using Pub-Med for the years 2019-2024. The 5 conditions with the largest number of references, other than rhinitis and rhinosinusitis addressed in another paper in this issue, or which are the most problematic in the authors' clinical experience are summarized. Others are briefly discussed. The diagnosis and treatment of both asthma and RCs are complicated by the overlap of symptoms and signs. Recognizing RCs is especially problematic in adult onset, non-type 2 asthma as there are no biomarkers to assist in confirming non-type 2 asthma. Treatment decisions in subjects with suspected asthma and RCs are complicated by the potential similarities between the symptoms or signs of the RC and asthma, the absence of a sine quo non for the diagnosis of asthma, the likelihood that many RCs improve with systemic corticosteroids, and the possibility that the manifestations of the RCs are misattributed to asthma or vice versa. Recognition of RCs is critical to the effective management of asthma, particularly severe or difficult to treat asthma.

Keywords: allergic bronchopulmonary aspergillosis (ABPA); asthma; asthma COPD overlap; bronchiectasis; chronic obstructive lung disease; co-morbid; cystic fibrosis; diffuse idiopathic pulmonary neuroendocrine cell hyperplasia (DIPNECH); eosinophilic bronchitis; eosinophilic pneumonia; laryngeal dysfunction; obstructive sleep apnea; rhinitis; rhinosinusitis.

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J Allergy Clin Immunol

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. 2024 Nov 10:S0091-6749(24)01181-3.

doi: 10.1016/j.jaci.2024.10.033. Online ahead of print.

[Low-dose interleukin-2 in birch pollen allergy: a phase-2 randomized double-blind placebo-controlled trial](#)

[Michelle Rosenzweig](#)¹, [Alina Gherasim](#)², [Franck Dietsch](#)², [Marine Beck](#)², [Nathalie Domis](#)², [Roberta Lorenzon](#)¹, [Yannick Chantran](#)³, [Bertrand Bellier](#)⁴, [E Vicaut](#)⁵, [Angele Soria](#)⁶, [Frederic De Blay](#)², [David Klatzmann](#)⁷

Affiliations Expand

- PMID: 39532189
- DOI: [10.1016/j.jaci.2024.10.033](https://doi.org/10.1016/j.jaci.2024.10.033)

Abstract

Background: Regulatory T cells (Tregs) are pivotal in immune tolerance to allergens. Low-dose IL-2 (IL-2_{LD}) activates Tregs.

Objective: To assess IL-2_{LD} efficacy for controlling clinical responses to allergen exposures.

Methods: RHINIL-2 was a phase-2a, randomised, double-blind, placebo-controlled trial. Patients with allergic rhinitis to birch pollen (BP) were included, 66% having concomitant asthma. All had a total nasal symptom score (TNSS) ≥ 5 following nasal exposure to BP in an environmental-exposure-chamber (EEC). Patients received 1 MUI/day of IL-2 (n=12) or Placebo (n=12) for 5 days, followed by weekly injections for 4 weeks. Clinical responses to subsequent BP exposures in the EEC were evaluated using TNSS, the rhinitis visual analogue scale (VAS) and spirometry. The primary efficacy endpoint was the difference in TNSS area under the curve between inclusion and day 40 (TNSS Δ AUC).

Results: IL-2_{LD} treatment induced a significant expansion of Tregs. The TNSS Δ AUC in the IL-2 and Placebo groups was non significantly different. TNSS and VAS AUCs were significantly reduced from baseline to day 40 in the IL-2_{LD} group only (p=0.04 and p=0.01, respectively). The ratio of forced expiratory volume in 1 second/forced vital capacity (FEV_{1P}) and the forced mid-expiratory flow (FEF_{25-75%}) showed improvement in the IL-2_{LD} vs Placebo groups at day 40 (p=0.04 and 0.04, respectively). However, the short treatment duration used in this study cannot have effects on specific IgE or IgG4 levels given their half-life. There was no severe treatment-related adverse events.

Conclusion: IL-2_{LD} is well-tolerated in allergic patients, even with asthma, clearing the path for further therapeutic development. Our work suggests that Treg can safely attenuate an ongoing allergic response. It paves the way for larger studies with longer treatment periods, which are needed to properly evaluate the therapeutic potential of IL-2 in allergy.

Keywords: Immunopathologies; Immunotherapy; Tolerance; biotherapy.

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chronic cough

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Respir Investig

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. 2024 Nov 13;62(6):1239-1241.

doi: 10.1016/j.resinv.2024.09.018. Online ahead of print.

[Temporal changes over time in sputum rheological parameters after SARS-CoV-2 infection in two patients with chronic cough](#)

[Haruhiko Ogawa¹](#), [Yuka Uchida²](#)

Affiliations Expand

- PMID: 39541638
- DOI: [10.1016/j.resinv.2024.09.018](https://doi.org/10.1016/j.resinv.2024.09.018)

Abstract

We report temporal changes in sputum rheological parameters after SARS-CoV-2 infection in two patients with chronic cough (71-year-old, male, sinobronchial syndrome; 80-year-old, female, cough variant asthma). Both patients complained of decreased cough-related quality of life and increased phlegm stickiness after infection. In parallel, their sputum showed decreases in linear viscoelastic region (LVR) parameters, such as viscoelastic modulus (G^*), elastic modulus (G'), and viscous modulus (G''), and increased tack ($\tan \delta/G'$; $\tan \delta = G''/G'$) compared to pre-infection levels. Rheological parameters, such as G^* and tack, took at least several months to return to almost pre-infection levels after recovery from COVID-19. Further studies are needed to determine whether the viscoelastic fluctuations seen in these two patients are common to patients with post-COVID-19 cough

and whether their delayed recovery is associated with prolonged clinical symptoms. A sputum rheology approach may provide new insights into post-COVID-19 cough.

Keywords: Post-COVID-19 cough; SARS-CoV-2; Sputum rheology; Tack; Viscoelastic modulus.

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Conflict of interest statement

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

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. 2024 Nov 11;10(6):00260-2024.

doi: 10.1183/23120541.00260-2024. eCollection 2024 Nov.

[**Could cough hypersensitivity symptom profile differentiate phenotypes of chronic cough?**](#)

[Mi-Yeong Kim¹](#), [Ha-Kyeong Won²](#), [Ji-Yoon Oh³](#), [Ji-Hyang Lee³](#), [Eun-Jung Jo⁴](#), [Sung-Yoon Kang⁵](#), [Ji-Ho Lee⁶](#), [Seung-Eun Lee^{4,7}](#), [Noeul Kang⁸](#), [Young-Chan Kim⁹](#), [Hwa Young Lee¹⁰](#), [Jin An¹¹](#), [Youngsang Yoo¹²](#), [Ji-Su Shim¹³](#), [So-Young Park¹⁴](#), [Han-Ki Park¹⁵](#), [Min-Hye Kim¹³](#), [Sae-Hoon Kim¹⁶](#), [Sang-Heon Kim¹⁷](#), [Yoon-Seok Chang¹⁶](#), [Sang-Hoon Kim¹⁸](#), [Byung-Jae Lee⁸](#), [Surinder S Birring¹⁹](#), [Woo-Jung Song³](#)

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- PMID: 39534772

- PMID: [PMC11551855](#)
- DOI: [10.1183/23120541.00260-2024](#)

Abstract

Background: Recently, cough reflex hypersensitivity has been proposed as a common underlying feature of chronic cough in adults. However, symptoms and clinical characteristics of cough hypersensitivity have not been studied amongst phenotypes of chronic cough. This study aimed to compare symptom features, such as cough triggers and associated throat sensations, of cough hypersensitivity in patients with asthmatic chronic cough and those with refractory chronic cough (RCC).

Methods: Patients with chronic cough from the Korean Chronic Cough Registry were prospectively evaluated over 6 months. Physicians determined the aetiological diagnosis based on clinical evaluations and responses to treatment at the 6-month follow-up visit. Symptoms of cough hypersensitivity and cough-specific quality of life were assessed using the Cough Hypersensitivity Questionnaire (CHQ) and the Leicester Cough Questionnaire (LCQ), respectively.

Results: The analysis included 280 patients who completed the follow-up: 79 with asthmatic cough (cough variant asthma or eosinophilic bronchitis) and 201 with RCC. Baseline CHQ scores were similar between the groups (8.3 ± 3.7 in asthmatic cough *versus* 8.9 ± 3.9 in RCC; $p=0.215$, adjusted for age, sex and LCQ score). There were no significant between-group differences in the LCQ and cough severity Visual Analog Scale scores. Both groups showed a similar negative correlation with LCQ scores (asthmatic cough: $r=-0.427$, $p<0.001$; RCC: $r=-0.306$, $p<0.001$).

Conclusions: The symptoms of cough hypersensitivity may not distinguish between asthmatic cough and RCC. This suggests that chronic cough is the primary diagnosis in both phenotypes. It indicates a shared mechanism in their cough pathogenesis, despite having potentially different treatable traits.

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Conflict of interest statement

Conflict of interest: S.S. Birring declares grants from Merck Sharp & Dohme Corp. and consulting fees from Merck, Shionogi, Bayer, Nerre, Genentech/Roche and Bellus. Conflict of interest: W-J. Song declares grants from Merck Sharp & Dohme Corp. and AstraZeneca; consulting fees from Merck, Bellus, AstraZeneca, Shionogi and GSK; and lecture fees from Merck, AstraZeneca, GSK, Sanofi and Novartis; and is deputy chief editor of this journal. Conflict of interest: The other authors declare that they have no competing interests.

- [39 references](#)

- [5 figures](#)

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

1

Observational Study

Ital J Pediatr

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. 2024 Nov 14;50(1):243.

doi: [10.1186/s13052-024-01799-3](https://doi.org/10.1186/s13052-024-01799-3).

[Lung function trajectories in children with early diagnosis of non-cystic fibrosis bronchiectasis: a retrospective observational study](#)

[Rossella Lamberti](#) ^{#1}, [Simona Ferraro](#) ^{#1}, [Andrea Farolfi](#) ¹, [Michele Ghezzi](#) ², [Salvatore Zirpoli](#) ³, [Alice Marianna Munari](#) ³, [Sai Spandana Adivishnu](#) ⁴, [Giuseppe Marano](#) ⁴, [Elia Biganzoli](#) ⁴, [Gian Vincenzo Zuccotti](#) ^{1,4}, [Enza D' Auria](#) ¹

Affiliations Expand

- PMID: [39538243](https://pubmed.ncbi.nlm.nih.gov/39538243/)
- PMCID: [PMC11562094](https://pubmed.ncbi.nlm.nih.gov/PMC11562094/)
- DOI: [10.1186/s13052-024-01799-3](https://doi.org/10.1186/s13052-024-01799-3)

Abstract

Background: Non-cystic fibrosis (non-CF) bronchiectasis (BE) is defined as a clinical syndrome of recurrent, persistent wet cough and abnormal bronchial dilatation on chest High Resolution Computed Tomography (HRCT) scans. The aims of this study were to characterize the pattern of the trajectories of lung function parameters and to consider the relationship between the lung function and radiological severity according to the modified Reiff score.

Methods: The study retrospectively considered 86 children (46.5% male, median age of 4 years) with non-CF BE, admitted at the Paediatric Pneumology Unit of Buzzi Children's Hospital from January 2015 to December 2022. The diagnosis of BE was made according to the presence of a suggestive clinical history and symptoms and key features of BE evidenced on chest HRCT scans. The modified Reiff score was adapted to quantify the severity of BE. Spirometry (COSMED MicroQuark spirometer) was performed at median age of 5.78 years (baseline or T₀) and after 1 and 2 years from the baseline (T₁ and T₂, respectively). The general trends of lung function parameters were estimated by ANOVA models for repeated measurements. For each lung function parameter, a longitudinal regression model was fitted. The analysis was performed with the software R release 4.2.3. The statistical significance was deemed when the p-value resulted lower than 0.05.

Results: The general trends of lung function parameters showed a statistically significant variation of forced vital capacity (FVC%) and forced expiratory volume in 1s (FEV₁%) from T₀ to T₁ (p = 0.0062, 0.0009) and no significant change for FVC%, FEV₁% and forced expiratory flow 25-75% of VC (FEF_{25/75}%) from T₁ to T₂ (p = 0.145, 0.210, 0.600, respectively). Notably, we found no correlation between the age at diagnosis and the lung function parameters at T₀ (r = 0.149, 0.103 and 0.042 for FVC%, FEV₁% and FEF_{25/75}%, respectively). Instead, a poor negative correlation resulted between the Reiff score and FVC%, FEV₁% e FEF_{25/75}% at baseline (Spearman coefficients: rho=-0.156, -0.204, -0.103, respectively).

Conclusions: A stable pulmonary function is detectable within 2 years follow up from baseline spirometry. The modified Reiff score should be considered as a good tool not only to quantify the radiological lung involvement but also the degree of pulmonary function impairment.

Keywords: Children; Lung function; Non-cystic fibrosis bronchiectasis.

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Conflict of interest statement

Declarations Ethics approval and consent to participate Not applicable for this study; the typology of the study does not require the local ethics committee approval. Consent for publication Not applicable. Conflict of interest The authors declare no conflict of interest.

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

Supplementary info

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Editorial

Thorax

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. 2024 Nov 14;79(12):1109-1111.

doi: 10.1136/thorax-2024-222333.

[Added complexity to genotype-phenotype relationships in primary ciliary dyskinesia: *TAS2R38* as a gene modifier](#)

[Katherine Alexandra Despotes¹](#), [Stephanie D Davis²](#)

Affiliations Expand

- PMID: 39414358
- DOI: [10.1136/thorax-2024-222333](https://doi.org/10.1136/thorax-2024-222333)

No abstract available

Keywords: Bronchiectasis; Primary ciliary dyskinesia.

Conflict of interest statement

Competing interests: SDD: Research support—National Institutes of Health (HL096458, TR004057); observational study research support—ReCode Therapeutics. Clinical advisory board and consultancies: PCD Foundation, Medical and Scientific Advisory Council; Chair, American Thoracic Society Publications Policy Committee (unpaid).

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Semin Respir Crit Care Med

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. 2024 Nov 13.

doi: 10.1055/s-0044-1791740. Online ahead of print.

[Imaging of Aspiration: When to Suspect Based on Imaging of Bacterial Aspiration, Chemical Aspiration, and Foreign Body Aspiration](#)

[Priya Agarwala¹, Stephen Machnicki², Jay H Ryu³, Xiaowen Hu⁴, Kaitlin Saez¹, Suhail Raof⁵](#)

Affiliations Expand

- PMID: 39536942
- DOI: [10.1055/s-0044-1791740](#)

Abstract

Aspiration-related syndromes comprise a broad spectrum of diseases affecting the airways and lung parenchyma resulting from inadvertent entry of oropharyngeal or gastric contents into the respiratory tract. The diagnosis can be challenging given lack of self-reported symptoms and unwitnessed or silent aspiration events. Aspiration is a common finding in healthy individuals suggesting that host defenses play a critical role in the pathophysiology. In the absence of strict criterion, a high index of suspicion is necessary based on recognition of established risk factors and identification of characteristic imaging findings. Conditions predisposing to altered levels of consciousness and neuromuscular weakness can lead to dysphagia, impaired cough reflex, and subsequent aspiration. The most salient feature on imaging is the anatomic location of the abnormalities, with the superior segments of the lower lobes and posterior segments of upper lobes involved in the recumbent position, and basilar segments of lower lobes in the upright position. Acute syndromes include pneumonia, pneumonitis, and foreign body aspiration. In the more indolent form of aspiration, bronchiectasis, diffuse bronchiolitis, and interstitial lung disease can develop. A detailed understanding of associated radiographic findings for these syndromes can help to implicate aspiration as the cause for imaging abnormalities and ultimately optimize patient management.

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Conflict of interest statement

None declared.

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. 2024 Nov 13:e0414423.

doi: 10.1128/spectrum.04144-23. Online ahead of print.

[Insights into respiratory microbiome composition and systemic inflammatory biomarkers of bronchiectasis patients](#)

[Aleksandras Konovalovas](#)^{1,2}, [Julija Armalytė](#)¹, [Laurita Klimkaitė](#)¹, [Tomas Liveikis](#)¹, [Brigita Jonaitytė](#)³, [Edvardas Danila](#)^{3,4}, [Daiva Bironaitė](#)², [Diana Mieliauskaitė](#)², [Edvardas Bagdonas](#)², [Rūta Aldonytė](#)²

Affiliations Expand

- PMID: 39535197
- DOI: [10.1128/spectrum.04144-23](https://doi.org/10.1128/spectrum.04144-23)

Free article

Abstract

The human microbiomes, including the ones present in the respiratory tract, are described and characterized in an increasing number of studies. However, the composition and the impact of the healthy and/or impaired microbiome on pulmonary health and its interaction with the host tissues remain enigmatic. In chronic airway diseases, bronchiectasis stands out as a progressive condition characterized by microbial colonization and infection. In this study, we aimed to investigate the microbiome of the lower airways and lungs of bronchiectasis patients together with their serum cytokine and chemokine content, and gain novel insights into the pathogenesis of bronchiectasis. The microbiome of 47 patients was analyzed by sequencing of full-length 16S rRNA gene using amplicon

sequencing Oxford Nanopore technologies. Their serum inflammatory mediators content was quantified in parallel. Several divergently composed microbiome groups were identified and characterized, the majority of patients displayed one dominant bacterial species, whereas others had a more diverse microbiome. The analysis of systemic immune biomarkers revealed two distinct inflammatory response groups, i.e., low and high response groups, each associated with a specific array of clinical symptoms, microbial composition, and diversity. Moreover, we have identified some microbiome compositions associated with high inflammatory response, i.e., high levels of pro- and anti-inflammatory cytokines, whereas other microbiomes were in correlation with low inflammatory responses. Although bronchiectasis pathogenetic mechanisms remain to be elucidated, it is clear that addressing microbiome composition in the airways is a valuable resource not only for diagnosis but also for personalized disease management.

Importance: The population of microorganisms on/in the human body resides in distinct local microbiomes, including the respiratory microbiome. It remains unclear what defines a healthy and a diseased respiratory microbiome. We investigated the respiratory microbiome in chronic pulmonary infectious disease, i.e., bronchiectasis, and researched correlations between microbiome composition, systemic inflammatory biomarkers, and disease characteristics. The bronchoalveolar microbiome of 47 patients was sequenced, and their serum inflammatory mediators were quantified. The microbiomes were grouped based on their content and diversity. In addition, patients were also grouped into low- and high-response groups according to their inflammatory biomarkers' levels. Certain microbiome compositions, mainly single-species dominated, were associated with high levels of inflammatory cytokines, whereas others correlated with low inflammatory response and remained diverse. We conclude that respiratory microbiome composition is a valuable resource for the diagnostics and personalized management of bronchiectasis, which may include preserving microbiome diversity and introducing possible probiotics.

Keywords: bronchiectasis; lower respiratory tract microbiome; respiratory microbiome; systemic inflammatory biomarkers.

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Review

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[Asthma and Respiratory Co-Morbidities](#)

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Affiliations Expand

- PMID: 39542142
- DOI: [10.1016/j.jaci.2024.11.006](#)

Abstract

Asthma is a common respiratory condition with various phenotypes, non-specific symptoms and variable clinical course. The occurrence of other respiratory conditions with asthma, respiratory co-morbidities (RCs), is not unusual. A literature search was performed for asthma and a variety of respiratory co-morbidities using Pub-Med for the years 2019-2024. The 5 conditions with the largest number of references, other than rhinitis and rhinosinusitis addressed in another paper in this issue, or which are the most problematic in the authors' clinical experience are summarized. Others are briefly discussed. The diagnosis and treatment of both asthma and RCs are complicated by the overlap of symptoms and signs. Recognizing RCs is especially problematic in adult onset, non-type 2 asthma as there are no biomarkers to assist in confirming non-type 2 asthma. Treatment decisions in subjects with suspected asthma and RCs are complicated by the potential similarities between the symptoms or signs of the RC and asthma, the absence of a sine quo non for the diagnosis of asthma, the likelihood that many RCs improve with systemic corticosteroids, and the possibility that the manifestations of the RCs are misattributed to asthma or vice versa. Recognition of RCs is critical to the effective management of asthma, particularly severe or difficult to treat asthma.

Keywords: allergic bronchopulmonary aspergillosis (ABPA); asthma; asthma COPD overlap; bronchiectasis; chronic obstructive lung disease; co-morbid; cystic fibrosis; diffuse idiopathic pulmonary neuroendocrine cell hyperplasia (DIPNECH); eosinophilic bronchitis; eosinophilic pneumonia; laryngeal dysfunction; obstructive sleep apnea; rhinitis; rhinosinusitis.

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[Characteristics of exacerbators in the US Bronchiectasis and NTM Research Registry: a cross-sectional study](#)

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- PMCID: [PMC11551853](#)
- DOI: [10.1183/23120541.00185-2024](#)

Abstract

Background: Exacerbations of noncystic fibrosis bronchiectasis (bronchiectasis) are associated with reduced health-related quality of life and increased mortality, likelihood of hospitalisation and lung function decline. This study investigated patient clinical characteristics associated with exacerbation frequency.

Methods: A cross-sectional cohort study of patients ≥ 18 years with bronchiectasis enrolled in the US Bronchiectasis and Nontuberculous Mycobacteria (NTM) Research Registry (BRR) September 2008-March 2020. Patients were stratified by exacerbation frequency in their 2 years before enrolment. Patient demographics, respiratory symptoms, healthcare resource utilisation, microbiology, modified bronchiectasis severity index (mBSI) and select comorbidities were collected at

enrolment. Patient characteristics associated with exacerbation frequency were assessed using a negative binomial model.

Results: The study included 2950 patients (mean age 65.6 years; 79.1% female). Frequency of moderate to severe airway obstruction (forced expiratory volume in 1 s (FEV₁) % predicted <50%; most recent measure) was 15.9%, 17.8%, and 24.6% in patients with 1, 2, and ≥3 exacerbations *versus* 8.9% in patients with 0 exacerbations; severe disease (mBSI) was 27.8%, 24.2% and 51.1% *versus* 13.2%; respiratory hospitalisation was 24.5%, 33.0% and 36.5% *versus* 4.1%; and *Pseudomonas aeruginosa* infection was 18.8%, 23.4% and 35.2% *versus* 11.9%. In multivariable model analysis, respiratory hospitalisation, cough, haemoptysis, *P. aeruginosa*, younger age, lower FEV₁% predicted, asthma, and gastro-oesophageal reflux disease were associated with more exacerbations.

Conclusions: These findings demonstrate a high disease burden, including increased respiratory symptoms, healthcare resource utilisation, and *P. aeruginosa* infection in patients with bronchiectasis and multiple exacerbations.

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Conflict of interest statement

Conflict of interest: N.C. Lapinel reports receiving consulting fees and serving on the advisory board panel for Insmmed Incorporated and that Louisiana State University Health Sciences Center received clinical trial support from Insmmed Incorporated. R. Choate and A. Schmid have nothing to disclose. T.R. Aksamit reports no personal grant/research support from Insmmed Incorporated or other pharma; clinical trial design and participation with AstraZeneca, Insmmed Incorporated, Johnson & Johnson, Redhill Biopharma, Spero Therapeutics and Zambon, with all support going to the Mayo Foundation for Medical Education and Research; and is the Medical Director of Bronchiectasis and NTM 360 for the COPD Foundation. J. Feliciano and S. Fucile are employees and shareholders of Insmmed Incorporated. K.L. Winthrop reports grant/research support and consulting fees from AN2 Therapeutics, Insmmed Incorporated, Paratek, Red Hill Biopharma, Renovion, and Spero Therapeutics and participation on a data safety monitoring board or advisory board for Red Hill Biopharma. M.L. Metersky reports receiving consulting fees from AN2 Therapeutics, Boehringer Ingelheim, Insmmed Incorporated, Renovion, and Zambon.

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[Computed tomography morphological assessments of central airways in interstitial lung abnormalities and idiopathic pulmonary fibrosis](#)

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Abstract

Background: Little is known about whether central airway morphological changes beyond traction bronchiectasis develop and affect clinical outcomes in patients with idiopathic pulmonary fibrosis (IPF). This study aimed to compare central airway structure comprehensively between patients with IPF, subjects with interstitial lung abnormality (ILA), and those without ILA (control) using computed tomography (CT). We further examined the prognostic impact of IPF-specific CT airway parameters in patients with IPF.

Methods: This retrospective study included male patients with IPF, and male health checkup subjects divided into those with ILA and control based on lung cancer screening CT. Using an artificial intelligence-based segmentation technique, the extent of fibrotic regions in the lung was quantified. After airway tree segmentation, CT parameters for central airway morphology, including the lumen area of the extrapulmonary airways (LA^{extra}), wall and lumen area of the segmental/subsegmental intrapulmonary airways (WA^{intra} and LA^{intra}), tracheal distortion (tortuosity and curvature) and bifurcation angle of the main carina, were calculated.

Results: There were 106 patients with IPF, 53 subjects with ILA, and 1295 controls. Multivariable models adjusted for age, height and smoking history revealed that LA^{intra} and WA^{intra} were larger in both ILA and IPF, and that tracheal tortuosity and curvature were higher in IPF, but not in ILA, than in the control, whereas the

bifurcation angle did not differ between the 3 groups. According to multivariable Cox proportional hazards models including only patients with IPF, increased WA^{intra} was significantly associated with greater mortality (standardized hazard ratio [95% confidence interval] = 1.58 [1.17, 2.14]), independent of the volume of fibrotic regions, normal-appearing regions, or the whole airway tree in the lung.

Conclusion: Increased lumen area and wall thickening of the central airways may be involved in the pathogenesis of ILA and IPF, and wall thickening may affect the prognosis of patients with IPF.

Keywords: Airway disease; Central airway morphology; Computed tomography; Curvature; Idiopathic pulmonary fibrosis; Imaging; Interstitial lung abnormality; Tortuosity; Traction bronchiectasis.

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Conflict of interest statement

Declarations Ethics approval and consent to participate The study was conducted in accordance with the Declaration of Helsinki. The ethics committees of Kyoto University Hospital (R2733-8, R2751-2, R1660-6, R1353, R1323-2) approved the study and waived written informed consent because of its retrospective nature. Consent for publication Not applicable. Competing interests NT, T. Handa, and T. Hirai were supported by grants from FUJIFILM Co., Ltd., and Daiichi Sankyo Company, Ltd. T. Handa is employed by the Collaborative Research Laboratory funded by Teijin Pharma Co., Ltd. SS received grants from FUJIFILM Co., Ltd., Nippon Boehringer Ingelheim, Philips-Respironics, Fukuda Denshi, Fukuda Lifetec Keiji, and ResMed outside of the submitted work. None of these companies played a role in the design or analysis of the study or in the writing of the manuscript. The other authors have no conflicts of interest to declare.

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