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

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Stud Health Technol Inform

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. 2026 May 21:336:1933-1934.

doi: 10.3233/SHTI260578.

Telemonitoring of COPD Patients Reduces Hospital Admission Rate

Zeina Safi [1], David Olander [1], Leili Lind [2 3], Petra Jacobson [1], Hans Lennart Persson [1]

Affiliations Expand

- **PMID: 42175248**

- **DOI: 10.3233/SHTI260578**

Abstract

In a telemonitoring (TM) context, applying the Rome Classification (RC), we assessed the frequency of hospital admissions, length of hospital stays and emergency room (ER) visits for 33 study subjects during one study year. In line with present knowledge and compared to the year prior to inclusion, TM significantly reduced the frequency of hospital admissions.

Keywords: COPD; Rome Classification; cost-effectiveness; telemonitoring.

Supplementary info

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2

Editorial

Eur Radiol

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. 2026 May 22.

doi: 10.1007/s00330-026-12625-1. Online ahead of print.

Imaging of the pulmonary vasculature in COPD: moving beyond airflow limitation

Andrew J Synn [1]

Affiliations Expand

- PMID: 42171695

- DOI: 10.1007/s00330-026-12625-1

No abstract available

Conflict of interest statement

Compliance with ethical standards. Guarantor: The scientific guarantor of this publication is Andrew J. Synn. Conflict of interest: The author of this manuscript declares no relationships with any companies whose products or services may be related to the subject matter of the article. Statistics and biometry: No complex statistical methods were necessary for this paper. Informed consent: Not applicable. Ethical approval: Not applicable. Study subjects or cohorts overlap: Not applicable. Methodology: Commentary

Comment on

- Pulmonary vascular volume heterogeneity in association with emphysema: a multicenter study based on non-contrast chest CT.

Li R, Li Z, Liu X, Gao X, Fan L, Yan J, E L, Zhang T, Liu J.Eur Radiol. 2026 May 22. doi: 10.1007/s00330-026-12618-0. Online ahead of print.PMID: 42171694

- 7 references

Supplementary info

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3

Comment

Eur Respir J

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. 2026 May 21;67(5):2600012.

doi: 10.1183/13993003.00012-2026. Print 2026 May.

Mucoactive therapies and the European Respiratory Society guideline for adult bronchiectasis: what now after the CLEAR trial?

James D Chalmers [1], Charles S Haworth [2], Patrick Flume [3], Merete B Long [4], Pierre Régis Burgel [5], Katerina Dimakou [6], Francesco Blasi [7 8], Beatriz Herrero Cortina [9 10], Raja Dhar [11], Sanjay H Chotirmall [12 13], Felix C Ringshausen [14 15 16], Josje Altenburg [17], Lucy Morgan [18], Mattia Nigro [19 20], Oriol Sibila [21], Pamela J McShane [22], Kevin Winthrop [23], Michael R Loebinger [24], Natalie Lorent [25 26], Pieter Goeminne [27], Michal Shteinberg [28 29], Eva Polverino [30], Stefano Aliberti [19 20]

Affiliations Expand

- PMID: 42167772

- DOI: 10.1183/13993003.00012-2026

No abstract available

Conflict of interest statement

Conflict of interest: J.D. Chalmers declares grants and personal fees from Antabio, AstraZeneca, Boehringer Ingelheim, CSL Behring, Genentech, Gilead Sciences, GlaxoSmithKline, Grifols, Insmed, Novartis, Pfizer, Trudell and Zambon. C.S. Haworth declares grants or personal fees from 30 Technology, AstraZeneca, BiomX, Chiesi, Insmed, Lifearc, Pneumagen, Vertex and Zambon. P. Flume declares grants from Aceragen. Boehringer Ingelheim, Insmed, National Institutes of Health, Renovion, Sanofi, Synchrony, Verona, BiomX, COPD Foundation, Inogen and Zambon. P.R. Burgel declares grants and personal fees from AstraZeneca, Chiesi, GSK, Insmed, MSD, Novartis, Pfizer, Sanofi, Vertex, Viatris and Zambon. F. Blasi declares grants and personal fees from Chiesi, GlaxoSmithKline, Grifols, Insmed, Menarini, OM Pharma, Pfizer, Sanofi, Vertex, Viatris and Zambon. R. Dhar declares grants and personal fees from Abbott, Cipla, Glenmark, GlaxoSmithKline, Lupin, Sanofi, Thorasys and Zuventus. S.H. Chotirmall declares grants or personal fees from Boehringer Ingelheim, Chiesi, Inovio and Pneumagen. F.C. Ringshausen declares grants and personal fees from i!DE Werbeagentur, German Center for Infection Research (DZIF), German Center for Lung Research (DZL), German Cystic Fibrosis Patient Advisory Group (Mukoviszidose e.V.), German Kartagener Syndrome and Primary Ciliary Dyskinesia Patient Advisory Group, Grifols, Helmholtz Center for Infection Research, Innovative Medicines Initiative (IMI; EU/EFPIA) and the iABC Consortium, Boehringer Ingelheim, Chiesi, Insmed, Mukoviszidose Institute, Novartis, Pari, Parion Sciences, Sanofi, Vertex and Zambon. L. Morgan declares grants or personal fees from AstraZeneca, GSK, Insmed and Zambon. P.J. McShane declares personal fees from Boehringer Ingelheim and Insmed. K. Winthrop declares grants and personal fees from Insmed and Zambon. M.R. Loebinger declares personal fees from 30 Technologies, AN2 Therapeutics, Armata, AstraZeneca, Boehringer Ingelheim, Chiesi, Electromed, Ethris, Insmed, Mannkind, Parion, Recode and Zambon. N. Lorent declares personal fees from GlaxoSmithKline and Insmed. P. Goeminne declares personal fees from Chiesi, GSK and MDF. M. Shteinberg declares grants or personal fees from AstraZeneca, Boehringer Ingelheim, Bonus biogroup, Dexxon, GSK, Kamada, Rafa, Sanofi and Synchrony Medical. E. Polverino declares grants and/or personal fees from Chiesi, Insmed, Grifols, Pari, CSL Behring, Moderna, Pfizer, Shionogi, Shire, Teva, Vertex and Zambon. S. Aliberti declares grants or personal fees from AstraZeneca, Brahms, Chiesi, GlaxoSmithKline, Insmed, Menarini and Physioassist. The remaining authors have no potential conflicts of interest to disclose.

Comment on

- **European Respiratory Society clinical practice guideline for the management of adult bronchiectasis.**

Chalmers JD, Haworth CS, Flume P, Long MB, Burgel PR, Dimakou K, Blasi F, Herrero-Cortina B, Dhar R, Chotirmall SH, Ringshausen FC, Altenburg J, Morgan L, Nigro M, Crichton ML, Van Meel C, Sibila O, Timothy A, Kompatsiari E, Hedberg T, Vandendriessche T, McShane PJ, Tonia T, Winthrop K, Loebinger MR, Lorent N, Goeminne P, Shteinberg M, Polverino E, Aliberti S.Eur Respir J. 2025 Dec 18;66(6):2501126. doi: 10.1183/13993003.01126-2025. Print 2025 Dec.PMID: 41016738

Supplementary info

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Eur Respir J

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. 2026 May 21;67(5):26E6705.

doi: 10.1183/13993003.E6705-2026. Print 2025 May.

ERJ Podcast May 2026: Mucus plugs in asthma and COPD

No authors listed

- PMID: 42167769

- DOI: 10.1183/13993003.E6705-2026

No abstract available

Full text links

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Cite

5

Review

Breathe (Sheff)

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. 2026 May 18;22(2):250260.

doi: 10.1183/20734735.0260-2025. eCollection 2026 Apr.

The metabolic code of pulmonary disease: from mechanisms to therapeutic opportunities

Ella Kearney [1 2], Sze-Ying Tan [1 2], Zhuowen Wang [1 3 2], Catríona M Dowling [1]

Affiliations Expand

- PMID: 42164237
- PMCID: PMC13184698
- DOI: 10.1183/20734735.0260-2025

Abstract

Emerging evidence suggests that metabolic dysregulation is a central driver in the pathogenesis of pulmonary disorders, extending beyond structural or immunological failures. This review synthesises current research on the specific alterations of glucose and lipid metabolism within the context of asthma, COPD, pulmonary fibrosis and lung cancer. We highlight how these metabolic alterations fuel disease progression and identify them as promising targets for novel biomarkers and therapeutic interventions. Finally, we outline critical future directions, emphasising the need to distinguish between causality and consequence, and the importance of mapping metabolic fluxes at the single-cell level.

Conflict of interest statement

Conflict of interest: There are no reported conflicts of interest.

- 105 references
- 2 figures

Supplementary info

Publication typesExpand

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Review

Breathe (Sheff)

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. 2026 May 18;22(2):260026.

doi: 10.1183/20734735.0026-2026. eCollection 2026 Apr.

Lung Facts: a practical tool to strengthen respiratory advocacy in Europe

Guy Joos [1], Amy Auer [2], Pippa Powell [3], Lauren Anderson [3], Joan B Soriano [4], Jana De Brandt [5], Chantal Raherison Semjen [6], Bruno Balbi [7], Aleksander Kania [8]

Affiliations Expand

- PMID: 42164234

- PMCID: PMC13184697

- DOI: 10.1183/20734735.0026-2026

Abstract

Respiratory diseases remain a leading health burden across Europe, yet national strategies are often fragmented or absent. The International Respiratory Coalition's Lung Facts platform offers a comprehensive, up-to-date resource for epidemiological and economic data for major respiratory conditions across 53 European countries. This viewpoint outlines the platform's development and the types of data available, including disease burden, societal costs and risk factor attribution. It also demonstrates how national coalitions are using it to advocate for respiratory health policies. By providing accessible, country-specific information in visual formats, Lung Facts supports benchmarking, evidence-based advocacy and planning of national respiratory strategies. The platform is a dynamic tool intended to strengthen respiratory health policy and empower stakeholders to act on the growing burden of lung disease.

Conflict of interest statement

Conflict of interest: G. Joos reports consultancy fees from Chiesi and GlaxoSmithKline; payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing or educational events from AstraZeneca, GlaxoSmithKline and Sanofi; support for attending meetings received from AstraZeneca; participation on a Data Safety Monitoring Board or Advisory Board for CR20 B.V; and a leadership role with IRC and is an Advocate GINA. A. Auer reports support for the present manuscript from the IRC; and is employed by the European Respiratory Society and works as a project manager for the International

Respiratory Coalition. P. Powell works for the European Lung Foundation. L. Anderson works for the European Lung Foundation. J.B. Soriano has received pharmaceutical company grants from 2022 to 2026 from Chiesi, GSK, Linde and Novartis via Hospital Universitario de La Princesa. Participated in speaking activities, advisory committees, and consultancies from 2022 to 2026 sponsored by Air Liquide, Almirall, AstraZeneca, Boehringer Ingelheim, CHEST, Chiesi, CNPT, ERS, FTH, Gebro, Grifols, GSK, IHME, Laminar Pharma, Linde, Lipopharma, Menarini, Mundipharma, Novartis, OMS/WHO, Pfizer, ResApp, RiRL, ROVI, SEPAR, SAPIO, Seqirus, WHO EUR, Takeda and Zambon. Finally, J.B. Soriano declares he has never received, directly or indirectly, any funding from tobacco manufacturers or their affiliates; and has participated in speaking activities, advisory committees, and consultancies from 2022 to 2026 sponsored by Air Liquide, Almirall, AstraZeneca, Boehringer Ingelheim, CHEST, Chiesi, CNPT, ERS, FTH, Gebro, Grifols, GSK, IHME, Laminar Pharma, Linde, Lipopharma, Menarini, Mundipharma, Novartis, OMS/WHO, Pfizer, ResApp, RiRL, ROVI, SEPAR, Seqirus, WHO EUR, Takeda and Zambon. J. De Brandt reports grants from IRC and Belgian Lung Foundation; support received for attending meetings from IRC; other financial or non-financial interests: MSD, AstraZeneca, Sanofi, GSK and Chiesi (organisation of the Run/Walk for your Lungs 2025 – Belgian Lung Foundation received 14K); Insmed (organisation of an awareness event for World COPD day – Belgian Lung Foundation received 7K); AstraZeneca, Sanofi, GSK and Chiesi (Organization of Scientific Forum “COPD in Belgium: Scientific update and next steps” – Belgian Respiratory Society received 29.6K). C. Raherison Semjen reports support for the present manuscript from Isis, Fondation Bordeaux University, Chiesi, GSK, Novartis, Boeringher Ingelheim and Fondation Bordeaux University; and payment or honoraria for lectures, presentations, speakers’ bureaus, manuscript writing or educational events from Chiesi. B. Balbi reports support for the present manuscript from IRC and Consulta della Pneumologia; and leadership roles with IRC and Consulta della Pneumologia. A. Kania has nothing to disclose.

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. 2026 May 19:S0012-3692(26)00646-X.

doi: 10.1016/j.chest.2026.05.013. Online ahead of print.

COPD Trial Evidence Comes from a Narrow Slice of the World: A Population Representativeness Analysis

Amr Youssef [1], Alexandru Corlateanu [2], Olga Corlateanu [3], Augusta Beech [4], Jørgen Vestbo [5], Alexander G Mathioudakis [6]

Affiliations Expand

- PMID: 42162834

- DOI: 10.1016/j.chest.2026.05.013

No abstract available

Keywords: COPD; Chronic Obstructive Pulmonary Disease; Clinical Trials; Exclusion criteria; Inclusivity.

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Pulm Ther

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. 2026 May 20.

doi: 10.1007/s41030-026-00367-w. Online ahead of print.

Peripheral Blood Inflammatory Markers and Immune Cell Profiles in Smokers With and Without COPD

Wenying Lu [1], Maddison Waters [2], Josie Larby [3], Sapha Shibeeb [4], Steven Bozinovski [4], Stavros Selemidis [4], Jonathan McQualter [4], Ross Vlahos [4], Md Imtaiyaz Hassan [5], Heinrich Weber [6], Sukhwinder Singh Sohal [7 8]

Affiliations Expand

- PMID: 42159657

- DOI: 10.1007/s41030-026-00367-w

Free article

Abstract

Introduction: Cigarette smoking is a major driver of airway and systemic inflammation and contributes to the development and progression of chronic obstructive pulmonary disease (COPD). This study compared peripheral blood inflammatory markers and immune cell profiles in smokers with and without COPD and in non-smoking controls.

Methods: In this cross-sectional study, blood samples were collected from 80 participants (n = 20/group): non-smoker controls (NS), smokers with normal lung function (NLFS), current smokers with COPD (COPD-CS), and ex-smokers with COPD (COPD-ES). Total white cell count (WCC) and leukocyte differentials (neutrophils, lymphocytes, monocytes, eosinophils) were measured using an automated haematology analyser (Sysmex XN2000). Systemic inflammatory markers were measured using C-reactive protein (CRP, Roche Cobas Pro) and erythrocyte sedimentation rate (ESR, Diesse VES-MATIC Easy). Lung function parameters (including FEV1, FVC, DLco, FEF25-75%, and SpO2) were assessed and correlated with blood markers.

Results: Compared with NS, WCC, neutrophils, and monocytes were higher in both COPD groups and in NLFS (all $p < 0.05$). Lymphocytes were higher in NLFS and COPD-CS ($p < 0.05$). Eosinophils were higher in COPD-ES and NLFS relative to NS ($p < 0.05$). ESR and CRP were elevated in NLFS and both COPD groups compared with NS ($p < 0.05$). In COPD, higher blood inflammatory cell counts were associated with poorer lung function (negative correlations; $p < 0.05$).

Conclusion: Peripheral blood inflammatory markers are increased in smokers, including those with preserved lung function, and in COPD. Differences in eosinophil patterns between COPD current smokers and ex-smokers suggest inflammatory heterogeneity and should be confirmed in larger, well-characterized cohorts. These findings support the move towards careful personalized medicine interventions, based on individual inflammatory profiles.

Keywords: Blood inflammatory cells; COPD; Inflammation; Smoking.

Plain language summary

Cigarette smoking causes inflammation throughout the body and in the lungs, and it plays a key role in the development of chronic obstructive pulmonary diseases (COPD). In this study, we looked at signs of inflammation in the blood from smokers and people with COPD and compared them with those of people who have never smoked. We recruited 80 people, divided into four groups: non-smokers, smokers with normal lung function, current smokers with COPD, and ex-smokers with COPD. We measured different types of white blood cells and common blood markers of inflammation and compared these results with lung function test results. We found that smokers, even those with normal lung function, had higher levels of inflammation in their blood than non-smokers. People with COPD also had higher inflammatory markers, and higher blood inflammation was linked to worse lung

function. Some differences were seen between current and ex-smokers with COPD, particularly in the level of eosinophils, suggesting that not all people with COPD have the same type of inflammation. Overall, the findings show that smoking is linked to increased inflammation in the blood, even before lung disease becomes obvious. The differences seen between individuals supports the need for more personalized approaches to COPD treatment, based on each person's inflammatory profile.

Conflict of interest statement

Declarations. Conflict of interest: Associate Professor Sohal reports honorarium for lectures from Chiesi, travel support from Chiesi, AstraZeneca, Boehringer Ingelheim, and GSK, and research grants from Boehringer Ingelheim and Lung Therapeutics, outside the submitted work; and has served on the Small Airway Advisory Board for Chiesi Australia for which an honorarium has been received. Associate Professor Sohal has served as Chair for the Chiesi Advisory Board for Centre of Excellence in Oscillometry, for which an honorarium was received. Associate Professor Sukhwinder Sohal (senior author on this paper) is on the Editorial Board of Pulmonary Therapy and was not involved in the selection of peer reviewers for the manuscript nor any of the subsequent editorial decisions. Dr Wenying Lu, Dr Maddison Waters, Dr Josie Larby, Dr Sapha Shibeeb, Professor Steven Bozinovski, Professor Stavros Selemidis, Professor Jonathan McQualter, Professor Ross Vlahos, Professor Md Imtaiyaz Hassan, and Associate Professor Heinrich Weber do not have any conflict of interest to declare. Ethical Approval: The study was conducted in accordance with the Declaration of Helsinki and approved by the Human Research Ethics Committee (Tasmania) (Ethics: H0013051). Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

- 47 references

Cite

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ERJ Open Res

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. 2026 May 18;12(3):00961-2025.

doi: 10.1183/23120541.00961-2025. eCollection 2026 May.

Whether emphysema is centrilobular or panlobular determines pulmonary artery remodelling in COPD

Graziella Turato [1 2], Erica Bazzan [1 2], Simonetta Baraldo [1], Mariaenrica Tinè [1], Umberto Semenzato [1], Giorgia Puddu [1], Davide Biondini [1 3], Marina Saetta [1 4], Manuel G Cosio [5 4]

Affiliations Expand

- PMID: 42158493
- PMCID: PMC13181582
- DOI: 10.1183/23120541.00961-2025

Abstract

Centrilobular emphysema has significantly worse remodelling of pulmonary arteries than panlobular emphysema, suggesting distinct pathological phenotypes in COPD, a concept that might improve the understanding of the disease https://bit.ly/4oZtm09.

Conflict of interest statement

Conflict of interest: M. Tinè reports speaker fees from Delphi International Srl, Med Maps Srl and Maregra. U. Semenzato reports consultancy fees from Insmed, Sanofi and Sanofi Suisse, payment for lectures, presentations, manuscript writing or educational events from AstraZeneca, Chiesi Farmaceutici, GlaxoSmithKline, Insmed, Menarini, MSD, Sanofi and Sanofi Suisse, support for attending meetings from Chiesi Farmaceutici, AstraZeneca and Menarini, and participation on a data safety monitoring board or advisory board with GlaxoSmithKline and financial support from Chiesi Farmaceutici for a second-degree master programme. All other authors declare no conflicts of interest.

- 15 references
- 1 figure

Supplementary info

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10

Syst Rev

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. 2026 May 20.

doi: 10.1186/s13643-026-03203-z. Online ahead of print.

Statins for the prevention of exacerbations in COPD: a systematic review and meta-analysis of randomized controlled trials

Guizuo Wang [1], Wenli Shang [1], Dong Han [2]

Affiliations Expand

- PMID: 42157340

- DOI: 10.1186/s13643-026-03203-z

Free article

Abstract

Background: The role of statins in reduction of acute exacerbations in chronic obstructive pulmonary disease (COPD) remains unclear. This systematic review and meta-analysis aimed to determine the preventive effect of statins on exacerbations in COPD patients.

Methods: A systematic search was conducted in PubMed, Embase, Cochrane Library, and clinicaltrials.gov, without language restrictions. Randomized controlled trials (RCTs) on treatment of COPD with statins, compared with placebo, were reviewed. Estimated effects of included studies were pooled as risk ratios (RRs) and weighted mean differences (WMDs), with 95% confidence intervals (CIs). The certainty of evidence was assessed using the GRADE (Grading of Recommendations, Assessment, Development, and Evaluations) framework.

Results: Three RCTs (enrolling 1190 patients) met the inclusion criteria. Compared with placebo, the exacerbation related hospitalization rate (RR 0.87, 95% CI 0.77 to 0.97; GRADE = low) and severe exacerbation rate (RR 0.88, 95% CI 0.78 to 0.99; low) were significantly lower in statins groups. There was no statistically significant difference in moderate exacerbation rate (RR 0.71, 95% CI 0.48 to 1.04; very low), annualized exacerbation rate (WMD -0.21 per person-year, 95% CI -0.61 to 0.20; very low), and annualized moderate-to-severe exacerbation rate (WMD -0.21 per person-year, 95% CI -0.57 to 0.15; very low) between the two groups.

Conclusions: In the absence of single-inhaler triple therapy (SITT), statins were associated with a reduction in severe exacerbations and hospitalization rates of COPD. Given the limitations of the evidence we found, further large-scale, high-

quality studies are needed to clarify the impact of statins on prognosis and the beneficiary population.

Systematic review registration: PROSPERO CRD42025644971.

Keywords: COPD; Exacerbation; Hospitalization; Meta-analysis; Statins.

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.

Supplementary info

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11

BMC Pulm Med

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. 2026 May 19.

doi: 10.1186/s12890-026-04312-0. Online ahead of print.

Classification and regression trees to identify COPD subgroups in clinical trial populations: insights from the IMPACT trial

Lucile Regard [1 2 3], Jean-Louis Paillasseur [4 5], Pierre-Régis Burgel [# 6 7 4], Nicolas Roche [# 6 7 4]

Affiliations Expand

- PMID: 42157159

- DOI: 10.1186/s12890-026-04312-0

Free article

Abstract

Background: Heterogeneity in chronic obstructive pulmonary disease (COPD) challenges the identification of optimal treatment populations. Subgroups derived from real-life cohorts using classification and regression trees (CARTs) have shown prognostic value for mortality, but their applicability to clinical trial populations to predict treatment response needs to be further investigated. We sought to evaluate whether previously identified CART-based subgroups are relevant for predicting outcomes and treatment response in the IMPACT trial, and to assess the stability of these subgroups using de novo clustering.

Methods: Post-hoc analysis of the IMPACT trial, a randomized controlled trial comparing inhaled corticosteroid (ICS)-containing dual or triple therapy to dual long-acting bronchodilation in patients with COPD. CART-based classification from prior real-life cohorts was applied to trial participants. Additionally, de novo clustering was performed using factor analysis of mixed data to identify alternative subgroup structures. Outcomes included mortality, exacerbation rates, lung function, dyspnea, and health status. Subgroups were compared descriptively in terms of baseline characteristics and on-treatment outcomes, with particular attention to blood eosinophil count and treatment response.

Results: Among 10,355 patients, both CART-based (5 classes) and de novo (5 clusters) classifications identified subgroups with distinct baseline profiles and variable on-treatment outcomes. Exacerbation and mortality rates differed markedly across subgroups, with numerically greater differences between treatment arms in higher-risk groups. Most clusters showed heterogeneous patterns of outcomes, while one cluster, characterized by elevated blood eosinophils (median 930/mm^3), showed a numerically lower exacerbation rate with triple versus dual bronchodilation. Improvements in lung function and symptom scores were also more pronounced in this group. Despite limited concordance between the two methods, both consistently identified subgroups with higher event rates and greater numerical separation between treatment arms, supporting their potential value for clinical trial enrichment and personalized treatment strategies.

Conclusions: Application of a CART-based classification derived from real-life cohorts to a clinical trial population revealed subgroups with distinct baseline characteristics and differential treatment outcomes. These findings should be interpreted as exploratory and hypothesis-generating, and may inform future work on trial enrichment strategies and personalized approaches to COPD management.

Trial registration: The IMPACT trial was registered on ClinicalTrials.gov under number NCT02164513, first submitted on 12 June 2014.

Keywords: COPD; Eosinophils; Exacerbations; Mortality; Phenotype.

Conflict of interest statement

Declarations. Ethics approval and consent to participate: The IMPACT trial was performed in 37 countries from June 2014 through July 2017. It was conducted in accordance with Good Clinical Practice guidelines and the provisions of the Declaration of Helsinki and received approval from local institutional review boards or independent ethics committees. All the patients provided written informed consent. **Consent for publication:** Not applicable. **Competing interests:** NR reports

personal fees from GSK, AstraZeneca, Sanofi, Chiesi, Pfizer, Austral, Biosency, Zambon, MSD, and Menarini for consulting or speaking engagements, and institutional support from Chiesi, GSK, and Pfizer. He also serves as Chair of the ERS Science Council. PRB reports personal fees from AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, Insmed, MSD, Pfizer, Sanofi, Vertex, and Viatris, and institutional support from AstraZeneca and Chiesi. LR reports personal fees from AstraZeneca, Chiesi, GSK, and Sanofi, and institutional support for meeting attendance from AstraZeneca, Chiesi, and Sanofi. JLP is employed by Effi-Stat.

Supplementary info

Associated dataExpand

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Cite

12

BMC Pulm Med

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Clinical and phenotypic characteristics of chronic cough patients without sputum eosinophilia

Qiaoli Chen [#1,2], Jingxuan Wang [#3], Jinghan Cai [4], Kaicheng Xu [4], Sihong Yang [4], Ye Lin [4], Zhuowen Zhang [4], Chenxi Wang [4], Qisen Yang [4], Zimo Xu [4], Yun Chen [1], Shan Zhong [1], Xin Zhao [5], Zheng Deng [6,7]

Affiliations Expand

- PMID: 42157039

- DOI: 10.1186/s12890-026-04352-6

Free article

Abstract

Background: Corticosteroid treatment has no effect in patients without sputum eosinophilia. Sputum neutrophils and lymphocytes contribute to chronic cough

hypersensitivity. The characteristics of chronic cough patients without sputum eosinophilia have not been investigated.

Methods: This study included a total of 1061 patients at the First Affiliated Hospital of Guangzhou Medical University between July 2021 and June 2024 (Approval number: ES-2024-K117-02). We analyzed clinical characteristics, sputum cell profiles, spirometry, and pulmonary lesions across four groups: chronic cough patients with normal sputum (n = 180), lymphocytotic sputum (n = 270), neutrophilic sputum (n = 349), and mixed leukocytotic sputum (n = 262).

Results: Gastroesophageal reflux cough was the most prevalent disease in chronic cough patients with normal sputum. Atopic cough was more common in patients with lymphocytotic sputum. COPD and bronchiectasis were more prevalent in both neutrophilic and leukocytotic sputum groups. Advanced age was a characteristic of patients with neutrophilic or leukocytotic sputum. Patients with neutrophilic sputum had a higher prevalence of smoking history and a longer smoking duration. Pulmonary lesions were less severe in patients with lymphocytotic sputum but more severe in those with neutrophilic or leukocytotic sputum. Compared to patients with normal sputum, both neutrophilic and leukocytotic sputum groups exhibited marked reductions in overall lung function (FVC% of predicted, FEV1% of predicted, FEV1/FVC% of predicted, and PEF% of predicted) and small airway function (MMEF% of predicted, FEF75% of predicted, and FEF50% of predicted). Associations were observed among age, smoking history, sputum neutrophil percentages, pulmonary lesions, and declined lung functions. Elevated sputum neutrophils were independently associated with reduced lung function across multiple parameters (FVC% of predicted, FEV1/FVC% predicted, FEV1/VCmax% predicted, PEF% predicted, MMEF% of predicted, and FEF50% of predicted), despite robust adjustment for age and the presence of COPD, bronchiectasis, and interstitial lung disease.

Conclusions: Advanced age and smoking history are risk factors for elevated sputum neutrophils in chronic cough patients. Neutrophil-mediated airway inflammation is associated with pulmonary lesions and declined lung functions in chronic cough patients.

Keywords: Chronic cough; Declined lung functions; Pulmonary lesions; Smoking history; Sputum neutrophils.

Conflict of interest statement

Declarations. Ethics approval and consent to participate: All subjects provided written informed consent for this study, which was approved by the Ethics Committee of the First Affiliated Hospital of Guangzhou Medical University (Approval number: ES-2024-K117-02). The study adhered to ethical standards and principles of research outlined by the Declaration of Helsinki. Consent for publication: Not applicable. Competing interests: The authors declare no competing interests.

Supplementary info

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13

Lancet Respir Med

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Comorbid diabetes disease severity and microbial changes in patients with bronchiectasis: a combined analysis of data from the EMBARC, EMBARC-India, Australian, and BE-China registries

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Abstract

Background: Bronchiectasis and diabetes commonly coexist and are associated with immune dysfunction and increased susceptibility to infection. Although diabetes is associated with worse prognosis in cystic fibrosis-related bronchiectasis, data are scarce for its impact on non-cystic fibrosis bronchiectasis.

This study aimed to characterise the impact of diabetes on clinical outcomes and microbial and inflammatory profiles in patients with bronchiectasis.

Methods: This analysis comprised data from the European Bronchiectasis Registry (EMBARC), Respiratory Research Network of India (EMBARC-India), Chinese Bronchiectasis Registry (BE-China), and Australian Bronchiectasis Registry (ABR); 30 263 patients with CT-confirmed bronchiectasis in 33 countries were included in the analysis: 16 963 from EMBARC (Jan 12, 2015, to April 12, 2022), 2361 from EMBARC-India plus additional Asian countries (June 1, 2015, to Sept 1, 2017), 10 324 from BE-China (Jan 10, 2020, to March 31, 2024), and 615 from the ABR (March 7, 2016, to Sept 11, 2018). Clinical data were compared between patients with and without diabetes. Long-term outcome data were available in EMBARC and EMBARC-India. Microbiome and inflammatory profiles were characterised in a sub-cohort of EMBARC patients by sputum 16S rRNA sequencing (n=433) and serum Olink (n=479).

Findings: 2487 (8·2%) of 30 263 patients with bronchiectasis had diabetes. Patients with diabetes had a higher prevalence of comorbidities than those without diabetes, including cardiovascular disorders (53·5% vs 21·8%, p<0·0001), asthma (27·5% vs 21·0%, p<0·0001), and chronic obstructive pulmonary disease (34·3% vs 19·0%, p<0·0001). Patients with diabetes had more severe disease than those without diabetes, with higher Bronchiectasis Severity Index scores (8 [IQR 5-12] vs 7 [4-10], p<0·0001) and UK Medical Research Council (MRC) dyspnoea scores (p<0·0001) and more hospital admissions in the previous year (p<0·0001). After adjustment for confounders, outcomes were significantly worse in patients with diabetes than in those without diabetes, including more frequent exacerbations (incidence rate ratio [IRR] 1·18 [95% CI 1·09-1·28], p<0·0001), hospital admissions (IRR 1·57 [1·40-1·76], p<0·0001), and higher 5-year mortality (hazard ratio 1·80 [1·53-2·12], p<0·0001). The sputum microbiome was significantly altered in patients with diabetes compared to those without diabetes, with increased isolation of Enterobacteriaceae (p<0·0001), Moraxella catarrhalis (p=0·0035), and Haemophilus influenzae (p=0·046). In serum, Gal-4 and GDF-15, established biomarkers of disease severity and cardiovascular risk in diabetes, were significantly increased in patients with diabetes (Gal-4, p<0·0001; GDF-15, p=0·0019).

Interpretation: Patients with diabetes and bronchiectasis are a high-risk population with more severe disease, worse outcomes, increased comorbidities, and increased risk of infections compared with patients without diabetes. These findings support inclusion of diabetes as a risk factor in individualised risk assessments for bronchiectasis.

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Conflict of interest statement

Declaration of interests HC reports grants or contracts from the Korean Ministry of Education (numbers RS-2025-25423084 and 2021R1I1A3052416) and AstraZeneca, consulting fees from Gilead, Boehringer Ingelheim, and Abbott, and lecture fees from Kolong, Boryung, Abbott, Otsuka, and Handok. SHC reports grants or contracts from the Singapore Ministry of Education and Singapore Ministry of Health's National Medical Research Council, with payments made to the institution; consulting fees from Boehringer Ingelheim, CSL Behring, Pneumagen, Sanofi, GSK and Zaccha Pte; lecture fees from AstraZeneca, CSL Behring, Boehringer Ingelheim, and Chiesi Farmaceutici; and participation on a data safety monitoring board or advisory board for Inovio Pharmaceuticals and Imam Abdulrahman Bin Faisal University. AS reports grants or contracts from Astrazeneca, Lifearc, and Insmed; fees for consulting or educational talks from Spirovant, Translate Bio, ReCode Therapeutics, Ethris, and Insmed; and leadership or fiduciary roles as Chair of the BEAT-PCD (Better Experimental Approaches to Treat Primary Ciliary Dyskinesia) European Respiratory Society clinical research consortium and involvement in European Respiratory Society Clinical Research Collaborations (EMBARC and AMR Lung). P-RB reports fees for consultancy work from AstraZeneca, Chiesi, GSK, Insmed, MSD, Pfizer, Vertex, and Viatris. MV reports payment for educational talks from Teva, Chiesi, and Insmed; support for attending meetings or travel, or both, from Pari, Chiesi, Zambon, Behring, Gebro, and Grifols and participated on a data safety monitoring board or advisory board for Insmed. W-JG reports support for this work as part of a Major Project of Guangzhou National Laboratory (grant number GZNL2024A02003) and Non-communicable Chronic Diseases-National Science and Technology Major Project (number 2024ZD0529600). PCG reports fees for educational talks from Insmed, RMEI, AstraZeneca, and GSK; support for attending meetings or travel, or both, from GSK and AstraZeneca; and participated on a data safety monitoring board or advisory board for Boehringer Ingelheim, MSD, and Pfizer. MS reports grants from Tel Aviv League for Lung Diseases and George K Baum Family Foundation; fees for consultancy work or educational talks from AstraZeneca, Boehringer Ingelheim, Dexcel, Kamada, Synchrony medical, Trumed, Zambon, CSL Behring, GSK, Sanofi, and Insmed; support for attending meetings or travel, or both, from Boehringer Ingelheim Israel, AstraZeneca Israel, Kamada, Rafa, and GSK Israel; has participated on a data safety monitoring board or advisory board for Bonus Biotherapeutics, Boehringer Ingelheim, AstraZeneca, and Insmed; and has a leadership or fiduciary role for the American Journal of Respiratory and Critical Care Medicine as Associate Editor, Treasurer of the Israeli Society for Tuberculosis and Mycobacterial Diseases, Management board member of EMBARC, Editorial board member of the European Respiratory Journal, European Respiratory Society (ERS) taskforce member of bronchiectasis guidelines, and ERS taskforce member of transitioning in bronchiectasis. ADS has received grants from Bayer, Gilead, GSK, Pfizer, AstraZeneca, Insmed, and Novartis; fees for consultancy or educational talks from Boehringer Ingelheim, Bayer, Gilead, Pfizer, GSK, Insmed, Astrazeneca, Novartis, Sanofi, 30T, Innogen, and Fisher&Paykel; support for attending meetings or travel, or both, from AstraZeneca, Chiesi, GSK, and Insmed; and participated on a data safety monitoring board or advisory board for Bayer. CSH has received fees for consultancy work or educational talks from 30 Technology, AstraZeneca, BiomX, Boehringer Ingelheim, Chiesi, Clarametyx, Infex, Insmed, LifeArc, Pneumagen, Sanofi, Vertex, and Zambon; and has received research funding from AstraZeneca. OS has received fees for consultancy work from Insmed and Boehringer Ingelheim. EP reports grants from Grifols and has

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14

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Dupilumab in COPD: A Pooled Analysis of Emergency Department Visits, Hospital Admissions, and Systemic Corticosteroid Use

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Abstract

Rationale: In chronic obstructive pulmonary disease, exacerbations drive morbidity, healthcare resource utilization, and mortality. Hospitalization and emergency department visits reflect acute clinical instability. Systemic corticosteroids are usually prescribed for exacerbations, but cumulative exposure is a concern.

Objectives: To evaluate the effect of dupilumab on emergency department visits/hospital admissions and systemic corticosteroid use in patients experiencing exacerbations.

Methods: BOREAS and NOTUS, two phase 3, randomized, double-blind, placebo-controlled trials, enrolled patients (40-85 years) with chronic obstructive pulmonary disease, moderate-to-severe airflow limitation, and type 2 inflammation (screening blood eosinophil count ≥ 300 cells/μL). Patients received dupilumab 300 mg (N = 938) or placebo (N = 936) for 52 weeks. Systemic corticosteroid use and annualized rate and time to first emergency department visit/hospital admission were assessed.

Measurements and main results: Dupilumab versus placebo reduced emergency department visits/hospital admissions of any duration by 38% (relative risk: 0.62 [95% confidence interval: 0.43-0.90]; P = .0121), delayed time to first event, and reduced risk of a first event by 45% (hazard ratio: 0.55 [95% confidence interval: 0.38-0.78]; P = .0010). Compared with placebo, systemic corticosteroid use was reduced in patients treated with dupilumab who experienced severe exacerbations by 42% (relative risk: 0.58 [95% confidence interval: 0.38-0.89]; P = .0126) and moderate exacerbations by 28% (relative risk: 0.72 [95% confidence interval: 0.60-0.87]; P = .0005).

Conclusions: Dupilumab reduced emergency department visits/hospital admissions of any duration. Patients who experienced moderate and/or severe exacerbations required fewer systemic corticosteroids with dupilumab compared with placebo.

Keywords: chronic obstructive pulmonary disease; dupilumab; exacerbations; severe exacerbations; systemic corticosteroids.

15

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Role of systemic corticosteroids in ventilated patients with chronic obstructive pulmonary disease exacerbation: a systematic review and meta-analysis

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Affiliations Expand

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Free article

Abstract

Purpose: The recommendation regarding systemic corticosteroids in ventilated patients with acute exacerbation of chronic obstructive pulmonary disease (AECOPD) is unknown since most studies have excluded ventilated patients. Our study aims to investigate whether systemic steroids benefit the subgroup of AECOPD who require ventilation.

Methods: We systematically searched PubMed, Cochrane, and Embase databases for randomized trials or observational studies comparing systemic steroids to placebo or no systemic steroids, up to April 2025. Outcomes of interest were intensive care unit (ICU) mortality, length of ICU stay, duration of ventilation, non-invasive ventilation (NIV) failure rate, hyperglycemia episodes, and ventilator-associated pneumonia (VAP).

Results: Six studies including 1596 ventilated AECOPD patients (including subgroups from larger ICU populations), were included in the systematic review. Of these 1424 contributed to the quantitative synthesis of at least one outcome. We performed sensitivity analysis for study type and mode of ventilation. ICU mortality was not significantly decreased in the systemic steroid group compared to placebo or no systemic steroids (Odds ratio (OR) = 1.09; 95% CI 0.62-1.91; p = 0.78; I^2=0.0%). There was no statistically significant difference between the groups for duration of ventilation (Mean difference (MD) = -2.24; 95% CI -5.13 to 0.66; p = 0.13; I^2=78.7%). In the subgroup of randomized controlled trials (RCTs), systemic steroids were associated with a shorter duration of ventilation (MD = -1.12 days; 95% CI -2.23 to 0.00; p = 0.049; I^2 = 59.9%). There was no difference between groups for length of ICU stay (MD = -1.60; 95% CI -3.32 to 0.12; p = 0.068; I^2=68.5%). There was no statistically significant difference between groups for NIV failure (Odds ratio (OR) = 1.17; 95% CI 0.83-1.67; p = 0.37; I^2=58.1%). Hyperglycemia episodes were significantly higher in the steroid group (OR = 2.38; 95% CI 1.56 to 3.62; p < 0.001; I^2=0.0%). There was no significant difference in rates of VAP (OR = 1.19; 95% CI 0.80-1.77; p = 0.38; I^2=0.0%).

Conclusion: This meta-analysis suggests that critically ill AECOPD patients on ventilation may not derive a significant benefit from systemic steroids.

Prospero protocol no: CRD420251034592.

Keywords: Acute exacerbation of chronic obstructive pulmonary disease; Intensive care unit; Mechanical ventilation; Non-invasive ventilation; Respiratory failure; Systemic steroids.

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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16

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Joint clinical and molecular subtyping of COPD with variational autoencoders

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Free article

Abstract

Chronic Obstructive Pulmonary Disease (COPD) is a complex, heterogeneous disease. Traditional subtyping methods generally focus on either the clinical manifestations or the molecular endotypes of the disease, leading to classifications that only partially reflect disease heterogeneity. Here, we introduce a variational autoencoder-based subtyping pipeline that jointly embeds clinical and gene expression data into a single subject-level representation. We evaluate the framework in the COPDGene study, a large study of current and former smoking individuals with and without COPD. Prediction experiments show that the embeddings have predictive accuracy comparable to or better than other unsupervised embedding approaches. Using trajectory learning approaches, we identify five well-separated subtypes with distinct clinical phenotypes, expression signatures, and longitudinal outcomes. Finally, we show that our findings generalize to an external validation cohort. Overall, our approach enables a transition from isolated phenotypic or molecular subtyping toward an integrated and clinically meaningful understanding of COPD heterogeneity.

Conflict of interest statement

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Safety and efficacy of astegolimab for COPD with frequent exacerbations regardless of baseline blood eosinophil counts (ALIENTO and ARNASA): randomised, double-blind, placebo-controlled, phase 2b and 3 trials

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Abstract

Background: Interleukin-33 and its receptor, ST2, are implicated in neutrophilic and eosinophilic inflammation during chronic obstructive pulmonary disease (COPD) exacerbations. We aimed to assess the efficacy and safety of astegolimab, an anti-ST2 human IgG2 monoclonal antibody, which were evaluated in two COPD pivotal trials.

Methods: In two randomised, double-blind, placebo-controlled trials (phase 2b ALIENTO and phase 3 ARNASA), current or former smokers with COPD and a history of frequent exacerbations, irrespective of baseline blood eosinophils, were randomly assigned (1:1:1; stratification by smoking status and region) to receive subcutaneous astegolimab 476 mg every 2 weeks, every 4 weeks, or placebo, alongside optimised inhaled maintenance therapy over 52 weeks. The primary endpoint (analysed in participants receiving one or more doses) was annualised rate of moderate or severe exacerbations. Missing data were considered similar to data from other participants in the same treatment group with the same baseline characteristics. The trials were registered with ClinicalTrials.gov (NCT05037929 and NCT05595642).

Findings: In ALIENTO, 1301 participants (astegolimab every 2 weeks, n=433; astegolimab every 4 weeks, n=437; and placebo, n=431) initiated treatment between Oct 5, 2021, and Feb 19, 2024. In ARNASA, 1375 participants (astegolimab every 2 weeks, n=459; astegolimab every 4 weeks, n=459; and placebo, n=457) initiated treatment between Jan 9, 2023, and June 25, 2024. Adjusted rate ratios versus placebo for the primary endpoint were 0·85 (95% CI 0·72-1·00; p=0·049) for astegolimab every 2 weeks and 0·93 (0·79-1·10; p=0·38) for astegolimab every 4 weeks in ALIENTO, and 0·85 (0·72-1·01; p=0·068) for astegolimab every 2 weeks and 0·82 (0·70-0·98; p=0·024) for astegolimab every 4 weeks in ARNASA. Adverse events were balanced between treatments, with most participants experiencing one or more adverse events (1093 [84·0%] of 1301 participants in ALIENTO and 1176 [85·5%] of 1375 in ARNASA). The most common non-COPD adverse event was nasopharyngitis in ALIENTO and upper respiratory chest infection in ARNASA. Deaths occurred in 40 (3·1%) of 1301 participants in ALIENTO and in 44 (3·2%) of 1375 participants in ARNASA, and were balanced across treatment groups. Across both trials, a total of three deaths (0·1%) were considered to be related to treatment by investigators.

Interpretation: In ALIENTO, astegolimab every 2 weeks was associated with a lower annual rate of exacerbations versus placebo in patients with COPD and a history of frequent exacerbations. In ARNASA, these findings did not meet statistical significance. Together, these findings suggest a role for targeting the ST2/IL-33 pathway to reduce the frequency of COPD exacerbations in patients with limited treatment options.

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Conflict of interest statement

Declaration on interests AP has received grants or contracts from AstraZeneca, Chiesi, GlaxoSmithKline, and Sanofi; consulting fees from AstraZeneca, Avillion, Chiesi, GlaxoSmithKline, Moderna, Regeneron, F Hoffmann-La Roche, Sanofi, Zambon, and Zentiva; and honoraria from AstraZeneca, Avillion, Chiesi, Regeneron, Moderna, GlaxoSmithKline, F Hoffmann-La Roche, Sanofi, and Zambon. NJG has received support for this study from the National Institute for Health and Care Research; grants or contracts from GlaxoSmithKline, AstraZeneca, and Genentech; consulting fees from AstraZeneca, Genentech, GlaxoSmithKline, Pulmonx, F Hoffmann-La Roche, and Sanofi; honoraria from AstraZeneca, Chiesi, Genentech, GlaxoSmithKline, Pulmonx, F Hoffmann-La Roche, and Sanofi; and support for travel from AstraZeneca, GlaxoSmithKline, Sanofi, and Chiesi. SPB has received grants or contracts from the National Institutes of Health, Nuvaira, Sanofi, Regeneron, Genentech, COPD Foundation, Apreo, Uniquity, and Connect Biopharma; royalties from Springer; consulting fees from Sanofi, Regeneron, Boehringer Ingelheim, Apreo, Genentech, Chiesi, AstraZeneca, GlaxoSmithKline, Kymera, Merck & Co, Verona Pharma, Polarean, Uniquity, and Connect Biopharma; honoraria from IntegrityCE, Medscape, Horizon CME, Illuminate Health, and Integritas Communications; and is chair of the Program Committee of the Clinical Problems Assembly of the American Thoracic Society. NR has received grants or contracts from Chiesi, GlaxoSmithKline, and Pfizer; consulting fees from GlaxoSmithKline, AstraZeneca, Sanofi, Chiesi, Nuvaira, Pfizer, Austral, Biosency, and F Hoffmann-La Roche; honoraria from GlaxoSmithKline, AstraZeneca, Sanofi, Chiesi, Pfizer, Zambon, Merck & Co, and Menarini; and support for travel from Chiesi, AstraZeneca, and GlaxoSmithKline. BC has received grants or contracts from GlaxoSmithKline, AstraZeneca, Menarini, Sanofi, Axios, Chiesi, F Hoffmann-La Roche, and Genentech; consulting fees from GlaxoSmithKline, AstraZeneca, and Sanofi; honoraria from GlaxoSmithKline, AstraZeneca, Menarini, Chiesi, and Regeneron; support for travel from GlaxoSmithKline and Sanofi; and has participated in a data safety monitoring board or advisory board for AstraZeneca, Sanofi, and Vertex. JAW has received grants from AstraZeneca, Boehringer Ingelheim, Chiesi, GlaxoSmithKline, and Novartis; consulting fees from Altesa, AstraZeneca, CSL Behring, Epiendo, F Hoffman-La Roche, GlaxoSmithKline, Empirico, Gilead, MucPharm, NEATstix, Pfizer, and Sanofi; honoraria from Altesa, AstraZeneca, Boehringer Ingelheim, F Hoffman-La Roche, GlaxoSmithKline, Handok, Novartis, Recipharm, and Sanofi; and has participated in a data safety monitoring board for Virtus. ÀA has received consultancy fees from GlaxoSmithKline, AstraZeneca, Chiesi, F Hoffmann-La Roche, and Menarini; honoraria from GlaxoSmithKline, AstraZeneca, Chiesi, F Hoffmann-La Roche, Menarini, Zambon, and Glenmark; support for attending meetings or travel from F Hoffmann-La Roche; and is chair of the board of directors of GOLD. RT-S has received grants or contracts from GlaxoSmithKline, F Hoffmann-La Roche, and Boehringer Ingelheim; consulting fees from GlaxoSmithKline, AstraZeneca, Johnson & Johnson, Renovion, F Hoffmann-La Roche, ENA Respiratory, Samay Health, Boehringer Ingelheim, COPD Foundation, Global Allergy and Airways Patient Platform, and Global Skin; honoraria from GlaxoSmithKline and F Hoffmann-La Roche; has or had a leadership or fiduciary role at COPD Foundation, ENA Respiratory, and Global Allergy and Airways Patient Platform; and owns share

options at ENA Respiratory. MKH has received grants from the National Institutes of Health, Novartis, Sunovion, Nuvaira, Sanofi, AstraZeneca, Boehringer Ingelheim, Galvanize Therapeutics, Biodesix, the COPD Foundation and the American Lung Association; honoraria from GlaxoSmithKline, AstraZeneca, Boehringer Ingelheim, Cipla, Chiesi, Novartis, Pulmonx, Teva, Verona, Merck & Co, Mylan, Sanofi, Genentech, F Hoffmann-La Roche, DevPro, Aerogen, Polarian, Regeneron, Amgen, UpToDate, Altesa Biopharma, CSL Behring, Bristol Myers Squibb, Zymeworks, Zambon, Windward Bio, Uniquity, Medscape, NACE, MDBriefcase, and Integrity; has participated in a data safety monitoring board for Novartis and Medtronic; and has stock options from Meissa Vaccines and Altesa Biopharma. WJ has received grants or contracts from AstraZeneca, Chiesi, and GlaxoSmithKline; consulting fees from AstraZeneca, Chiesi, F Hoffmann-La Roche, Sanofi, and GlaxoSmithKline; and honoraria from AstraZeneca, Chiesi, F Hoffmann-La Roche, Sanofi, and GlaxoSmithKline. NAH has received grants or contracts from GlaxoSmithKline, Sanofi, Genentech, Regeneron, Amgen, AstraZeneca, and Chiesi; consulting fees from GlaxoSmithKline, Sanofi, Genentech, Regeneron, AstraZeneca, Chiesi, Verona Pharma, and Connect Biopharma; and honoraria from Sanofi, Regeneron, AstraZeneca, and Genentech. PN has received grants or contracts from AstraZeneca, Teva, Sanofi, Foresee, Cyclomedica, F Hoffmann-La Roche, Genentech, Methapharm, and Eli Lilly; and personal fees from AstraZeneca, Sanofi, Arrowhead Pharma, GlaxoSmithKline, and Methapharm. PB has received grants or contracts from Boehringer Ingelheim; honoraria from Boehringer Ingelheim; support for travel from Boehringer Ingelheim; and is a board member of St John of God Health Care. KP has received grants or contracts from GlaxoSmithKline and AstraZeneca; honoraria from GlaxoSmithKline, AstraZeneca, Menarini, and Chiesi; and support for travel from GlaxoSmithKline, AstraZeneca, Menarini, Chiesi. YS has received honoraria from AstraZeneca, Merck & Co, Kracie, Sanofi, Boehringer Ingelheim, and GlaxoSmithKline. SK received grants or contracts from GlaxoSmithKline, AstraZeneca, Sanofi, Chiesi, F Hoffmann-La Roche, and Genentech; consulting fees from GlaxoSmithKline, AstraZeneca, Chiesi, and Sanofi; honoraria from GlaxoSmithKline, AstraZeneca, and Chiesi; and support for travel from GlaxoSmithKline and Sanofi. TY received grants from GlaxoSmithKline, AstraZeneca, Sanofi, F Hoffmann-La Roche, National Natural Science Foundation of Beijing, National Natural Science Foundation of China, and Ministry of Science and Technology of China. OG is an employee of F Hoffmann-La Roche and owns stocks or stock options in the company. RS is an employee of Genentech with stocks and stock options in F Hoffmann-La Roche. JN is an employee of Genentech with stocks in F Hoffmann-La Roche. DSC is an employee of Genentech, with stocks in F Hoffmann-La Roche and is a patent holder for method of treating COPD with an ST2 antagonist. JD is an employee of F Hoffmann-La Roche and owns stock in the company. MAG is an employee of Genentech with stocks and stock options in F Hoffmann-La Roche. WZ is an employee of Genentech with stocks in F Hoffmann-La Roche. XY is an employee of Genentech with stocks and stock options in F Hoffmann-La Roche–Genentech. DM is an employee of Genentech, with stocks in F Hoffmann-La Roche and is a patent holder for method of treating COPD with an ST2 antagonist. CFV has received grants or contracts from the German Ministry of Education and Science, AstraZeneca, Boehringer Ingelheim, Chiesi, CSL Behring, GlaxoSmithKline, and Grifols; consulting fees from Aerogen, AstraZeneca, Boehringer Ingelheim, CSL Behring, Chiesi, GlaxoSmithKline, Insmed, Menarini, F Hoffmann-La Roche, and Sanofi; and honoraria from Aerogen, AstraZeneca, Boehringer Ingelheim, CSL Behring, Chiesi, GlaxoSmithKline, Insmed, Menarini, F

Hoffmann-La Roche, and Sanofi. CEB has received support for the present manuscript from National Institute for Health and Care Research Biomedical Research Centre; grants or contracts from Areteia, AstraZeneca, Chiesi, Genentech, GlaxoSmithKline, Regeneron, F Hoffmann-La Roche, and Sanofi; and consulting fees from Areteia, AstraZeneca, Chiesi, Genentech, GlaxoSmithKline, Regeneron, F Hoffmann-La Roche, and Sanofi.

Supplementary info

Publication types, MeSH terms, Substances, Associated dataExpand

Full text links

Cite

18

Lancet

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. 2026 May 23;407(10543):1990-1991.

doi: 10.1016/S0140-6736(26)00924-4. Epub 2026 May 18.

Astegolimab and the new era of biologics in COPD care

Clarus Leung [1], Don D Sin [2]

Affiliations Expand

- PMID: 42150580

- DOI: 10.1016/S0140-6736(26)00924-4

No abstract available

Conflict of interest statement

In the past 3 years, CL has received a small honorarium from AstraZeneca for giving a talk on asthma to a group of physicians; however, AstraZeneca had no input on the content of the presentation. DS has received a small honorarium from AstraZeneca and GSK for giving a talk on chronic obstructive pulmonary disease (COPD) to a group of physicians; however, neither AstraZeneca nor GSK had any input on the content of the presentation. DS is a chair of a data safety monitoring board for a US National Institutes of Health-sponsored clinical trial on COPD, and is a Tier 1 Canada Research Chair in COPD.

Full text links

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Cite

19

Am J Respir Crit Care Med

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doi: 10.1093/ajrccm/aamag226. Online ahead of print.

Astegolimab for COPD With Frequent Exacerbations: Pooled Analysis of the ALIENTO and ARNASA Trials

Jadwiga A Wedzicha [1], Àlvar Agustí [2 3 4 5], Christopher E Brightling [6], Peter Calverley [7], James D Chalmers [8], Neil J Greening [6], MeiLan K Han [9], Divya Mohan [10], Julie Ng [11], Alberto Papi [12], Nicolas Roche [13], Rebecca Saenz [10], Katerina Samara [14], Ruth Tal-Singer [15], Claus F Vogelmeier [16], Xiaoying Yang [17], Bartolome R Celli [18]

Affiliations Expand

- PMID: 42148875

- DOI: 10.1093/ajrccm/aamag226

Abstract

Rationale: The efficacy and safety of astegolimab, an anti-ST2 monoclonal antibody, was evaluated in participants with chronic obstructive pulmonary disease (COPD) and frequent exacerbations in the pivotal ALIENTO and ARNASA trials.

Objectives: To report the prespecified pooled analysis of ALIENTO and ARNASA.

Methods: ALIENTO and ARNASA were randomized, double-blind, placebo-controlled trials with similar designs and included participants with COPD, a history of frequent exacerbations, and who were current/former smokers, irrespective of blood eosinophil count and chronic bronchitis. Participants were randomized 1:1:1 to astegolimab 476 mg every 2 weeks, every 4 weeks or placebo for 52 weeks, plus optimized maintenance therapy. The primary endpoint was annualized rate of moderate/severe exacerbations. Secondary endpoints included annualized rate of severe exacerbations. A hierarchical statistical plan was followed with hypothesis

testing of secondary efficacy endpoints gated on the primary efficacy endpoint success.

Measurements and main results: 2682 participants were included in the pooled intent-to-treat population. Astegolimab significantly reduced the annualized rate of moderate/severe exacerbations by 15% in the every 2 weeks arm (adjusted rate ratio 0.85 [95% CI, 0.76-0.96]; P = .0077) and by 12% in the every 4 weeks arm (rate ratio 0.88 [95% CI, 0.78-0.99] P = .0265). A nominally significant reduction in the annualized rate of severe COPD exacerbations (rate ratio 0.68 [95% CI, 0.52-0.87]; P = .0028) was observed for astegolimab every 2 weeks vs. placebo. Astegolimab was well tolerated.

Conclusions: Astegolimab every 2 weeks reduced the annualized rate of moderate/severe exacerbations in a clinically heterogeneous population of participants with COPD and frequent exacerbations.

Trial registration numbers: ClinicalTrials.gov: NCT05037929; NCT05595642.

Keywords: ST2 monoclonal antibody; inflammation; interleukin-33.

Supplementary info

Associated dataExpand

Full text links

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Cite

20

Curr Opin Pulm Med

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. 2026 May 18.

doi: 10.1097/MCP.0000000000001273. Online ahead of print.

The changing face of lung transplant candidates

Frank R Leuzzi [1], Emily S Clausen, Daniel F Dilling

Affiliations Expand

- PMID: 42144949

- DOI: 10.1097/MCP.0000000000001273

Abstract

Purpose of review: Lung transplant remains the ultimate life-saving therapy for people with progressive end-stage lung disease. It is important to highlight the evolution of the field in the United States, as its development has had varying impacts on the different lung transplant candidate groups. This review seeks to synthesize current evidence on the evolution of transplantation across various patient groups, reflecting advances in medical therapies, the implementation of the new composite allocation score (CAS) and trends in lung transplant candidate groups over the years.

Recent findings: The proportion of waitlisted candidate with chronic obstructive pulmonary disease (COPD, group A) and cystic fibrosis (group C) has declined, reflecting the impact of novel therapeutics and advanced procedural interventions. In contrast, restrictive lung disease patients (group D) now account for most lung transplant recipients, which is likely reflective of our increased use of extracorporeal membrane oxygen (ECMO) for bridging and transplant centers expanded eligibility. Pulmonary hypertension patients (group B) continue to face high waitlist mortality despite the change to the new allocation scoring system.

Summary: Advancements in medical therapies and the new composite allocation scoring system has altered both the timing and outcomes for various transplant candidate groups. It is important that we continue to study these findings to optimize patient outcomes and organ allocation.

Keywords: composite allocation score; extracorporeal membrane oxygenation; lung transplantation; recipient selection.

- 33 references

Full text links

Proceed to details

Cite

21

Occup Environ Med

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. 2026 May 21;83(2):78-84.

doi: 10.1136/oemed-2025-110689.

Cancer, chronic obstructive pulmonary disease and ischaemic heart disease in Ontario, Canada workers exposed to diesel engine exhaust

Stephanie Ziembicki [1 2], Tracy L Kirkham [3 2], Victoria H Arrandale [3 2], Tanya Navaneelan [3], Paul A Demers [3 2]

Affiliations Expand

- PMID: 42055809

- DOI: 10.1136/oemed-2025-110689

Abstract

Objective: This study assesses potential exposure-response relationships between diesel engine exhaust (DEE) and lung and bladder cancers, chronic obstructive pulmonary disease (COPD) and ischaemic heart disease (IHD) in Ontario workers in the Occupational Disease Surveillance System.

Methods: Approximately 2.3 million workers were identified through workers' compensation claims (1983-2019) and followed for cancer through linkage with the Ontario Cancer Registry (1964-2019). COPD and IHD cases were identified using hospital discharges (2006-2020), emergency department visits (2006-2020) and physician billing records (1999-2020). Exposure was assessed using the Diesel Exhaust in Canada Job-Exposure Matrix, a semiquantitative job-exposure matrix based on expert assessment and published measurement data. Cox-proportional hazards models were used to estimate HRs and 95% CIs, adjusted for age, birth year and sex by exposure status (exposed/unexposed) and for increasing exposure level (unexposed, low, moderate, high and very high). Trend tests were run using exposure category midpoints (μg/m^3 elemental carbon).

Results: Overall, 39 743 incident lung cancer, 12 528 bladder cancer, 77 124 COPD and 302 876 IHD cases were identified. Among exposed cases (all outcomes), the majority (90%) were assigned low exposure. Significant increased risks of lung cancer (HR=1.33, 95% CI 1.29 to 1.37), bladder cancer (HR=1.19, 95% CI 1.13 to 1.26), COPD (HR=1.34, 95% CI 1.31 to 1.37) and IHD (HR=1.15, 95% CI 1.13 to 1.16) were observed among exposed workers compared with unexposed workers. Exposure-response relationships were observed (all outcomes) although increases in risk were non-monotonic. Trend tests suggested increased risk (*p trend <0.001*).

Conclusions: This study improves understanding of DEE-related diseases. These results could be used to improve prevention efforts and workers compensation practices for DEE-related occupational diseases.

Keywords: Epidemiology; Occupational Health; Public Health Surveillance.

Conflict of interest statement

Competing interests: None declared.

Supplementary info

MeSH terms, SubstancesExpand

Full text links

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Cite

22

Review

Eur Respir J

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. 2026 May 21;67(5):2502358.

doi: 10.1183/13993003.02358-2025. Print 2026 May.

The pathobiology and treatment of mucus plugs in asthma and COPD: state of the art

John V Fahy [1]

Affiliations Expand

- PMID: 41713949

- DOI: 10.1183/13993003.02358-2025

Abstract

Recent studies using computed tomography have uncovered a high prevalence of airway mucus plugs in patients with asthma and COPD. These mucus plugs persist in the same airways for years and often occur in patients without symptoms of cough and sputum production. Mucus plugs associate strongly with measures of airflow obstruction and disease morbidity in both asthma and COPD, and they occur and persist despite treatment with high doses of inhaled and oral corticosteroids. Thus, airway mucus plugs have emerged as an underappreciated airway pathology in asthma and COPD and a cause of persistent airflow obstruction and disease morbidity that can be specifically targeted for treatment. This narrative review covers the pathobiology of mucus plugs in asthma and COPD with three areas of

emphasis: 1) prevalence and clinical features; 2) mechanisms of formation and persistence; and 3) current and emerging treatments.

Conflict of interest statement

Conflict of interest: J.V. Fahy reports consultancy fees from Connect Biopharma, Abbvie, Paratus Sciences and Kymera, and is founder, board member and consultant for Aer Therapeutics, a company developing an inhaled mucolytic drug for muco-obstructive lung disease.

Supplementary info

Publication types, MeSH terms, SubstancesExpand

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

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Review

Drugs Aging

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. 2026 May 22.

doi: 10.1007/s40266-026-01302-z. Online ahead of print.

Guideline-Directed Heart Failure Pharmacotherapy in Adults Aged ≥75 Years: Evidence Gaps, Tolerability, and Implications for Clinical Practice

Rémi Esser [1], Olivier Maurou [2], Marine Larbaneix [2], Alejandro Mondragon [2], Marlène Esteban [2], Christine Farges [2], Vincenzo Palermo [3], Nicolas Pages [4], Sophie Nisse Durgeat [4], Marc Harboun [2]

Affiliations Expand

- PMID: 42174326

- DOI: 10.1007/s40266-026-01302-z

Abstract

Heart failure predominantly affects older adults, yet the evidence supporting guideline-directed medical therapy is largely derived from randomized controlled trials predominantly enrolling younger and less frail populations. Adults aged ≥75 years remain underrepresented, raising important questions regarding the generalizability of trial evidence to contemporary geriatric practice. This review focuses on the applicability, tolerability, and clinical relevance of guideline-directed medical therapy in adults aged ≥75 years, with particular attention to objective outcomes and feasibility markers such as adverse events, treatment discontinuation, hospitalization, mortality, frailty-related vulnerability, and patient-centred functional implications. We conducted a structured narrative critical review of pivotal randomized controlled trials underpinning modern heart failure pharmacotherapy, without formal systematic selection or meta-analysis. Published data were extracted on age distribution, exclusion criteria relevant to older adults, efficacy outcomes (mortality and hospitalization when reported), safety outcomes (hypotension, renal dysfunction, hyperkalaemia, and treatment discontinuation), and geriatric domains or frailty-related measures when available. Trial findings were interpreted through established geriatric frameworks, including frailty and multimorbidity constructs. Across major heart failure trials, mean participant age ranged from 61 to 67 years, with very limited inclusion of patients aged ≥75 years and very limited representation of patients aged ≥80 years. While relative treatment efficacy appears preserved with ageing, older participants experienced higher rates of hypotension, renal dysfunction, and treatment discontinuation, whereas frailty, functional status, cognition, and other geriatric domains were rarely measured. Key geriatric domains-frailty, functional status, cognition, nutrition, and polypharmacy-were systematically absent from trial designs. This narrative review highlights a persistent gap between clinical trial populations and older patients with heart failure in routine care. In adults aged ≥75 years, application of guideline-directed medical therapy should remain evidence-aligned but clinically adapted, with slower titration, closer monitoring, and acceptance of tolerated submaximal doses when frailty, multimorbidity, or limited physiological reserve reduce treatment feasibility.

Conflict of interest statement

Declarations. Conflict of interest: Sophie Nisse Durgeat and Nicolas Pages are employed by NP Medical. All other authors declare that they have no conflicts of interest related to this work. Ethical approval and consent to participate: This manuscript is a narrative review based exclusively on published data and did not involve human participants. Ethical approval was therefore not required. AI-use statement: Generative artificial intelligence tools were used solely to assist with language editing, clarity, and translation of the manuscript. The AI tools did not contribute to the study design, data collection, data analysis, interpretation of results, or scientific conclusions. All content was reviewed, edited, and approved by the authors, who take full responsibility for the accuracy and integrity of the work. Consent for publication: Not applicable. The manuscript does not include any individual person's data in any form (images, videos, or identifiable details). Availability of data and materials: The datasets used and/or analyzed during the current study are available from the corresponding author (R.E.) on reasonable request. Due to patient privacy restrictions, data are not publicly available. Author contributions: RE conceived the review, defined the conceptual framework, and led the manuscript drafting. OM, ML, AM, ME, CF, and MH contributed to the literature

review, data interpretation, and critical revision of the manuscript for important intellectual content. VP provided expert input on heart failure pharmacotherapy and critically reviewed the cardiology content. NP and SND contributed to telemonitoring perspectives, and editorial revision. All authors approved the final version of the manuscript and agree to be accountable for all aspects of the work.

- 57 references

Supplementary info

Publication typesExpand

Full text links

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Cite

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Dermatol Ther (Heidelb)

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. 2026 May 21.

doi: 10.1007/s13555-026-01795-x. Online ahead of print.

Real-world effectiveness and safety of tralokinumab in moderate-to-severe atopic dermatitis with malignancy, chronic infections, and multimorbidity

Francisco Javier Melgosa Ramos [1], Pedro Mercader [2], Sergio Santos Alarcón [3], Nalia Dominguez Liron [4], Andrea Bernabeu [5], Mercedes Rodriguez Serna [6], Pablo Fernandez-Crehuet [7], Juan Francisco Silvestre [4]

Affiliations Expand

- PMID: 42168711

- DOI: 10.1007/s13555-026-01795-x

Abstract

Introduction: Patients with moderate-to-severe atopic dermatitis (AD) and significant comorbidities are frequently excluded from randomized clinical trials, limiting the applicability of evidence to these clinically complex patients. We evaluated the effectiveness and safety of tralokinumab in this setting.

Methods: Multicenter retrospective study including adults with moderate-to-severe AD treated with tralokinumab (300 mg every 2 weeks) in Spanish tertiary hospitals (June 2022-December 2025). Special populations included patients with malignancies, advanced cardiovascular or renal disease, chronic infections, or neurologic disorders. Outcomes included Eczema Area and Severity Index (EASI), pruritus NRS, safety events, and treatment optimization. Analyses were descriptive.

Results: Twenty-one patients (aged 27-90 years) with high multimorbidity burden were included. Comorbidities comprised malignancies (n = 9), advanced heart disease (n = 7), neurologic disorders (n = 4), chronic kidney disease (n = 2), latent tuberculosis (n = 2), and HIV (n = 2). Mean EASI decreased from 19.3 to 3.45 (~ 82% reduction) and pruritus Numeric Rating Scale (NRS) from 7 to 2 (~ 71% reduction) after a mean follow-up of 24.6 months. Approximately 70% achieved EASI ≤ 3 and 50% EASI 0-1. Median follow-up was 24.6 months. Dose interval extension was feasible in 33.3% of patients. No tumor progression, infection reactivation, major cardiovascular events, or severe adverse events were observed.

Conclusions: Tralokinumab showed sustained effectiveness and a favorable safety profile in clinically complex patients with AD. These real-world findings support IL-13 blockade as a valuable therapeutic option for multimorbid populations that are underrepresented in clinical trials.

Keywords: Atopic dermatitis; HIV; Malignancy; Special populations; Tralokinumab; Tuberculosis.

Conflict of interest statement

Declarations. Conflict of interest: Francisco Javier Melgosa Ramos has received honoraria and/or travel grants and has served as an advisory board member for Novartis, AbbVie, Janssen-Cilag, UCB, Lilly, LEO Pharma, L'Oréal, Sanofi, Almirall, and Amgen. Pedro Mercader has received honoraria and/or travel grants and has served as an advisory board member for Sanofi, LEO Pharma, Lilly, Almirall, and AbbVie. Sergio Santos Alarcón has received honoraria and/or travel grants and has served as an advisory board member for Almirall, AbbVie, Adium Pharma, Amgen, Pfizer, Novartis, Janssen-Cilag, Lilly, LEO Pharma, UCB Pharma, Pierre Fabre, ISDIN, Sanofi, and Viñas. Andrea Bernabeu has received honoraria and/or travel grants and has served as an advisory board member for LEO Pharma. Nalia Domínguez Lirón, Mercedes Rodríguez, and Pablo Fernández-Crehuet declare no conflicts of interest related to this manuscript. Juan Francisco Silvestre Salvador has served as a speaker, advisory board member, and/or investigator for AbbVie, Almirall, Amgen, Apogee Therapeutics, AstraZeneca, Bristol Myers Squibb, Celldex, Eli Lilly, Galderma, Incyte, LEO Pharma, Nektar Therapeutics, Novartis, Pfizer, Regeneron, and Sanofi Genzyme. Ethical approval: The study protocol was reviewed in accordance with institutional ethics policies and was considered exempt from formal approval in accordance with Spanish Law 14/2007 on Biomedical Research and EU General Data Protection Regulation (GDPR) 2016/679 and conducted in accordance with the Declaration of Helsinki, due to its retrospective design and the use of fully anonymized data. In accordance with institutional policies, the requirement for written informed consent was waived. Patients were informed through institutional privacy notices and had the opportunity to opt out of the use of their anonymized data for research purposes.

Data were collected and processed in compliance with GDPR standards, and no identifiable personal information was accessible to the investigators. When required, specific consent for publication was obtained.

- 9 references

Full text links

Proceed to details

Cite

3

Multicenter Study

Open Heart

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. 2026 May 21;13(1):e003950.

doi: 10.1136/openhrt-2025-003950.

Risk factors for multimorbidity of cardiovascular diseases in the prospective Million Women Study

Jae Won Suh [1 2], Sarah Floud [2], Gillian K Reeves [2], Benjamin J Cairns [3], F Lucy Wright [4]

Affiliations Expand

- PMID: 42167794

- DOI: 10.1136/openhrt-2025-003950

Free article

Abstract

Objective: Cardiovascular diseases often occur together, but little is known about what increases the risk of developing cardiovascular multimorbidity (CVM), particularly in women. This study investigated the associations of cardiovascular risk factors with CVM incidence in UK women.

Methods: 1.3 million women aged 50-64 years were recruited into the Million Women Study in 1996-2001. Women reported information on demographic and

cardiovascular risk factors (weight, height, smoking, alcohol consumption, physical activity and treatment for high blood pressure, diabetes and high blood cholesterol) at baseline. Using linked hospital admission and death records, each participant was followed for 19 subtypes of incident cardiovascular disease. Outcomes were CVM (having ≥2 of 19 selected cardiovascular disease diagnoses), complex CVM (having ≥4 diagnoses), and pairs of the four most common individual cardiovascular diseases.

Results: In multivariable adjusted models, obesity, current smoking and treatment for diabetes or hypertension were each independently associated with a 2-3 times higher risk of incident CVM. Severe obesity, heavy smoking and diabetes were associated with 3-4 times higher risks of complex CVM and most CVM pairs. The strongest relationships were for severe obesity, which was associated with a fivefold higher risk of developing both atrial fibrillation and heart failure together (compared with healthy body mass index), and for diabetes, which was associated with a fivefold higher risk of developing both ischaemic heart disease and heart failure together. There was little evidence of strong associations of alcohol consumption or physical activity with most CVM outcomes.

Conclusions: In middle-aged women, known cardiovascular risk factors including smoking and obesity were associated with substantially higher risks of CVM, with stronger associations for severe obesity, heavy smoking and diabetes, and certain combinations of cardiovascular disease subtypes. Targeted management of these risk factors for secondary prevention may reduce progression to CVM, potentially with greater benefits in those at risk for complex CVM.

Keywords: CORONARY ARTERY DISEASE; EPIDEMIOLOGY; Electronic Health Records.

Conflict of interest statement

Competing interests: None declared.

Supplementary info

Publication types, MeSH termsExpand

Full text links

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BMC Public Health

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. 2026 May 19.

doi: 10.1186/s12889-026-27782-7. Online ahead of print.

Sex differences in multimorbidity: a systematic review and meta-analysis

Tu Nguyen [1 2], Wei Jin Wong [3], Mark Woodward [4 5 6 7], Katie Harris [4 6]

Affiliations Expand

- PMID: 42157149

- DOI: 10.1186/s12889-026-27782-7

Free article

Abstract

Background: Emerging evidence suggests that sex and gender may influence the development, expression, and impact of multimorbidity through a range of mechanisms. This review aimed to examine the differences between women and men in the prevalence, risk factors, and patterns of multimorbidity, and sex differences regarding the impact of multimorbidity on health outcomes.

Methods: A systematic literature search was conducted in Ovid Medline and Embase from inception until June 2025. Studies in human beings which reported data separately for women and men related to multimorbidity were included. Where possible, estimates from the included studies were pooled using inverse-variance weighted meta-analysis. Where available, the sex differential was quantified as the women-to-men ratio of prevalence, relative risks, hazard ratios or odds ratios. This review is registered at PROSPERO, CRD42024553043.

Results: This review identified 37 studies of 5,828,856 individuals (60% women) from 24 countries. We summarised the findings on sex differences according to: (1) prevalence of multimorbidity, (2) risk factors for multimorbidity, (3) patterns of multimorbidity, and (4) the impact of multimorbidity on health outcomes. The pooled multimorbidity prevalence in the 31 general population studies were 0.45 (95%CI 0.35-0.56) in women and 0.39 (95%CI 0.30-0.50) in men, pooled women-to-men prevalence ratio for multimorbidity was 1.12 (95%CI 1.02-1.23). In studies in populations with an index disease, the prevalence of multimorbidity was much higher: 0.83 (95%CI 0.63-0.93) in women and 0.82 (95%CI 0.48-0.96) in men. There were limited studies examining sex differences in the patterns and risk factors for multimorbidity, and on the impact of multimorbidity on outcomes.

Conclusions: Our systematic review reveals a higher prevalence of multimorbidity in women than men. The increased likelihood of multimorbidity in women compared to men is a complex issue influenced by multiple factors and highlights the need for further research on this topic.

Keywords: Men's health; Multimorbidity; Sex differences; Women's health.

Conflict of interest statement

Declarations. Ethics approval and consent to participate: Not applicable. Consent for publication: Not applicable. Competing interests: Mark Woodward is a consultant to Perisphere. Other authors have no competing interests.

Full text links

[Proceed to details]

Cite

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Eur Geriatr Med

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. 2026 May 19.

doi: 10.1007/s41999-026-01500-3. Online ahead of print.

Multimorbidity, readmissions and mortality among older patients with potentially preventable hospitalisations: a Danish nationwide cohort study

Trine Worm Thøgersen [1 2 3], Eskild Bendix Kristiansen [4 5], Katrine Bødkergaard [4 6], Mette Geil Kollerup [7 8], Deirdre Cronin-Fenton [4 5], Marianne Lisby [9 5]

Affiliations Expand

- **PMID: 42154147**

- **DOI: 10.1007/s41999-026-01500-3**

Abstract

Purpose: We investigated the association between multimorbidity level, all-cause 30-day readmissions, and post-discharge 30-day mortality.

Methods: Using Danish national registries, we identified patients aged ≥ 65 years hospitalized for ambulatory care-sensitive conditions between 2013-2018. Multimorbidity was defined as having 2-3 (moderate) or ≥ 4 (severe) of 39 chronic conditions. We estimated 30-day cumulative incidence of readmission after discharge and used Cox regression to calculate hazard ratios (HRs) for readmission and mortality.

Results: Among 178,445 patients, median age was 78 years (IQR: 71-85), 59% were female. The 30-day readmission rate was 21% for those with severe multimorbidity, compared with 12% for those without multimorbidity and 16% for those with

moderate multimorbidity. The hazard of 30-day readmission was elevated for both moderate (HR 1.4, 95% CI 1.4-1.5) and severe (HR 1.9, 95% CI 1.8-1.9) multimorbidity. Additionally, moderate and severe multimorbidity were associated with increased 30-day mortality (HR 1.9, 95% CI 1.7-2.1 and HR 2.6, 95% CI 2.4-2.8, respectively).

Conclusion: Multimorbidity is associated with increased risk of hospital readmission and mortality, underscoring the need for improved care coordination in acute and post-discharge settings.

Keywords: Ambulatory care sensitive conditions; Mortality; Multimorbidity; Readmissions.

Conflict of interest statement

Declarations. Conflict of interest: None of the authors of this article has any conflicts of interest to declare. Ethical statement and Informed consent: The Danish Data Protection Agency approved the use of pseudonymized data from the national registries (record number FSEID-00006481). Direct identifiers were replaced with key-coded identifiers for analysis. According to Danish legislation, informed consent from included individuals was not required.

- 28 references

Supplementary info

Grants and fundingExpand

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Cite

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BMC Med

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. 2026 May 18.

doi: 10.1186/s12916-026-04924-7. Online ahead of print.

Clustering of multimorbidity in stroke and transient ischaemic attack survivors: a population-based study

Efthalia Massou [1], Duncan Edwards [2], Yajing Zhu [3], Zhirong Yang [4 5], Jonathan Mant [2]

Affiliations Expand

- **PMID: 42151925**

- **DOI: 10.1186/s12916-026-04924-7**

Free article

Abstract

Background: Stroke and transient ischaemic attack (TIA) survivors frequently experience multiple long-term conditions (multimorbidity) placing substantial demands on healthcare systems. Moving away from a single-disease approach could lead to more efficient and effective care for stroke survivors with multimorbidity. However, it is unclear how to categorise the stroke population to achieve this. To inform care, this population-based study identified and described clusters of stroke survivors with multimorbidity.

Methods: Using the Clinical Practice Research Datalink GOLD database, we identified 69,372 adult stroke/TIA survivors who were currently registered with a general practice on the 1st July 2017. We defined multimorbidity as the co-occurrence of ≥ 2 of 36 long-term conditions (including stroke/TIA) and divided patients into four age strata (< 45, 45-64, 65-84, ≥ 85). Within each stratum, Latent Class Analysis identified classes of co-morbid stroke survivors based on statistical diagnostics, clustering interpretation and clinical input. We investigated the validity of our findings, using a training and a test set. We described clusters according to prevalence of long-term conditions, demographic factors (age, gender, ethnicity, smoking, BMI) and health outcomes (mortality, hospital admissions, primary care consultations, prescriptions).

Results: In the UK, 94·7% of adult stroke/TIA survivors live with at least one additional long-term condition, with a median of five conditions per patient. We identified 12 clusters. Among 45-64-year-olds, the "alcohol and substance misuse" (6%) and the "established cardiovascular disease" (5%) clusters, have the highest mortality, while the "lower morbidity, better outcomes" cluster included 49% of patients. In ages 65-84, the "poor mental health" cluster (25%) exhibits the highest mortality. Among patients [Formula: see text]85, the "dementia-dominant" cluster had the highest rates of mortality, whereas the "established cardiovascular disease" cluster had the most hospital admissions. In each age strata, a cluster with increased mental health needs, and another with lower rates of multimorbidity and the best health outcomes could be identified.

Conclusions: Internally validated clusters of stroke survivors can be identified with distinct patterns of multimorbidity, healthcare utilisation, and mortality. By understanding these clusters, more targeted, efficient, and integrated models of post-stroke care can be designed to better address the overall healthcare needs of stroke survivors.

Keywords: Age Stratification; Clustering; Latent Class Analysis; Long Term Conditions; Multimorbidity; Stroke.

Conflict of interest statement

Declarations. Ethics approval and consent to participate: This study (20_056R) was approved by the CPRD Independent Scientific Advisory Committee (ISAC), and so is covered by their ethics approval. Consent for publication: This study used anonymized data from the Clinical Practice Research Datalink (CPRD). As such, explicit consent for publication from individual patients was not required. Competing interests: The authors declare no competing interests.

Supplementary info

Grants and fundingExpand

Full text links

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Arthritis Care Res (Hoboken)

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. 2026 May 18.

doi: 10.1002/acr.80090. Online ahead of print.

Phenotypes of Chronic Overlapping Pain Multimorbidity in Rheumatology: A Population-Based Claims Study

Di Lu [1], Kristen Cunanan [1], James Cragun [1], Lauren Vuong [1], Matthew C Baker [1], Titilola Falasinnu [1]

Affiliations Expand

- **PMID: 42148468**
- **DOI: 10.1002/acr.80090**

Abstract

Objective: This study aims to characterize the burden and distinct patterns of chronic overlapping pain conditions (COPCs) multimorbidity in adults with autoimmune rheumatic diseases (ARDs).

Methods: We analyzed 2008-2021 data from the Merative MarketScan Commercial Claims and Encounters Database, identifying 149,742 patients with ARD (ankylosing spondylitis, psoriatic arthritis, rheumatoid arthritis, Sjögren's disease, systemic lupus erythematosus, systemic sclerosis) using ICD-9/10-CM codes. We assessed

COPC (e.g., fibromyalgia, chronic low back pain, migraine, irritable bowel syndrome, chronic fatigue syndrome, temporomandibular disorders, and pelvic pain conditions) prevalence, multimorbidity patterns, and pairwise co-occurrence frequencies, calculating observed/expected ratios and odds ratios.

Results: Of 149,742 ARD patients, 57.5% had ≥1 COPC, with 22.7% experiencing multiple conditions. Chronic low back pain (41.4%) and fibromyalgia (21.1%) were most prevalent. Women and individuals aged 31-50 showed the highest COPC prevalence. Many COPC pairs co-occurred more frequently than expected by chance (e.g., fibromyalgia and chronic low back pain: observed/expected ratio 1.35; migraine and chronic low back pain: 1.42). Strongly associated dyads included urologic chronic pelvic pain and vulvodynia (OR 10.46).

Conclusion: A substantial burden and distinct multimorbidity patterns of COPCs exist among ARD patients, suggesting shared pathophysiological mechanisms. Routine COPC screening and targeted non-opioid multimodal interventions, especially for common dyads, are crucial for improved pain management and reducing opioid-related risks in this population.

Cite

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BMC Public Health

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. 2026 May 18.

doi: 10.1186/s12889-026-27784-5. Online ahead of print.

Patterns of multimorbidity, their outcomes and analytical methods for their determination: a systematic review

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Affiliations Expand

- PMID: 42144604

- DOI: 10.1186/s12889-026-27784-5

Abstract

Background: Multimorbidity is becoming a pressing public health problem, as more than 50% of the world's adult population over the age of 60 is multimorbid. In order to better stratify risk in patients pattern identification is a promising approach. We conducted this systematic review to inform future research on multimorbidity patterns, their related outcomes and analytical methods used to derive them.

Methods: This systematic review followed PRISMA 2020 guidelines and was registered in PROSPERO registry (CRD420261290771). Bibliographic databases PubMed, Ovid MEDLINE(R), and Web of Science were systematically searched. Original observational studies examining multimorbidity patterns and associated health outcomes were included. Data was independently extracted by two reviewers and synthesised qualitatively. Methodological quality was assessed using a modified Newcastle-Ottawa Scale.

Results: We examined a total of 7897 articles based on title and abstract. This systematic review includes an analysis of 30 studies and provides an update on the current state of multimorbidity patterns identification, their outcomes and the analytical methods used to derive them. We found that across all included studies the most commonly identified and stable patterns are those which include a cardiovascular, metabolic, respiratory or neurological/neuropsychiatric component. The cardiometabolic pattern showed the least heterogeneity in its composition. The most commonly measured outcome between patterns and outcomes was mortality. Higher all-cause mortality was observed in the majority of studies in patterns including a cardiovascular, metabolic or neurological/neuropsychiatric component. We found that identifying multimorbidity patterns using electronic health records and questionnaires are the most prevalent methods of data gathering. The most commonly used methodology in this field was latent class analysis followed by other methods such as, fuzzy c-means, k-means clustering, and factor analysis.

Conclusion: Across the included studies, the most consistently identified and stable multimorbidity patterns were those comprising cardiovascular, metabolic, respiratory, and neurological/neuropsychiatric components. Patterns that included cardiovascular, metabolic, or neuropsychiatric conditions were most frequently associated with increased all-cause mortality. These findings support the clinical relevance of pattern-based approaches to multimorbidity. Future research should prioritise methodological standardisation, transparent reporting, and systematic validation of identified patterns to improve comparability and facilitate their translation into clinical practice and public health planning.

Keywords: Disease clustering; Disease patterns; Electronic health records; Functional outcomes; Methodological approaches; Multimorbidity; Multimorbidity patterns.

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.

Supplementary info

Publication typesExpand

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

1

Observational Study

Medicine (Baltimore)

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. 2026 May 22;105(21):e48933.

doi: 10.1097/MD.0000000000048933.

Baseline immune status associates respiratory viral infection in preterm infants: A prospective cohort study

José Antonio Cañas [1 2], José Manuel Rodrigo-Muñoz [1 2], Laura Sánchez-García [3], Maite Beato Merino [4], Patricia Alonso-López [4 5 6], Leticia Labanda [3], Marta Gil-Martínez [1], Zahara García de Castro [1], Daniel Rodríguez-González [1 2], Sonia Alcolea [5 6 7 8], Adelina Pellicer [3], Inmaculada Casas [9 10], María Luz García-García [5 6 8 11], Cristina Calvo [7 8 11], Victoria Del Pozo [1 2]

Affiliations Expand

- **PMID: 42175422**

- **DOI: 10.1097/MD.0000000000048933**

Abstract

Preterm infants (PI) are particularly vulnerable to respiratory viral infections (RVI), which may affect their lung development and immune responses, increasing the risk of recurrent wheezing (RW) and asthma. This study aimed to evaluate the cytokine immune profile in PI admitted to neonatal intensive care units (NICUs) and to explore its association with RVI and subsequent respiratory outcomes during the first year of life. A prospective cohort of 118 PI (<32 weeks gestational age) was studied in 2 NICUs. Nasopharyngeal aspirates were collected at birth and discharge for virological and immunological analyses. Infants were classified into 4 groups based on RVI and RW presence. Cytokine levels were measured using Luminex and

ELISA. Infants with RVI and/or RW showed higher rates of BPD and respiratory readmissions. Distinct cytokine patterns were observed: V-/W+ infants showed elevated baseline TNF-α and reduced IL-13 and TGF-β over time. V+/W- infants had increasing TNF-α levels during hospitalization. Notably, immune profiles at birth differed even in the absence of RVI, suggesting innate predispositions. Correlation analyses revealed significant associations between cytokines and clinical factors like birth weight and oxygen need. Preterm infants without RVI who developed RW appeared to exhibit a distinct pro-inflammatory cytokine profile early in life. This cytokine pattern may be associated with respiratory outcomes later in infancy, although predictive value cannot be inferred from this study and requires confirmation in larger, more representative cohorts.

Keywords: Cytokines; Preterm Infants; Respiratory; Virus Infection; Wheezing.

Conflict of interest statement

The authors have no conflicts of interest to disclose.

- **25 references**

Supplementary info

Publication types, MeSH terms, SubstancesExpand

Full text links

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Cite

2

Randomized Controlled Trial

Sci Rep

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. 2026 May 22;16(1):15986.

doi: 10.1038/s41598-026-52301-4.

A randomized controlled trial of adjunctive speleotherapy in asthma, COPD and long COVID

Joachim Schwarz [1], Madelaine Eicke [2], Nina Schwedler [2], Gerrit von Komorowski [2], Verena Goldfuss [2], Wolfgang Fladerer [3], Béatrice Barbolan [4], Martin Mogk [5], Natascha Sommer [6 7]

Affiliations Expand

- PMID: 42173973

- DOI: 10.1038/s41598-026-52301-4

Abstract

Speleotherapy (underground climate therapy) is a non-pharmacological intervention for chronic respiratory diseases. This randomized controlled trial investigated whether a 3-week speleotherapy course (6 sessions, 2 h/week) improves respiratory outcomes in patients on standard background therapy with asthma, COPD, or Long COVID, and whether it affects blood CO_2 levels. The control group did not receive speleotherapy but continued their standard therapy. A total of 208 patients (asthma: n = 107; COPD: n = 59; Long COVID: n = 42) were enrolled across nine centers in Germany, Austria, and Italy. Assessments were conducted pre-intervention (T1), post-intervention (T2), and at 3-month follow-up (T3). Outcome measures included airway inflammation (FeNO), pulmonary function parameters (FVC% predicted values, FEV_1% predicted values, FEV_1/FVC, PEF% predicted values), and respiratory muscle strength (MIP and MEP in absolute values). In addition the following validated questionnaires were administered: Asthma Control Test (ACT), Asthma Quality of Life Questionnaire (AQLQ), COPD Assessment Test (CAT), St. George's Respiratory Questionnaire (SGRQ), Nijmegen Questionnaire (NQ), and Fatigue Assessment Scale (FAS), along with the Long COVID questionnaire from the Median Clinic Group. CO_2 levels were assessed via capillary blood ($SpCO_2$) and end-tidal CO_2 ($PetCO_2$). Between-group comparisons used the Mann-Whitney U test; within-group changes were assessed with the Wilcoxon signed-rank test (Bonferroni-Holm corrected). In patients with asthma, the predefined primary endpoint (FeNO) showed no significant improvement. In contrast, patient-reported outcomes improved significantly, with clinically relevant gains in asthma control (ACT: $p < 0.001$) and asthma-related quality of life (total AQLQ: $p = 0.005$). Lung function parameters showed statistically significant but modest improvements at T2 (FVC: $p = 0.011$; PEF: $p = 0.010$; FEV_1 in participants < 70 years: $p = 0.035$). In patients with COPD, symptom burden improved according to CAT scores ($p = 0.036$), while no improvements in lung function were observed. Patients with Long COVID reported significant improvements in dysfunctional breathing (NQ: T2: $p = 0.014$), dyspnea (T2: $p = 0.026$; T3: $p = 0.001$), and "problems with stair climbing/muscle exertion" (T2: $p = 0.042$), as well as improvements in anxiety and sleep-related symptoms (T2: $p = 0.021$). No improvements in lung function were observed in this group. In the total cohort, the intervention group showed statistically significant improvements compared to controls in respiratory muscle strength (MIP: $p = 0.002$; MEP: $p = 0.018$) and dysfunctional breathing (NQ scores at T2: $p = 0.007$; T3: $p = 0.017$). In CO_2-rich speleotherapy centers, both $SpCO_2$ ($p = 0.026$) and $PetCO_2$ ($p < 0.001$) increased at T2. While speleotherapy did not improve FeNO, it was associated with clinically relevant improvements in patient-reported outcomes across disease groups. Changes in lung function and respiratory muscle strength were statistically significant but modest and should be interpreted with caution. Overall,

speleotherapy may have direct effects on the airways and breathing regulation, with more consistent evidence for improvements in breathing patterns than for direct effects on the airways.Trial registration: DRKS00033365 (retrospectively registered).

Keywords: Asthma; COPD; Dysfunctional breathing; Long-COVID; Speleotherapy.

Conflict of interest statement

Declarations. Competing interests: Joachim Schwarz is President of the German Speleotherapy Association; he received an honorarium of €10,000 from the German Speleotherapy Association for organizing and supervising the present study. Martin Mogk, from the company moreData, was commissioned by the German Speleotherapy Association to conduct the statistical analysis of the study and received an honorarium of €7,735. The remaining authors declare no conflicts of interest. Ethics approval: Ethics Committee of the State Medical Association of Rhineland-Palatinate: primary review, March 19, 2024; Application number: 2024-17426 – other research, primary review. Ethics Committee of the State Medical Association of Baden-Württemberg: secondary review, April 12, 2024; Internal reference number: B-F-2024-038; Study protocol code: 2024-17426. Ethics Committee of the State Medical Association of Bavaria: no obligation for consultation or notification in the presence of a primary review. If an opinion on the research project has already been issued by an ethics committee established under state law, the requirements of §15 of the Professional Code of Conduct for Physicians in Bavaria are deemed to be fulfilled (Ethics Committee of the BLÄK acting in an advisory capacity according to §15 BO). Ethics Committee of the State Medical Association of Lower Saxony: approval granted, April 5, 2024; Reference number: Grae/030/2024. Ethics Committee of the State Medical Association of Westphalia-Lippe: approval granted, April 11, 2024; Reference number: 2024-203-b-S. Ethics Committee of the State Medical Association of Thuringia: approval granted, April 12, 2024; Reference number: 80961/2024/25. Ethics Committee of Carinthia, Austria: study not subject to mandatory application, February 1, 2024; Email dated February 1, 2024. Ethics Committee for Clinical Research of the Autonomous Province of Bolzano, Italy: approval granted, May 15, 2024; Reference number 33-2024.

- 32 references

Supplementary info

Publication types, MeSH terms, Substances, Associated dataExpand

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Ann Allergy Asthma Immunol

. 2026 May 21:S1081-1206(26)00218-8.

doi: 10.1016/j.anai.2026.05.018. Online ahead of print.

Depemokimab reduces asthma exacerbations similarly to other biologics: systematic trial review and indirect treatment comparison

Arnaud Bourdin [1], Ian D Pavord [2], Nicholas Ballew [3], Brandon Butcher [4], Lydia Vinals [5], Houcine El Alili [6], Vikas Jangra [7], Victor Laliman-Khara [8], Grammati Sarri [9], Anna Vichiendilokkul [10], Peter Howarth [11], Rafael Alfonso-Cristancho [12]

Affiliations Expand

- PMID: 42173441

- DOI: 10.1016/j.anai.2026.05.018

Abstract

Background: Depemokimab is the first ultra-long-acting biologic, with efficacy and safety recently reported in the Phase III SWIFT-1/-2 studies including patients with type 2 asthma.

Objective: To estimate the relative efficacy and safety of depemokimab versus other biologics via an indirect treatment comparison (ITC).

Methods: The ITC evidence base was compiled via a systematic literature review (SLR) to identify randomized clinical trials on efficacy and safety of biologics in patients with severe asthma. Endpoints were analyzed using network meta-analysis (NMA; unadjusted) and multi-level network meta-regression (ML-NMR; partially/fully adjusted for clinically relevant/statistically feasible covariates including prior exacerbation history, inhaled/oral corticosteroid use and blood eosinophil count) and included annualized exacerbation rates (AER), adverse events (AEs) and serious AEs (SAEs).

Results: Overall, 17 and 22 trials were included in the exacerbation and safety analyses. Significant differences in efficacy were observed in the unadjusted fixed-effect model for depemokimab versus placebo, omalizumab, benralizumab, and dupilumab 300 mg, and in the partially adjusted fixed-effect model for depemokimab versus placebo and omalizumab. In the fully adjusted fixed-effect model, depemokimab significantly reduced AERs versus placebo; no significant differences were observed versus other biologics in this model. Odds of experiencing AEs and SAEs were similar across treatments, with fewer SAEs observed with depemokimab compared with dupilumab. Results were generally consistent across fixed- and random-effect approaches.

Conclusion: In general, no statistically significant difference was detected between depemokimab and other biologics in terms of AER reduction or safety in severe

asthma, including when adjusting for differences across studies in clinically important patient characteristics.

Keywords: Biologic; benralizumab; depemokimab; dupilumab; indirect treatment comparison; mepolizumab; omalizumab; reslizumab; severe asthma; tezepelumab.

Conflict of interest statement

Declaration of competing interest AB has received grants, personal fees, non-financial support, and other support from Actelion, AstraZeneca, Boehringer Ingelheim, and GSK; personal fees, non-financial support, and other support from Chiesi, Novartis, and Regeneron; personal fees and non-financial support from Teva; personal fees from Gilead; non-financial support and other support from Roche; and other support from Nuvaira. IDP in the last 5 years has received speaker's honoraria for speaking at sponsored meetings from AstraZeneca, Aerocrine, Almirall, Sanofi/Regeneron, Menarini, and GSK, and payments for organizing educational events from AstraZeneca, GSK, and Sanofi/Regeneron. He has received honoraria for attending advisory panels with Sanofi/Regeneron, AstraZeneca, GSK, Merck, Circassia, Chiesi, Upstream Bio, and Areteia. He has received sponsorship to attend international scientific meetings from GSK, AstraZeneca, and Sanofi/Regeneron. NB, BB, AV, and PH are employees of GSK and hold financial equities in GSK. RA-C was an employee of GSK at the time of the study and may hold financial equities in GSK. LV, HEA, VJ, VL-K, and GS are employees of Cytel, which received funding from GSK for the conduct of this study.

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Review

Lung

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. 2026 May 22;204(1):31.

doi: 10.1007/s00408-026-00897-9.

IL-1β Pathway Inhibition in Asthma and COPD: Strong Biological Rationale, Disappointing Clinical Trials, and Emerging New Opportunities

Mario Cazzola [1], Clive P Page [2], Maria Gabriella Matera [3]

Affiliations Expand

- PMID: 42168720
- PMCID: PMC13194302
- DOI: 10.1007/s00408-026-00897-9

Abstract

Interleukin-1β (IL-1β) is a key mediator of innate immunity and a central driver of airway inflammation in asthma and chronic obstructive pulmonary disease (COPD). Elevated IL-1β levels in sputum, bronchoalveolar lavage, and airway tissues correlate with neutrophilic inflammation, exacerbation frequency, airflow limitation, and steroid resistance. Mechanistically, IL-1β promotes epithelial activation, epithelial-mesenchymal transition, neutrophil recruitment, inflammasome activation, and immune cell plasticity, particularly driving ILC2 transdifferentiation toward pro-inflammatory phenotypes. Despite strong biological rationale, clinical trials targeting IL-1 signaling through receptor blockade or IL-1β neutralization have yielded limited benefits in certain patient populations. Therapeutic failure is largely attributed to disease heterogeneity, lack of biomarker-guided stratification, redundant inflammatory pathways, and suboptimal timing of intervention. Emerging strategies include precision medicine approaches with biomarker enrichment, upstream NLRP3 inflammasome inhibition, combinatorial cytokine targeting, modulation of signaling intermediates, temporally targeted therapy during exacerbations, and localized airway delivery systems. Integration of multi-omics profiling and endotype-based patient selection may enhance therapeutic responsiveness. Future clinical trials should adopt adaptive designs to validate IL-1-targeted interventions in biologically defined subgroups of patients with asthma or COPD.

Keywords: Asthma and COPD endotypes; Interleukin-1β; NLRP3 inflammasome; Neutrophilic inflammation; Precision medicine.

Conflict of interest statement

Declarations. Competing interests: The authors declare no competing interests. Ethical Approval: The authors have nothing to report.

- 86 references
- 3 figures

Supplementary info

Publication types, MeSH terms, SubstancesExpand

Full text links

Cite

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Eur Respir J

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. 2026 May 21:2600150.

doi: 10.1183/13993003.00150-2026. Online ahead of print.

Small Airway Dysfunction May Mediate the Association Between Body Mass Index and Severe Asthma Exacerbations

Andrea Portacci [1], Laura Ventura [2], Francesco Menzella [3], Remo Poto [4], Alvise Berti [5], Carlo Lombardi [6], Pasquale Comberiati [7], Giovanna Elisiana Carpagnano [8], Zuzana Diamant [9 10 11], Ian M Adcock [12], Brian Lipworth [13], Omar Usmani [14], Marcello Cottini [15], Rory Chan [15]

Affiliations Expand

- PMID: 42167779

- DOI: 10.1183/13993003.00150-2026

Abstract

Background: Obesity is associated with poorer asthma outcomes and an increased risk of exacerbations, but the underlying mechanisms remain incompletely understood. Small airway dysfunction (SAD) may represent a key mechanistic link between excess body weight and adverse asthma outcomes.

Methods: In this multicenter observational study, adult patients with asthma underwent clinical characterization, spirometry and impulse oscillometry (IOS). SAD was defined using a composite criterion based on peripheral airway resistance (R_{5-20}), reactance area (AX) and the ratio of peripheral to total airway resistance (R_{5-20})/R_5. Associations between body mass index (BMI), SAD and severe asthma exacerbations were assessed using multivariable regression models. Non-linear relationships were explored using generalized additive models and mediation analyses quantified the contribution of SAD to the obesity-exacerbation association.

Findings: Among 1169 patients, IOS-defined SAD was significantly more prevalent in individuals with BMI≥30 kg·m^{-2}. Increasing BMI was associated with worse oscillometric parameters ($p<0.0001$), following a non-linear pattern with steeper deterioration beyond BMI values of approximately 28-30 kg·m^{-2}. SAD was

independently associated with obesity (adjusted OR 2.11, 95% CI 1.56-2.86) and with severe asthma exacerbations in the previous year (adjusted OR 2.01, 95% CI 1.53-2.65, both p<0.0001). Mediation analyses showed that SAD accounted for 26%-41% of the association between obesity and exacerbation risk (p=0.004 and 0.03). Spirometric indices provided limited additional information.

Interpretation: Oscillometry-defined small airways dysfunction (SAD) represents a non-linear functional trait underlying the association between obesity and severe asthma exacerbations, supporting its clinical relevance in obese patients with asthma and identifying SAD as a potential treatable trait.

Cite

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Eur Respir J

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. 2026 May 21;67(5):26E6705.

doi: 10.1183/13993003.E6705-2026. Print 2025 May.

ERJ Podcast May 2026: Mucus plugs in asthma and COPD

No authors listed

- **PMID: 42167769**

- **DOI: 10.1183/13993003.E6705-2026**

No abstract available

Full text links

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Cite

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J Allergy Clin Immunol

. 2026 May 20:S0091-6749(26)00344-1.

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One-Year Clinical Remission with Tezepelumab in Severe Asthma: TERESA Single-Arm Prospective Study

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- PMID: 42167656

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Abstract

Background: Clinical remission has emerged as an ambitious therapeutic goal in severe asthma, shifting emphasis from symptomatic relief to long-term disease modification. Tezepelumab, a monoclonal antibody targeting thymic stromal lymphopoietin, has demonstrated broad-spectrum anti-inflammatory activity. However, prospective data assessing clinical remission with tezepelumab, especially in biologic-experienced patients, remain limited.

Objective: The Tezepelumab-induced Clinical Remission in Severe Asthma (TERESA) study is a multicenter, prospective, single-arm, investigator-initiated Phase 4 study evaluating clinical remission at week 52 in patients with uncontrolled severe asthma receiving tezepelumab every 4 weeks.

Methods: Clinical remission was defined as the absence of asthma exacerbations, discontinuation of maintenance oral corticosteroids, an ACQ-6 score of ≤1.5, and stabilized lung function. Secondary endpoints included complete remission (clinical remission plus T2 biomarker negativity).

Results: Among 107 patients enrolled (including 50 biologic-experienced), 34.6% (95% CI: 26.2, 44.0) achieved clinical remission at week 52. Complete remission was observed in 9.3%. Biologic-naïve patients demonstrated higher remission rates than biologic-experienced patients (47.4% versus 20.0%, respectively). Multivariable logistic regression identified absence of previous biologic use (adjusted OR: 3.61, 95% CI: 1.29, 10.15) and baseline blood eosinophil count ≥300 cells/μL (adjusted OR: 5.10, 95% CI: 1.23, 21.18) as independent predictors of clinical remission.

Conclusion: In this single-arm study with a one-year follow-up, tezepelumab achieved clinical remission in approximately one-third of patients with severe asthma, with a favorable safety profile. Higher baseline eosinophil count and biologic-naïve status were key predictors of remission, underscoring tezepelumab's potential to achieve comprehensive disease control in appropriately selected patients.

Clinical trial registration: This study has been registered at the Japan Registry of Clinical Trials (No.: jRCTs071230026).

Keywords: Asthma; Biologics; Clinical remission; Prospective studies; Tezepelumab.

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Glucagon-like peptide-1 receptor agonists in asthma and obesity-associated asthma: a systematic review of clinical outcomes and translational mechanisms

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Abstract

Background: Obesity and metabolic dysfunction are increasingly recognized as important modifiers of asthma risk, severity, and treatment response. Glucagon-like peptide-1 receptor agonists (GLP-1RAs), widely used for type 2 diabetes and obesity, have been associated with improved respiratory outcomes, but the underlying clinical and biological mechanisms remain incompletely defined.

Objectives: To systematically review and synthesize clinical, translational, and preclinical evidence evaluating the effects of GLP-1 receptor agonists on asthma outcomes, with particular attention to weight-dependent, metabolic, and airway-intrinsic mechanisms.

Methods: We conducted a systematic review of human observational studies, clinical trials, and preclinical investigations assessing associations between GLP-1RA exposure and asthma-related outcomes. Data extraction included study design, population characteristics, respiratory outcomes, mechanistic findings, and risk-of-bias assessments using validated tools appropriate to study type.

Results: Across observational human studies, GLP-1RA use was consistently associated with reduced asthma exacerbations and healthcare utilization, predominantly in populations with obesity and/or type 2 diabetes. Several studies reported associations that persisted after adjustment for body mass index or glycemic markers. Preclinical models demonstrated reductions in airway inflammation, hyperresponsiveness, and epithelial cytokine signaling, though these findings were subject to substantial risk of bias and species-specific differences in GLP-1 receptor expression. Overall, evidence supporting airway-intrinsic effects remains largely preclinical, while human data are limited by confounding and population selection.

Conclusions: Current evidence suggests that GLP-1 receptor agonists may improve asthma outcomes through mechanisms that extend beyond weight loss, potentially involving metabolic and airway-relevant pathways. However, uncertainty remains regarding benefits in the absence of metabolic dysfunction. Ongoing randomized controlled trials will be critical to clarifying causality, defining responsive asthma phenotypes, and determining the clinical role of GLP-1RAs in broader asthma populations.

Keywords: Asthma; Exacerbation; Glucagon-Like Peptide-1 Receptor Agonists; Inflammation.; Obesity.

Review

Eur Arch Otorhinolaryngol

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Efficacy of tezepelumab in chronic rhinosinusitis with nasal polyps: a systematic review and meta-analysis

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- **PMID: 42165888**

- **DOI: 10.1007/s00405-026-10286-w**

Abstract

Purpose: To evaluate the efficacy of tezepelumab as an adjunctive treatment in patients with chronic rhinosinusitis with nasal polyps (CRSwNP).

Methods: PubMed, SCOPUS, Embase, Web of Science, and the Cochrane Library were systematically searched from database inception through January 2026. Eligible studies compared tezepelumab with placebo or reported pre-post treatment outcomes in tezepelumab-treated cohorts. Outcomes included nasal and olfactory symptom measures (nasal congestion, nasal polyp score, olfactory testing, olfactory-related symptoms, and the Sino-Nasal Outcome Test-22 [SNOT-22]), asthma-related measures (pre-bronchodilator forced expiratory volume in 1 s [FEV_1] and the Asthma Control Questionnaire [ACQ]-6), and treatment-related adverse events.

Results: Four studies involving 702 participants met the inclusion criteria. Pre-post analyses demonstrated significant improvements following tezepelumab treatment in nasal congestion (mean difference [MD] 1.6859, 95% confidence interval [CI] [1.3882; 1.9836]), olfactory function (standardized mean difference [SMD] - 1.17, 95% CI - 1.39 to - 0.95), SNOT-22 scores (MD 28.6091, 95% CI [15.9241; 41.2940]), and asthma control (ACQ SMD 1.06, 95% CI 0.54-1.57). Both the asthma with nasal polyps and CRSwNP subgroups exhibited consistent symptom improvement. Changes in FEV_1 were modest and did not reach statistical significance.

Conclusion: Tezepelumab was associated with significant improvements in rhinologic and asthma-related outcomes in patients with CRSwNP. Larger, well-designed randomized controlled trials are warranted to confirm these findings and

to define more accurately the long-term therapeutic role of tezepelumab in this population.

Keywords: Antibodies, monoclonal; Asthma; Biological products; Nasal polyps; Sinusitis; Thymic stromal lymphopoietin.

Conflict of interest statement

Declarations. Ethical: Institutional Review Board approval and informed consents were not required because this study is based exclusively on published literature. Competing interests: The authors declare that there are no competing interests.

- 22 references

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10

Review

Otolaryngol Clin North Am

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The Pulmonologist's Approach to the Diagnosis and Treatment of Cough

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Abstract

Cough is one of the most common symptoms prompting medical consultation and represents a diagnostic challenge due to its multifactorial nature and often overlapping etiologies. This review outlines the pulmonologist's systematic approach to the evaluation and management of cough, emphasizing the importance of classifying cough as acute, subacute, or chronic to guide investigation and treatment. Overall, this article underscores the complexity of cough evaluation and the necessity of a comprehensive, patient-centered approach. This article describes the pulmonologist's approach to the diagnosis and treatment of cough and how it interplays with the otolaryngologist's evaluation. The need for an interdisciplinary approach to diagnoses and treat cough is emphasized.

Keywords: Acute cough; Asthma; Bronchiectasis; Bronchiolitis; Bronchitis; Chronic cough; Pneumonitis.

Conflict of interest statement

Disclosure The author has no conflicts of interest to disclose.

Supplementary info

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11

BMJ Open

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Association of early-life human rhinovirus and respiratory syncytial virus infections with childhood asthma: a cohort study in Suzhou, China

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Affiliations Expand

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Free article

Abstract

Objectives: To investigate the impact of early-life human rhinovirus (HRV) and respiratory syncytial virus (RSV) infections on subsequent asthma development among children with acute respiratory infections (ARI), with a focus on the timing of infection during critical developmental windows.

Design: Retrospective cohort study.

Setting: Tertiary paediatric hospital-Children's Hospital of Soochow University in eastern China-with data linked to a regional health information system.

Participants: A total of 2628 children who were hospitalised with acute respiratory infections (ARI) and received respiratory virus testing between September 2017 and December 2024 were included in this study.

Primary and secondary outcome measures: The primary outcome was incident asthma. Associations between early-life HRV or RSV infection and asthma risk were evaluated using univariate and multivariable Cox proportional hazards models. Causal mediation analysis was applied to examine potential mediation by wheezing and bronchiolitis. Secondary outcomes were the frequency of asthma-related medical visits and number of exacerbations, analysed using multivariable negative binomial regression models.

Results: Overall, 616 (20.2%) children developed asthma. Cox regression showed that HRV-RSV (aHR=2.40, 95% CI 1.02 to 6.69) and s-HRV (aHR=1.56, 95% CI 1.10 to 2.22) were associated with asthma risk compared with negative controls, whereas s-RSV was not (aHR=1.31, 95% CI 0.89 to 1.89). Wheezing mediated 53.5% of the effect of HRV on asthma risk. Among asthma cases, both HRV and RSV were associated with increased asthma-related visits and exacerbations.

Conclusions: Early-life hospitalisation for HRV or RSV, particularly at 13-24 months of age, may be associated with increased risk of asthma and greater asthma morbidity. These findings suggest a potential role of infection timing in shaping long-term respiratory outcomes.

Keywords: Asthma; Child; Rhinitis, Allergic.

Conflict of interest statement

Competing interests: None declared.

Supplementary info

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12

Editorial

ERJ Open Res

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Adapting asthma guidelines

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Affiliations Expand

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- PMCID: PMC13181581
- DOI: 10.1183/23120541.01841-2025

Abstract

The adaptation of asthma guidelines for children and adolescents is a dynamic process that requires collaboration between national centres, consideration of local resources and ongoing evaluation of diagnostic strategies https://bit.ly/4qpPnXb.

Conflict of interest statement

Conflict of interest: C. Lex reports grants from Sanofi and the University of Frankfurt; payment or honoraria for lectures, presentations, manuscript writing or educational events from the German Society of Pediatric Allergology, the Society of Paediatric Pneumology (German, Austrian, Swiss) and the German Society of Paediatrics and Adolescent Medicine; and leadership roles with the German Society of Pediatric Allergology and the Society of Paediatric Pneumology (German, Austrian and Swiss). A. Zacharasiewicz reports no conflict of interest.

- 8 references

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13

Lancet Respir Med

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Comorbid diabetes disease severity and microbial changes in patients with bronchiectasis: a combined analysis of data from the EMBARC, EMBARC-India, Australian, and BE-China registries

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Affiliations Expand

- **PMID: 42155496**

- **DOI: 10.1016/S2213-2600(26)00057-3**

Abstract

Background: Bronchiectasis and diabetes commonly coexist and are associated with immune dysfunction and increased susceptibility to infection. Although diabetes is associated with worse prognosis in cystic fibrosis-related bronchiectasis, data are scarce for its impact on non-cystic fibrosis bronchiectasis. This study aimed to characterise the impact of diabetes on clinical outcomes and microbial and inflammatory profiles in patients with bronchiectasis.

Methods: This analysis comprised data from the European Bronchiectasis Registry (EMBARC), Respiratory Research Network of India (EMBARC-India), Chinese Bronchiectasis Registry (BE-China), and Australian Bronchiectasis Registry (ABR); 30 263 patients with CT-confirmed bronchiectasis in 33 countries were included in the analysis: 16 963 from EMBARC (Jan 12, 2015, to April 12, 2022), 2361 from EMBARC-India plus additional Asian countries (June 1, 2015, to Sept 1, 2017), 10 324 from BE-China (Jan 10, 2020, to March 31, 2024), and 615 from the ABR (March 7, 2016, to Sept 11, 2018). Clinical data were compared between patients with and without diabetes. Long-term outcome data were available in EMBARC and EMBARC-India. Microbiome and inflammatory profiles were characterised in a sub-cohort of EMBARC patients by sputum 16S rRNA sequencing (n=433) and serum Olink (n=479).

Findings: 2487 (8·2%) of 30 263 patients with bronchiectasis had diabetes. Patients with diabetes had a higher prevalence of comorbidities than those without diabetes, including cardiovascular disorders (53·5% vs 21·8%, p<0·0001), asthma (27·5% vs 21·0%, p<0·0001), and chronic obstructive pulmonary disease (34·3% vs 19·0%, p<0·0001). Patients with diabetes had more severe disease than those without diabetes, with higher Bronchiectasis Severity Index scores (8 [IQR 5-12] vs 7 [4-10], p<0·0001) and UK Medical Research Council (MRC) dyspnoea scores (p<0·0001) and more hospital admissions in the previous year (p<0·0001). After adjustment for confounders, outcomes were significantly worse in patients with diabetes than in those without diabetes, including more frequent exacerbations (incidence rate ratio [IRR] 1·18 [95% CI 1·09-1·28], p<0·0001), hospital admissions (IRR 1·57 [1·40-1·76], p<0·0001), and higher 5-year mortality (hazard ratio 1·80 [1·53-2·12], p<0·0001). The sputum microbiome was significantly altered in patients with diabetes compared to those without diabetes, with increased isolation of Enterobacteriaceae (p<0·0001), Moraxella catarrhalis (p=0·0035), and Haemophilus influenzae (p=0·046). In serum, Gal-4 and GDF-15, established biomarkers of disease severity and cardiovascular risk in diabetes, were significantly increased in patients with diabetes (Gal-4, p<0·0001; GDF-15, p=0·0019).

Interpretation: Patients with diabetes and bronchiectasis are a high-risk population with more severe disease, worse outcomes, increased comorbidities, and increased risk of infections compared with patients without diabetes. These findings support inclusion of diabetes as a risk factor in individualised risk assessments for bronchiectasis.

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Industries and Associations, Innovative Medicines Initiative, and Inhaled Antibiotics in Bronchiectasis and Cystic Fibrosis Consortium.

Conflict of interest statement

Declaration of interests HC reports grants or contracts from the Korean Ministry of Education (numbers RS-2025-25423084 and 2021R1I1A3052416) and AstraZeneca, consulting fees from Gilead, Boehringer Ingelheim, and Abbott, and lecture fees from Kolong, Boryung, Abbott, Otsuka, and Handok. SHC reports grants or contracts from the Singapore Ministry of Education and Singapore Ministry of Health's National Medical Research Council, with payments made to the institution; consulting fees from Boehringer Ingelheim, CSL Behring, Pneumagen, Sanofi, GSK and Zaccha Pte; lecture fees from AstraZeneca, CSL Behring, Boehringer Ingelheim, and Chiesi Farmaceutici; and participation on a data safety monitoring board or advisory board for Inovio Pharmaceuticals and Imam Abdulrahman Bin Faisal University. AS reports grants or contracts from Astrazeneca, Lifearc, and Insmed; fees for consulting or educational talks from Spirovant, Translate Bio, ReCode Therapeutics, Ethris, and Insmed; and leadership or fiduciary roles as Chair of the BEAT-PCD (Better Experimental Approaches to Treat Primary Ciliary Dyskinesia) European Respiratory Society clinical research consortium and involvement in European Respiratory Society Clinical Research Collaborations (EMBARC and AMR Lung). P-RB reports fees for consultancy work from AstraZeneca, Chiesi, GSK, Insmed, MSD, Pfizer, Vertex, and Viatris. MV reports payment for educational talks from Teva, Chiesi, and Insmed; support for attending meetings or travel, or both, from Pari, Chiesi, Zambon, Behring, Gebro, and Grifols and participated on a data safety monitoring board or advisory board for Insmed. W-JG reports support for this work as part of a Major Project of Guangzhou National Laboratory (grant number GZNL2024A02003) and Non-communicable Chronic Diseases-National Science and Technology Major Project (number 2024ZD0529600). PCG reports fees for educational talks from Insmed, RMEI, AstraZeneca, and GSK; support for attending meetings or travel, or both, from GSK and AstraZeneca; and participated on a data safety monitoring board or advisory board for Boehringer Ingelheim, MSD, and Pfizer. MS reports grants from Tel Aviv League for Lung Diseases and George K Baum Family Foundation; fees for consultancy work or educational talks from AstraZeneca, Boehringer Ingelheim, Dexcel, Kamada, Synchrony medical, Trumed, Zambon, CSL Behring, GSK, Sanofi, and Insmed; support for attending meetings or travel, or both, from Boehringer Ingelheim Israel, AstraZeneca Israel, Kamada, Rafa, and GSK Israel; has participated on a data safety monitoring board or advisory board for Bonus Biotherapeutics, Boehringer Ingelheim, AstraZeneca, and Insmed; and has a leadership or fiduciary role for the American Journal of Respiratory and Critical Care Medicine as Associate Editor, Treasurer of the Israeli Society for Tuberculosis and Mycobacterial Diseases, Management board member of EMBARC, Editorial board member of the European Respiratory Journal, European Respiratory Society (ERS) taskforce member of bronchiectasis guidelines, and ERS taskforce member of transitioning in bronchiectasis. ADS has received grants from Bayer, Gilead, GSK, Pfizer, AstraZeneca, Insmed, and Novartis; fees for consultancy or educational talks from Boehringer Ingelheim, Bayer, Gilead, Pfizer, GSK, Insmed, Astrazeneca, Novartis, Sanofi, 30T, Innogen, and Fisher&Paykel; support for attending meetings or travel, or both, from AstraZeneca, Chiesi, GSK, and Insmed;

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a data safety monitoring board or advisory board for Glenmark, Lupin, Sun Pharma, and Cipla. JDC has received grants from AstraZeneca, Boehringer Ingelheim, Chiesi, Grifols, Genentech, Gilead, Insmed, and Trudell; and received fees for consultancy from AstraZeneca, Glaxosmithkline, Grifols, Boehringer Ingelheim, Janssen, Zambon, Chiesi, Insmed, Novartis, Pfizer, and Antabio. All other authors declare no competing interests.

Cite

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Review

J Med Internet Res

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Understanding Remission of Long-Term Conditions Through Electronic Health Records: Scoping Review

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Affiliations Expand

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- **PMCID: PMC13186534**
- **DOI: 10.2196/80796**

Abstract

Background: Multiple long-term conditions (MLTCs) require complex and prolonged treatment regimens. Remission in long-term conditions (LTCs) is important for understanding disease progression and evaluating treatment effectiveness.

Electronic health records (EHRs) are increasingly used to monitor clinical outcomes, but how remission is defined within EHRs remains unclear.

Objective: This study aimed to summarize and collate the previous literature on how remission of LTCs has been defined in EHRs.

Methods: Systematic electronic searches were performed on OVID MEDLINE, Embase, CINAHL EBSCO, the Cochrane Library, and the Bielefeld Academic Search Engine for eligible studies published from inception to November 27, 2025. Quantitative studies, published in any language, on adult populations, and using EHRs to assess remission of LTCs, were eligible for inclusion. Studies that did not clearly define remission and studies on cancer remission were excluded. Data were extracted from each eligible study using a structured table. Risk of bias was not assessed, in line with scoping review methodology. A narrative approach was taken to summarize and present data from the included studies. The number and characteristics of studies were described, both overall and by condition. Findings were discussed with clinicians and data experts to ensure applicability in clinical practice.

Results: Ninety-one studies were included. Sample sizes ranged from 12 to 72.9 million adults. Studies were conducted in 18 countries, with the majority being from the United States. The majority of included studies used a cohort study design. Studies assessed how remission was defined in 12 LTCs, including inflammatory bowel disease (41/91, 45.1%), type 2 diabetes (n=15, 16.5%), depression (n=15, 16.5%), alcohol or drug misuse (n=8, 8.8%), asthma (n=3, 3.3%), multiple sclerosis (n=3, 3.3%), epilepsy (n=1, 1.1%), anemia (n=1, 1.1%), chronic kidney disease (n=1, 1.1%), autoimmune pancreatitis (n=1, 1.1%), hypertension (n=1, 1.1%), heart failure (n=1, 1.1%), and MLTC (n=1, 1.1%). Remission was typically defined using a combination of clinical codes (n=7, 7.7%), validated rating scales (n=56, 61.5%), biochemical markers (n=29, 31.9%), absence of symptoms (n=10, 11%), absence of condition-specific events (eg, hospital admissions; n=4, 4.4%), and cessation of pharmacological treatments (n=26, 28.6%). There was substantial variation in the criteria and duration of follow-up used to define remission across studies.

Conclusions: This review demonstrates that remission of LTCs can be identified and operationalized within EHRs, although remission criteria varied across studies. The review extends the literature on remission in EHRs by combining evidence synthesis and consultation with clinical and data experts to propose standardized comprehensive definitions to reliably define and implement remission of multiple LTCs in EHR-based research. This will allow cross-study comparisons and present an opportunity to advance understanding of disease trajectories and improve evaluation and monitoring of patient outcomes. Further research may apply, compare, and evaluate standardized definitions across different data sources to assess generalizability and further improve our understanding of remission of LTCs.

Keywords: electronic health records; long-term conditions; remission; resolution; scoping review.

Conflict of interest statement

Conflicts of Interest: None declared.

- **140 references**
- **4 figures**

Supplementary info

Publication types, MeSH termsExpand

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Neural mechanisms of mindfulness-based stress reduction in asthma

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Affiliations Expand

- **PMID: 42151421**
- **DOI: 10.1038/s41598-026-53074-6**

Free article

Abstract

Mindfulness-based stress reduction (MBSR) can improve symptoms of chronic inflammation; in asthma, improving asthma control and reducing airway inflammation. Understanding the neural mechanisms underlying these salubrious outcomes could help identify neuroimmune phenotypes and personalize interventions. Adults with asthma were randomized to 8 weeks of MBSR (n = 38) or a wait-list group (n = 34). Clinically relevant asthma-related and psychological outcomes were measured, and task-based fMRI data were acquired during exposure

to emotional cues at baseline, post-intervention, and 6mo follow-up. Whole-brain group x time interactions and voxelwise regressions were used to evaluate changes in neural responses to emotion cues from baseline and their relationship to psychological and biological outcomes. Post-intervention, MBSR participants showed decreased lateral prefrontal/orbitofrontal cortex responses to aversive cues relative to controls, which was associated with increased mindfulness. Across participants, decreased salience network reactivity at post-intervention was associated with reduced psychological distress and airway inflammation. At 6 months, some relationships persisted while others did not. Results suggest that mindfulness training reduced effortful regulation of cognitive and affective responses to emotional cues, instead promoting more efficient processing strategies and reduced affective reactivity. Our findings clarify neural mechanisms underlying MBSR's clinical benefits for asthma, underscoring mind-brain-immune relationships as a critical target for asthma treatment.

Keywords: Asthma; Mindfulness; Neuroimaging.

Conflict of interest statement

Declarations. Competing interests: Dr. Richard J. Davidson is the founder, president, and serves on the board of directors for the non-profit organization, Healthy Minds Innovations, Inc. No donors, either anonymous or identified, have participated in the design, conduct, or reporting of research results in this manuscript. All other authors have nothing to disclose.

Supplementary info

Grants and fundingExpand

Full text links

16

BMJ Open Respir Res

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Integrated molecular networks reveal latent components distinguishing type 2-high and type 2-low asthma

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Affiliations Expand

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- PMCID: PMC13185048
- DOI: 10.1136/bmjresp-2025-004003

Abstract

Background: Type 2 inflammation (T2) biomarkers are used to identify T2-low and T2-high endotypes of asthma in the clinic and understanding of these endotypes has helped to improve clinical management of patients. The T2-low asthma endotype remains relatively poorly characterised and these patients have few treatment options. Despite its clinical relevance, this endotype lacks specific biomarkers.

Objective: To identify transcriptional and microRNA signatures associated with asthma endotypes.

Methods: We studied 88 participants with asthma stratified into T2-high and T2-low asthma by blood eosinophils and/or fractional exhaled nitric oxide. We defined whole-blood microRNA and mRNA profiles for each participant and used Data Integration Analysis for Biomarker discovery using Latent Variable approaches for Omics integration to identify latent components (LCs). The results were validated in two independent cohorts of subjects with asthma, including patient samples taken before and after treatment with benralizumab.

Results: The T2-high endotype was the most prevalent (67%, n=55) within the study population. We identified two LCs associated with T2-high and T2-low asthma. LC1 was characterised by eosinophil-derived mRNAs and included multiple T2-low microRNAs. LC2 was associated with both endotypes and non-eosinophilic cell types. Pathway analysis revealed increased representation of taste and smooth muscle pathways in the T2-low endotype. The T2-low microRNA miR-574-3p was enriched in LC1. Furthermore, we found that the LC signatures were present in two independent cohorts and modulated by benralizumab.

Conclusions: T2-high and T2-low asthma are distinguished by unique transcriptomic networks and have minimal microRNA overlaps. T2-low asthma was enriched for pathways involved with smooth muscle contraction. The LCs signatures are also modulated by benralizumab.

Keywords: Asthma; Asthma Genetics; Inflammation.

Conflict of interest statement

Competing interests: GC reports fees for non-CME/CE services received directly from a commercial interest or its agent: AstraZeneca, GlaxoSmithKline, Genentech, RAPT Therapeutics, Kymera Therapeutics, Shinogi, Sanofi Genzyme. Contracted research: AstraZeneca, GlaxoSmithKline, Genentech, Sanofi Genzyme. All other authors have no conflicts to report.

- 43 references
- 4 figures

Supplementary info

MeSH terms, SubstancesExpand

Full text links

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17

Lancet Respir Med

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. 2026 May 18:S2213-2600(26)00076-7.

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Efficacy and safety of tezepelumab versus placebo in reducing oral corticosteroid use in adults with severe, oral corticosteroid-dependent asthma (SUNRISE): a multicentre, placebo-controlled, double-blind, phase 3 trial

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Collaborators, Affiliations Expand

- **PMID: 42150582**

- **DOI: 10.1016/S2213-2600(26)00076-7**

Abstract

Background: Tezepelumab is a human monoclonal antibody that blocks the activity of thymic stromal lymphopoietin. This study aimed to evaluate the oral corticosteroid-sparing effect of tezepelumab in adults with severe, oral corticosteroid-dependent asthma.

Methods: SUNRISE was a phase 3, double-blind, placebo-controlled trial conducted across 63 sites in 12 countries. After oral corticosteroid optimisation, participants aged 18-80 years with physician-diagnosed asthma who were receiving medium-dose or high-dose inhaled corticosteroids for at least 12 months before screening were randomly assigned (2:1) to receive tezepelumab 210 mg or placebo subcutaneously every 4 weeks for 28 weeks. Participants were stratified by region and blood eosinophil count. Participants, investigators, and site staff were masked to treatment assignment. The primary outcome was the categorised percentage reduction from baseline in the daily maintenance oral corticosteroid dose at week 28 while maintaining asthma control. The primary outcome and safety outcomes were evaluated in all randomly assigned participants who received at least one dose of tezepelumab or placebo (ie, the full analysis set). This study is registered with ClinicalTrials.gov (NCT05398263).

Findings: Between Aug 9, 2022, and March 24, 2025, when the study was terminated, 122 of 207 planned participants received tezepelumab (n=83) or placebo (n=39). 90 (74%) participants completed treatment. Of 122 participants, 25 (20%) did not complete the study owing to early study termination due to recruitment challenges. The odds of reaching a category of greater percentage oral corticosteroid reduction at week 28 were significantly higher with tezepelumab than placebo (odds ratio 2·93 [95% CI 1·43-6·03]; p=0·0034). Overall, 25 (30%) participants in the tezepelumab group and 23 (59%) participants in the placebo group had at least one asthma exacerbation over 28 weeks. Adverse events occurred in 47 (57%) participants in the tezepelumab group and 28 (72%) participants in the placebo group. Serious adverse events occurred in seven (8%) participants in the tezepelumab group and five (13%) participants in the placebo group. Three deaths occurred (two in the tezepelumab group during the post-treatment period and one in the placebo group during the treatment period); none were considered causally related to study treatment based on investigator assessment.

Interpretation: In this study, tezepelumab treatment led to greater reductions from baseline in daily oral corticosteroid dose than placebo at week 28 despite early study termination. No safety concerns were identified for tezepelumab. These findings show that patients receiving tezepelumab can reduce maintenance oral corticosteroid use while maintaining asthma control and without compromising efficacy.

Funding: AstraZeneca and Amgen.

Conflict of interest statement

Declaration of interests MEW is an employee of National Jewish Health and has received consulting or advisory fees, or both, from AbbVie, Allakos, Apogee, Areteia Therapeutics, Arrowhead Pharmaceuticals, Avalo Therapeutics, Belenos Bio, Celldex, Connect Biopharma, Eli Lilly, Enveda, Equillium, General Medicines, Gilead,

Jasper Therapeutics, Kinaset, Kymera, Merck, myBiometry, Pfizer, Pharming, Phylaxis, Pulmatrix, RAPT Therapeutics, Recludix Pharma, Roche/Genentech, Sentien, Sound Biologics, Tetherex Pharmaceuticals, Uniquity Bio, Verona Pharma, and Zurabio; has received consulting, advisory, or speaker fees, or all three, from AstraZeneca, Amgen, Regeneron Pharmaceuticals, GSK, and Sanofi, and is conducting research sponsored by these companies; has received stock options from Cellergy Pharma; and has received consulting fees and stock options from Upstream Bio, and is conducting research sponsored by this company. CEB has received grants and consultancy fees paid to his institution from 4D Pharma, Areteia Therapeutics, AstraZeneca, Chiesi, Genentech, Global Access Diagnostics (formerly Mologic), GSK, Novartis, Regeneron Pharmaceuticals, Roche, and Sanofi. GB has received fees for advisory boards or speaker fees, or both, from Amgen, AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, MSD, Novartis, and Sanofi. MC has received fees from AstraZeneca for serving on advisory boards and has received speaker fees from GSK and Sanofi. TS has received fees from AstraZeneca, GSK, Pfizer, and Sanofi as the principal investigator in various studies on chronic respiratory diseases. EMG has received fees from AstraZeneca for participation as an investigator in the SUNRISE study. NN has received fees for advisory boards or speaker fees, or both, from AstraZeneca, Boehringer Ingelheim, GSK, Novartis, and Sanofi. IC-S, GH, GA, HL, PK, PS, and SSP are employees of AstraZeneca and might own stock or stock options in AstraZeneca. YM and NM are employees of Amgen and own stock in Amgen.

18

N Engl J Med

. 2026 May 18:10.1056/NEJMoa2516505.

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Azithromycin for Preschoolers with Wheezing in the Emergency Department

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Affiliations Expand

- PMID: 42149992
- PMCID: PMC13186117
- DOI: 10.1056/NEJMoa2516505

Abstract

Background: Wheezing illnesses are a leading cause of hospitalization for preschool-age children and are frequently treated with antibiotics. Observational studies have shown more frequent isolation of three pathogenic bacteria (*Streptococcus pneumoniae*, *Moraxella catarrhalis*, and *Haemophilus influenzae*) from nasopharyngeal samples from children with recurrent episodes of wheezing than from those without such illnesses.

Methods: In this multicenter trial, we randomly assigned patients 18 to 59 months of age who presented to an emergency department with a moderate-to-severe episode of wheezing to receive azithromycin once daily at a dose of 12 mg per kilogram of body weight or matching placebo for 5 days. The primary outcome was the sum of scores on the Asthma Flare-up Diary for Young Children (ADYC) over 5 days. Primary-outcome scores could range from 5 to 35, with higher scores indicating more severe wheezing-related symptoms. Efficacy was assessed separately in patients who tested positive for pathogenic bacteria (the positive cohort) and in those who tested negative (the negative cohort). Secondary outcomes were length of stay in the emergency department, length of hospital stay, and return emergency department visits or hospitalizations within 72 hours. Bacterial clearance and antimicrobial resistance were measured at follow-up visits 1 to 3 weeks after randomization.

Results: Among 840 patients who underwent randomization, 521 tested positive for pathogenic bacteria. The trial was stopped for futility by the data and safety monitoring board after a planned interim analysis. ADYC scores did not differ significantly between the azithromycin and placebo groups in either the positive cohort (median, 9.59 [interquartile range, 7.29 to 12.60] vs. 9.72 [interquartile range, 7.66 to 12.17]; P = 0.70) or the negative cohort (median, 9.30 [interquartile range, 6.97 to 11.62] vs. 9.10 [interquartile range, 7.19 to 11.45]; P = 0.69). In the positive cohort, bacterial clearance was 58.7% in the azithromycin group and 11.4% in the placebo group. Secondary outcomes appeared to be similar in the two groups for both cohorts, as did the development of bacterial resistance and the incidence of adverse events.

Conclusions: Azithromycin did not lead to a greater reduction in the severity of wheezing-related symptoms than placebo in preschool-age children who presented to the emergency department with moderate-to-severe acute wheezing. (Funded by

the National Heart, Lung, and Blood Institute and others; AZ-SWED ClinicalTrials.gov number, NCT04669288.).

- 16 references
- 2 figures

Supplementary info

Associated data, Grants and fundingExpand

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Proceed to details

Cite

19

JAMA

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. 2026 May 18.

doi: 10.1001/jama.2026.8185. Online ahead of print.

Advancing Pharmacoequity in Asthma

Sumit Agarwal [1 2], Preeti N Malani [1 3]

Affiliations Expand

- PMID: 42149713

- DOI: 10.1001/jama.2026.8185

No abstract available

Full text links

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Cite

20

JAMA

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. 2026 May 18:e267613.

doi: 10.1001/jama.2026.7613. Online ahead of print.

Disparities in Inhaler Utilization Among US Adults With Asthma

Jing Ren [1 2], Ashkan F Ara [2 3], Utibe R Essien [4], Christopher Scannell [5]

Affiliations Expand

- PMID: 42149706

- PMCID: PMC13184773 (available on 2026-11-18)

- DOI: 10.1001/jama.2026.7613

No abstract available

Plain language summary

This cross-sectional cohort study examines inhaler use among US adults with asthma and how demographic, socioeconomic, clinical, and heath care access factors may affect treatment disparities in this population.

Conflict of interest statement

Conflict of Interest Disclosures: Dr Ren reported receiving funding from the National Institutes of Health (T32072752) outside the submitted work. No other disclosures were reported.

Comment in

- doi: 10.1001/jama.2026.8185
- 10 references

Full text links

Am J Respir Crit Care Med

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. 2026 May 18:aamag225.

doi: 10.1093/ajrccm/aamag225. Online ahead of print.

Tezepelumab in Real-World U.S. Patients with Severe Asthma Across Phenotypes and Underrepresented Populations: The Phase 4 PASSAGE Study

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Affiliations Expand

- PMID: 42148905

- DOI: 10.1093/ajrccm/aamag225

Abstract

Rationale: Clinical trials of severe asthma therapies often exclude or underrepresent key patient populations.

Objectives: To evaluate the effectiveness and safety of tezepelumab in a diverse, real-world U.S. population with severe, uncontrolled asthma (SUA).

Methods: PASSAGE was a phase 4, multicenter, single-arm, open-label, 12-month study enrolling patients with SUA (≥12 years old), including different phenotypes (blood eosinophil count ≥/<300 cells/μL, with/without allergy) and underrepresented populations (Black/African American patients, adolescents, SUA with comorbid mild-to-moderate COPD, smokers [≥10 pack-years]). The primary outcome was the annualized asthma exacerbation rate (AAER) in the 12 months before (baseline period) and after (treatment period) tezepelumab initiation.

Measurements and main results: Among 286 participants, AAER decreased 70% (95% CI: 63, 75) from 2.88 (baseline period) to 0.87 (treatment period) and by 54-77% across phenotypes and underrepresented populations. At week 52, least-squares mean pre-bronchodilator FEV1 increased from baseline by 0.122 L (95% CI: 0.07, 0.17) overall and by 0.212 L (95% CI: 0.15, 0.28) among participants with percent predicted pre-bronchodilator FEV1 ≤ 80% at baseline. Clinically meaningful improvements in Asthma Control Questionnaire-6, Asthma Impairment and Risk Questionnaire, and St George's Respiratory Questionnaire scores were observed in 51-91% of participants across phenotypes and underrepresented populations at week 52. No new safety signals were identified.

Conclusions: The PASSAGE study of a diverse, real-world U.S. population with SUA treated with tezepelumab demonstrated substantial reductions in asthma

exacerbations across phenotypes and underrepresented populations, and clinically meaningful improvements in lung function, asthma control, and health-related quality of life.Clinical trial registered with www.clinicaltrials.gov (NCT05329194).

Keywords: Phenotype; Real-world; Severe asthma; Tezepelumab; Underrepresented populations.

Supplementary info

Associated dataExpand

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Cite

22

Review

Eur Respir J

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. 2026 May 21;67(5):2502358.

doi: 10.1183/13993003.02358-2025. Print 2026 May.

The pathobiology and treatment of mucus plugs in asthma and COPD: state of the art

John V Fahy [1]

Affiliations Expand

- PMID: 41713949

- DOI: 10.1183/13993003.02358-2025

Abstract

Recent studies using computed tomography have uncovered a high prevalence of airway mucus plugs in patients with asthma and COPD. These mucus plugs persist in the same airways for years and often occur in patients without symptoms of

cough and sputum production. Mucus plugs associate strongly with measures of airflow obstruction and disease morbidity in both asthma and COPD, and they occur and persist despite treatment with high doses of inhaled and oral corticosteroids. Thus, airway mucus plugs have emerged as an underappreciated airway pathology in asthma and COPD and a cause of persistent airflow obstruction and disease morbidity that can be specifically targeted for treatment. This narrative review covers the pathobiology of mucus plugs in asthma and COPD with three areas of emphasis: 1) prevalence and clinical features; 2) mechanisms of formation and persistence; and 3) current and emerging treatments.

Conflict of interest statement

Conflict of interest: J.V. Fahy reports consultancy fees from Connect Biopharma, Abbvie, Paratus Sciences and Kymera, and is founder, board member and consultant for Aer Therapeutics, a company developing an inhaled mucolytic drug for muco-obstructive lung disease.

Supplementary info

Publication types, MeSH terms, SubstancesExpand

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

1

BMJ Open

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. 2026 May 20;16(5):e111954.

doi: 10.1136/bmjopen-2025-111954.

Association of early-life human rhinovirus and respiratory syncytial virus infections with childhood asthma: a cohort study in Suzhou, China

Longsong Li [1 2], Kaiyue Shen [2], Qinghui Chen [3], Liling Chen [4], Youyi Zhang [2], Ran Peng [2], Jianmei Tian [3], Genming Zhao [2], Tao Zhang [5 2]

Affiliations Expand

- **PMID: 42161543**

- **DOI: 10.1136/bmjopen-2025-111954**

Free article

Abstract

Objectives: To investigate the impact of early-life human rhinovirus (HRV) and respiratory syncytial virus (RSV) infections on subsequent asthma development among children with acute respiratory infections (ARI), with a focus on the timing of infection during critical developmental windows.

Design: Retrospective cohort study.

Setting: Tertiary paediatric hospital-Children's Hospital of Soochow University in eastern China-with data linked to a regional health information system.

Participants: A total of 2628 children who were hospitalised with acute respiratory infections (ARI) and received respiratory virus testing between September 2017 and December 2024 were included in this study.

Primary and secondary outcome measures: The primary outcome was incident asthma. Associations between early-life HRV or RSV infection and asthma risk were evaluated using univariate and multivariable Cox proportional hazards models. Causal mediation analysis was applied to examine potential mediation by wheezing and bronchiolitis. Secondary outcomes were the frequency of asthma-related medical visits and number of exacerbations, analysed using multivariable negative binomial regression models.

Results: Overall, 616 (20.2%) children developed asthma. Cox regression showed that HRV-RSV (aHR=2.40, 95% CI 1.02 to 6.69) and s-HRV (aHR=1.56, 95% CI 1.10 to 2.22) were associated with asthma risk compared with negative controls, whereas s-RSV was not (aHR=1.31, 95% CI 0.89 to 1.89). Wheezing mediated 53.5% of the effect of HRV on asthma risk. Among asthma cases, both HRV and RSV were associated with increased asthma-related visits and exacerbations.

Conclusions: Early-life hospitalisation for HRV or RSV, particularly at 13-24 months of age, may be associated with increased risk of asthma and greater asthma morbidity. These findings suggest a potential role of infection timing in shaping long-term respiratory outcomes.

Keywords: Asthma; Child; Rhinitis, Allergic.

Conflict of interest statement

Competing interests: None declared.

Supplementary info

MeSH termsExpand

Full text links

Cite

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Am J Rhinol Allergy

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. 2026 May 19:19458924261448266.

doi: 10.1177/19458924261448266. Online ahead of print.

Association of Depression in Patients With Chronic Rhinosinusitis Comorbid Asthma and Allergic Rhinitis: A Cross-Sectional Study With the All of Us Research Database

Sherron Thomas [1], Ashley Choi [1], Meryl Kravitz [2], Patrick Colley [2], Nadeem Akbar [2], Christina H Fang [2]

Affiliations Expand

- PMID: 42153790

- DOI: 10.1177/19458924261448266

Abstract

BackgroundChronic rhinosinusitis (CRS) is a persistent inflammatory condition often coexisting with asthma, allergic rhinitis (AR), and depression, impacting patients' quality of life. While the relationship between CRS and these comorbidities is recognized, their interaction with depression remains underexplored.ObjectiveThis study aimed to investigate the associations of comorbid asthma and AR with depression in CRS patients using the All of Us Database.MethodsA cross-sectional analysis was conducted of 27 077 CRS and 244 101 non-CRS patients. Conditions were identified through Systematized Nomenclature of Medicine codes. Generalized linear models were used to calculate adjusted odds ratios (aORs) for associations. Stratified analyses were performed by age, sex, and income.ResultsCRS patients were more likely to have asthma (32.8% vs 12.2%), AR (52.1% vs 13.1%), and depression (41.7% vs 20.4%). The adjusted GLM revealed significant associations with depression for CRS (aOR = 2.54, 95% confidence interval [CI]: 2.43, 2.65), asthma (aOR = 2.93, 95% CI: 2.84, 3.02), and AR (aOR = 2.67, 95% CI: 2.59, 2.75). Low socioeconomic status (SES) in CRS patients was associated with higher odds of depression (aOR range: [2.70-2.90]). Patients with both CRS and asthma or AR exhibited increased odds of depression (aOR = 1.88 and 1.42). The combination of CRS, asthma, and AR showed the highest risk (aOR = 2.15).ConclusionThis study highlights the significant impact of comorbid asthma and AR on depression in CRS patients, with low SES further increasing the

likelihood of depression. Our findings underscore the importance of comprehensive management of CRS and its comorbidities, particularly in patients with lower SES.

Keywords: allergic rhinitis; asthma; chronic rhinosinusitis; depression; mental health; sinusitis.

Full text links

Proceed to details

Cite

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Eur Respir J

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doi: 10.1183/13993003.02272-2025. Print 2026 May.

Early-life greenness and childhood asthma and allergic rhinitis: an Ontario birth cohort study

Erjia Ge [1], Chengchun Yu [2 3], Eric Lavigne [2 3 4 5], Paul J Villeneuve [6], Xin Liu [7], Nicholas Grubic [1], Wendy Lou [8], Jeffrey Brook [9], Zihang Lu [10], Ye Lennon Li [8 11], Teresa To [12 8 13 14 15]

Affiliations Expand

- PMID: 41819538

- DOI: 10.1183/13993003.02272-2025

No abstract available

Conflict of interest statement

Conflict of interest: The authors have no potential conflicts of interest to disclose.

Supplementary info

Publication typesExpand

Full text links

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Cite

4

Br J Dermatol

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. 2026 May 19;194(6):1097-1106.

doi: 10.1093/bjd/ljag025.

Burden and risk of asthma and rhinitis in people with atopic dermatitis: global estimates from a hierarchical Bayesian model

Yixuan Liu [1], Jiayi Ge [2], Geyang Xu [3], Chengfei Cai [1 4], Depin Chen [1 4], Jingru Tian [2 5], Jun Xu [1 4]

Affiliations Expand

- PMID: 41641462

- DOI: 10.1093/bjd/ljag025

Abstract

Background: Atopic dermatitis (AD) is a chronic inflammatory skin disease often associated with asthma and rhinitis. However, epidemiological evidence on these comorbidities remains fragmented and is largely limited to high-income countries.

Objectives: To provide comprehensive global, regional and country-level estimates of the prevalence and odds ratios (ORs) of asthma, rhinitis and their subtypes among individuals with AD.

Methods: We systematically reviewed 278 studies retrieved from PubMed, Embase, Web of Science and CNKI (China National Knowledge Infrastructure). Standardized prevalence estimates and ORs were derived using a Bayesian hierarchical linear mixed-effects model.

Results: Among individuals with AD, the global prevalence estimate of asthma, rhinitis, allergic rhinitis, rhinoconjunctivitis, and coexisting asthma and rhinitis was 20.1% (ranging from 2.5% in Israel to 59.4% in India), 45.1% (ranging from 7.8% in Israel to 82.7% in India), 41.4% (ranging from 6.8% in Israel to 80.3% in India), 30.7% (ranging from 4.3% in Israel to 71.9% in India) and 10.4% (ranging from 1.1% in Israel to 40.8% in India), respectively. Estimates were higher when restricted to patients with AD diagnosed by dermatologists or physicians. The highest comorbid prevalence rates were found for India, Cuba, Finland and Puerto Rico. Compared with healthy control individuals, AD was associated with higher odds of asthma (OR

2.73; ranging from 1.59 in China to 6.64 in Ethiopia), rhinitis (OR 2.98; ranging from 1.73 in China to 7.23 in Ethiopia), allergic rhinitis (OR 2.42; ranging from 1.41 in China to 5.89 in Ethiopia), rhinoconjunctivitis (OR 4.21; ranging from 2.45 in China to 10.19 in Ethiopia), and coexisting asthma and rhinitis (OR 2.42; ranging from 1.41 in China to 5.89 in Ethiopia).

Conclusions: This study provides the first globally standardized estimates of respiratory comorbidities in AD, and can inform clinical practice and public health policy.

Plain language summary

Atopic dermatitis is a common long-term inflammatory skin disease. It is also called eczema. It affects more than 200 million children and adults worldwide. People with the disease often have other conditions, particularly asthma and rhinitis. Asthma affects breathing and rhinitis causes sneezing or congestion. Most studies on these conditions have been in wealthy countries. They have also used a range of different research methods. This makes it difficult to compare and understand the global situation. In this study, researchers in China and the USA analysed data from 278 studies from around the world. We estimated how common asthma and rhinitis are in people with eczema in different regions and countries. We found that about 1 in 5 people with eczema have asthma and almost half have rhinitis. We also found that people with eczema are 2 to 4 times more likely to have these conditions than people without eczema. Some countries showed particularly high rates of these conditions. Our findings suggest that asthma and rhinitis are common problems for people with eczema. This is true no matter where they live. The information from this study may help doctors recognize and manage these conditions in people with eczema. These findings could also support future research to improve disease prevention and patient care.

Supplementary info

Publication types, MeSH terms, Grants and fundingExpand

chronic cough

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Respir Med

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. 2026 May 19:259:108897.

doi: 10.1016/j.rmed.2026.108897. Online ahead of print.

Real-world prescribing patterns of inhaled corticosteroid-containing inhalers following acute respiratory tract infections: A nationwide claims database study

Jumpei Taniguchi [1], Shotaro Aso [2], Hideo Yasunaga [3]

Affiliations Expand

- PMID: 42162922

- DOI: 10.1016/j.rmed.2026.108897

Abstract

Background: Inhaled corticosteroid (ICS)-containing inhalers are not routinely recommended for acute cough following respiratory tract infections in patients without chronic respiratory diseases; however, they are sometimes prescribed for acute cough. This study aimed to characterize real-world patterns of inhaled therapy initiation following respiratory tract infections.

Methods: This retrospective descriptive study utilized an administrative claims database in Japan. We identified adult outpatients without chronic respiratory diseases, who were diagnosed with acute upper or lower respiratory tract infections between 2006 and 2022, and enrolled those who received an ICS-containing inhaler within 21 days of the diagnosis. We assessed treatment patterns, diagnostic examinations (imaging, blood tests, and pulmonary function testing), and medication costs. Potentially inappropriate prescription was defined as inhaler initiation without diagnostic examinations from the respiratory tract infection diagnosis to 30 days after initiation, with no re-prescription within 90 days.

Results: Among 4,640,282 eligible patients, 267,887 (5.8%) received an ICS-containing inhaler. The median time to initiation was 1 day; most prescriptions were issued on the day of diagnosis. Pulmonary function testing was performed in 16.7% of patients. The proportion of re-prescription within 90 days was 26.0%. Overall, 40.3% met the definition of potentially inappropriate prescription. In these patients, the median cost of ICS-containing inhalers was USD 20.0, representing 59.3% of the total medication expenditure for respiratory tract infections.

Conclusions: ICS-containing inhalers were sometimes prescribed as one-time treatments following respiratory tract infections without objective evaluation, reflecting short-term empirical use rather than maintenance therapy and potentially contributing to inefficient healthcare resource utilization.

Keywords: Asthma; Drug prescriptions; Health care costs; Inhaled corticosteroids; Low-value care.

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.

2

Review

Otolaryngol Clin North Am

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. 2026 May 20:S0030-6665(26)00072-1.

doi: 10.1016/j.otc.2026.04.005. Online ahead of print.

The Pulmonologist's Approach to the Diagnosis and Treatment of Cough

David Posner[1]

Affiliations Expand

- PMID: 42161710

- DOI: 10.1016/j.otc.2026.04.005

Abstract

Cough is one of the most common symptoms prompting medical consultation and represents a diagnostic challenge due to its multifactorial nature and often overlapping

etiologies. This review outlines the pulmonologist's systematic approach to the evaluation and management of cough, emphasizing the importance of classifying cough as acute, subacute, or chronic to guide investigation and treatment. Overall, this article underscores the complexity of cough evaluation and the necessity of a comprehensive, patient-centered approach. This article describes the pulmonologist's approach to the diagnosis and treatment of cough and how it interplays with the otolaryngologist's evaluation. The need for an interdisciplinary approach to diagnoses and treat cough is emphasized.

Keywords: Acute cough; Asthma; Bronchiectasis; Bronchiolitis; Bronchitis; Chronic cough; Pneumonitis.

Conflict of interest statement

Disclosure The author has no conflicts of interest to disclose.

Supplementary info

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3

Review

Otolaryngol Clin North Am

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. 2026 May 20:S0030-6665(26)00049-6.

doi: 10.1016/j.otc.2026.03.023. Online ahead of print.

Building and Implementing a Multidisciplinary Cough Clinic

Salma Ahsanuddin [1], Seymour I Huberfeld [2], William E Karle [3]

Affiliations Expand

- PMID: 42161709

- DOI: 10.1016/j.otc.2026.03.023

Abstract

This article provides a practical guide to building a multidisciplinary chronic cough clinic, a model designed to enhance clarity and efficiency in addressing a condition that is often challenging to diagnose and manage. Given that chronic cough frequently stems from overlapping causes and evaluations may be prolonged and fragmented, coordinated assessment is essential. The article highlights the value of otolaryngology and pulmonology jointly assessing patients together at the initial visit, supported by well-defined referral pathways to gastroenterology, allergy, and speech-language pathology.

Keywords: Chronic cough; Cough clinic; Otolaryngology; Otolaryngology clinic; Pulmonology.

Conflict of interest statement

Disclosure The authors have nothing to disclose.

Supplementary info

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4

BMC Pulm Med

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. 2026 May 19.

doi: 10.1186/s12890-026-04352-6. Online ahead of print.

Clinical and phenotypic characteristics of chronic cough patients without sputum eosinophilia

Qiaoli Chen [# 1 2], Jingxuan Wang [# 3], Jinghan Cai [4], Kaicheng Xu [4], Sihong Yang [4], Ye Lin [4], Zhuowen Zhang [4], Chenxi Wang [4], Qisen Yang [4], Zimo Xu [4], Yun Chen [1], Shan Zhong [1], Xin Zhao [5], Zheng Deng [6 7]

Affiliations Expand

- PMID: 42157039

- DOI: 10.1186/s12890-026-04352-6

Free article

Abstract

Background: Corticosteroid treatment has no effect in patients without sputum eosinophilia. Sputum neutrophils and lymphocytes contribute to chronic cough hypersensitivity. The characteristics of chronic cough patients without sputum eosinophilia have not been investigated.

Methods: This study included a total of 1061 patients at the First Affiliated Hospital of Guangzhou Medical University between July 2021 and June 2024 (Approval number: ES-2024-K117-02). We analyzed clinical characteristics, sputum cell profiles, spirometry, and pulmonary lesions across four groups: chronic cough patients with normal sputum (n = 180), lymphocytotic sputum (n = 270), neutrophilic sputum (n = 349), and mixed leukocytotic sputum (n = 262).

Results: Gastroesophageal reflux cough was the most prevalent disease in chronic cough patients with normal sputum. Atopic cough was more common in patients with lymphocytotic sputum. COPD and bronchiectasis were more prevalent in both neutrophilic and leukocytotic sputum groups. Advanced age was a characteristic of patients with neutrophilic or leukocytotic sputum. Patients with neutrophilic sputum had a higher prevalence of smoking history and a longer smoking duration. Pulmonary lesions were less severe in patients with lymphocytotic sputum but more severe in those with neutrophilic or leukocytotic sputum. Compared to patients with normal sputum, both neutrophilic and leukocytotic sputum groups exhibited marked reductions in overall lung function (FVC% of predicted, FEV1% of predicted, FEV1/FVC% of predicted, and PEF% of predicted) and small airway function (MMEF% of predicted, FEF75% of predicted, and FEF50% of predicted). Associations were observed among age, smoking history, sputum neutrophil percentages, pulmonary lesions, and declined lung functions. Elevated sputum neutrophils were independently associated with reduced lung function across multiple parameters (FVC% of predicted, FEV1/FVC% predicted, FEV1/VCmax% predicted, PEF% predicted, MMEF% of predicted, and FEF50% of predicted), despite robust adjustment for age and the presence of COPD, bronchiectasis, and interstitial lung disease.

Conclusions: Advanced age and smoking history are risk factors for elevated sputum neutrophils in chronic cough patients. Neutrophil-mediated airway inflammation is associated with pulmonary lesions and declined lung functions in chronic cough patients.

Keywords: Chronic cough; Declined lung functions; Pulmonary lesions; Smoking history; Sputum neutrophils.

Conflict of interest statement

Declarations. Ethics approval and consent to participate: All subjects provided written informed consent for this study, which was approved by the Ethics Committee of the First Affiliated Hospital of Guangzhou Medical University (Approval number: ES-2024-K117-02). The study adhered to ethical standards and principles of research outlined by the Declaration of Helsinki. Consent for publication: Not applicable. Competing interests: The authors declare no competing interests.

Supplementary info

Grants and fundingExpand

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5

BMC Pediatr

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. 2026 May 18;26(1):439.

doi: 10.1186/s12887-026-07004-0.

Bronchoscopic abnormalities in children with chronic nonspecific cough

Rehab Elmeazawy [1], Ahmed M Elniny [2], Ahmed Mohamed Abdel Razik [2], Ahmed A Abo-Elezz [2], Amira Youssef [3], Mahitab Morsy Hussein [4]

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- PMID: 42151924

- PMCID: PMC13188504

- DOI: 10.1186/s12887-026-07004-0

Abstract

Background: Chronic nonspecific cough in children is a common and challenging clinical problem. Flexible bronchoscopy plays a crucial role in identifying underlying etiologies when non-invasive investigations are inconclusive. This study aimed to assess bronchoscopy and related diagnostic findings in children presenting with chronic cough.

Methods: This prospective cross-sectional study included 64 children aged 3 months to 18 years who presented with chronic nonspecific cough lasting more than four weeks. All patients underwent a standardized evaluation that included clinical assessment, laboratory tests, chest X-ray, and high-resolution CT. Pulmonary function testing was performed in children older than five years. Flexible bronchoscopy was conducted, and bronchoalveolar lavage samples were examined for cytological and microbiological analysis.

Results: This prospective study included 64 children (32 males) with a median age of 8 months (IQR 36-84) with chronic cough, classified as dry (n = 38), wet (n = 21), or barking (n = 5) cough. Bronchoscopy revealed abnormalities in 87.5% of cases, most commonly purulent secretions and congenital airway anomalies. BAL showed neutrophilia in 95.3%, and cultures were positive in 20.3%, mainly for Haemophilus influenzae and Streptococcus pneumoniae. For predicting PBB, the combined multivariable model demonstrated good discriminative ability (AUC = 0.809, P = 0.004). Increasing age (OR = 1.038, P = 0.024) and tobacco smoke exposure (OR = 4.15, P = 0.04) were significant independent predictors. For congenital airway anomalies, the combined model demonstrated excellent predictive performance (AUC = 0.912, P < 0.001), outperforming individual clinical variables.

Conclusion: Flexible bronchoscopy demonstrated a high diagnostic yield in children with chronic cough that remained unexplained following comprehensive noninvasive evaluation. However, a definitive assessment of its clinical utility requires direct comparison with other diagnostic modalities, which is addressed in the subsequent analysis.

Keywords: Airway anomalies; Bronchoalveolar lavage; Children; Chronic cough; Flexible bronchoscopy; Protracted bacterial bronchitis.

Conflict of interest statement

Declarations. Ethics approval and consent to participate: This study was performed in accordance with the principles of the Declaration of Helsinki. Approval was granted by the research ethics committee of the Faculty of Medicine, Tanta University (approval number 34314/12/20). Written informed consent was obtained from the parents or caregivers of

study participants. Consent for publications: Not applicable. Competing interests: The authors declare no competing interests.

- 35 references
- 5 figures

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Review

Eur Respir J

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. 2026 May 21;67(5):2502358.

doi: 10.1183/13993003.02358-2025. Print 2026 May.

The pathobiology and treatment of mucus plugs in asthma and COPD: state of the art

John V Fahy[1]

Affiliations Expand

- PMID: 41713949

- DOI: 10.1183/13993003.02358-2025

Abstract

Recent studies using computed tomography have uncovered a high prevalence of airway mucus plugs in patients with asthma and COPD. These mucus plugs persist in the same airways for years and often occur in patients without symptoms of cough and sputum production. Mucus plugs associate strongly with measures of airflow obstruction and disease morbidity in both asthma and COPD, and they occur and persist despite treatment with high doses of inhaled and oral corticosteroids. Thus, airway mucus plugs have emerged as an underappreciated airway pathology in asthma and COPD and a cause of persistent airflow obstruction and disease morbidity that can be specifically targeted for treatment. This narrative review covers the pathobiology of mucus plugs in asthma and COPD with three areas of emphasis: 1) prevalence and clinical features; 2) mechanisms of formation and persistence; and 3) current and emerging treatments.

Conflict of interest statement

Conflict of interest: J.V. Fahy reports consultancy fees from Connect Biopharma, Abbvie, Paratus Sciences and Kymera, and is founder, board member and consultant for Aer Therapeutics, a company developing an inhaled mucolytic drug for muco-obstructive lung disease.

Supplementary info

Publication types, MeSH terms, SubstancesExpand

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

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Comment

Eur Respir J

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. 2026 May 21;67(5):2600012.

doi: 10.1183/13993003.00012-2026. Print 2026 May.

Mucoactive therapies and the European Respiratory Society guideline for adult bronchiectasis: what now after the CLEAR trial?

James D Chalmers [1], Charles S Haworth [2], Patrick Flume [3], Merete B Long [4], Pierre Régis Burgel [5], Katerina Dimakou [6], Francesco Blasi [7 8], Beatriz Herrero Cortina [9 10], Raja Dhar [11], Sanjay H Chotirmall [12 13], Felix C Ringshausen [14 15 16], Josje Altenburg [17], Lucy Morgan [18], Mattia Nigro [19 20], Oriol Sibila [21], Pamela J McShane [22], Kevin Winthrop [23], Michael R Loebinger [24], Natalie Lorent [25 26], Pieter Goeminne [27], Michal Shteinberg [28 29], Eva Polverino [30], Stefano Aliberti [19 20]

Affiliations Expand

- **PMID: 42167772**

- **DOI: 10.1183/13993003.00012-2026**

No abstract available

Conflict of interest statement

Conflict of interest: J.D. Chalmers declares grants and personal fees from Antabio, AstraZeneca, Boehringer Ingelheim, CSL Behring, Genentech, Gilead Sciences, GlaxoSmithKline, Grifols, Insmed, Novartis, Pfizer, Trudell and Zambon. C.S. Haworth declares grants or personal fees from 30 Technology, AstraZeneca, BiomX, Chiesi, Insmed, Lifearc, Pneumagen, Vertex and Zambon. P. Flume declares grants from Aceragen. Boehringer Ingelheim, Insmed, National Institutes of Health, Renovion, Sanofi, Synchrony, Verona, BiomX, COPD Foundation, Inogen and Zambon. P.R. Burgel declares grants and personal fees from AstraZeneca, Chiesi, GSK, Insmed, MSD, Novartis, Pfizer, Sanofi, Vertex, Viatris and Zambon. F. Blasi declares grants and personal fees from Chiesi, GlaxoSmithKline, Grifols, Insmed, Menarini, OM Pharma, Pfizer, Sanofi, Vertex, Viatris and Zambon. R. Dhar declares grants and personal fees from Abbott, Cipla, Glenmark, GlaxoSmithKline, Lupin, Sanofi, Thorasys and Zuventus. S.H. Chotirmall declares grants or personal fees from Boehringer Ingelheim, Chiesi, Inovio and Pneumagen. F.C. Ringshausen declares grants and personal fees from i!DE Werbeagentur, German Center for Infection Research (DZIF), German Center for Lung Research (DZL), German Cystic Fibrosis Patient Advisory Group (Mukoviszidose e.V.), German Kartagener Syndrome and Primary Ciliary Dyskinesia Patient Advisory Group, Grifols, Helmholtz Center for Infection Research, Innovative Medicines Initiative (IMI; EU/EFPIA) and the iABC Consortium, Boehringer Ingelheim, Chiesi, Insmed, Mukoviszidose Institute, Novartis, Pari, Parion Sciences, Sanofi, Vertex and Zambon. L. Morgan declares grants or personal fees from AstraZeneca, GSK, Insmed and Zambon. P.J. McShane declares personal fees from Boehringer Ingelheim and Insmed. K. Winthrop declares grants and personal fees from Insmed and Zambon. M.R. Loebinger declares personal fees from 30 Technologies, AN2 Therapeutics, Armata, AstraZeneca, Boehringer Ingelheim, Chiesi, Electromed, Ethris, Insmed, Mannkind, Parion, Recode and Zambon. N. Lorent declares personal fees from GlaxoSmithKline and Insmed. P. Goeminne declares personal fees from Chiesi, GSK and MDF. M. Shteinberg declares grants or personal fees from AstraZeneca, Boehringer Ingelheim, Bonus biogroup, Dexxon, GSK, Kamada, Rafa, Sanofi and Synchrony Medical. E. Polverino declares grants and/or personal fees from Chiesi, Insmed, Grifols, Pari, CSL Behring, Moderna, Pfizer, Shionogi, Shire, Teva, Vertex and Zambon. S. Aliberti declares grants or personal fees from

AstraZeneca, Brahms, Chiesi, GlaxoSmithKline, Insmed, Menarini and Physioassist. The remaining authors have no potential conflicts of interest to disclose.

Comment on

- European Respiratory Society clinical practice guideline for the management of adult bronchiectasis.

Chalmers JD, Haworth CS, Flume P, Long MB, Burgel PR, Dimakou K, Blasi F, Herrero-Cortina B, Dhar R, Chotirmall SH, Ringshausen FC, Altenburg J, Morgan L, Nigro M, Crichton ML, Van Meel C, Sibila O, Timothy A, Kompatsiari E, Hedberg T, Vandendriessche T, McShane PJ, Tonia T, Winthrop K, Loebinger MR, Lorent N, Goeminne P, Shteinberg M, Polverino E, Aliberti S.Eur Respir J. 2025 Dec 18;66(6):2501126. doi: 10.1183/13993003.01126-2025. Print 2025 Dec.PMID: 41016738

Supplementary info

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Review

Am J Physiol Lung Cell Mol Physiol

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. 2026 May 21.

doi: 10.1152/ajplung.00321.2025. Online ahead of print.

Impaired mucociliary clearance in bronchiectasis: the result of a differentiation-delayed airway epithelium?

Andrew T Reid [1 2], Punnam Chander Veerati [1 2], Kristy S Nichol [3 4], Michael Schuliga [3 4], Jane Read [3 4], Adam M Collison [1 2], Peter A B Wark [5 6 7], Felicia Ton [7], Christopher L Grainge [1 2 7]

Affiliations Expand

- PMID: 42166638

- DOI: 10.1152/ajplung.00321.2025

Abstract

Impaired mucociliary clearance (MCC) is a potential targetable feature of bronchiectasis, however it is difficult to model outside of the patient, thus there remains little mechanistic evidence to suggest what drives it. To unravel the complexities associated with assessing mucociliary clearance we have established a 4-parameter assessment, the Newcastle Cilia and Mucus (NewCAM) score, which quantifies active ciliated area, cilia beat frequency, apical particle velocity and mucus viscosity *in vitro*. Additionally single-cell RNA (scRNA) sequencing was used to assess the breakdown of epithelial cell types within this model. Bronchial epithelial cells from bronchiectasis donors, cultured for 28 days at the air-liquid interface (ALI), exhibited lower active ciliated area (*P<0.05*) and apical particle velocity (*P<0.05*) compared to healthy donor cells using NewCAM. ScRNA analysis indicated a modest increase in immature basal cell-types in bronchiectasis donor cultures, at the expense of terminally differentiated cell-types such as ciliated and secretory cells during differentiation. Taken together, these results suggest that bronchial epithelial cells from bronchiectasis donors are temporally delayed in their differentiation and fail to meet levels of MCC observed in their healthy counterparts under equivalent growth conditions over the same timeframe.

Keywords: bronchiectasis; cilia; epithelium; mucociliary clearance; single-cell RNA.

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Case Reports

Breathe (Sheff)

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. 2026 May 18;22(2):250330.

doi: 10.1183/20734735.0330-2025. eCollection 2026 Apr.

The diagnostic journey of a young adult with recurrent infections and progressive dyspnoea

Vinay Venugopal [1], Saurabh Karmakar [1], Gaurav Kumar Singh [1], Debapriya Maji [1], Alpana Srivastava [2], Jinit Rakeshbhai Soni [3]

Affiliations Expand

- PMID: 42164233
- PMCID: PMC13184696
- DOI: 10.1183/20734735.0330-2025

Abstract

Recurrent infections and unexplained bronchiectasis in adults should prompt evaluation for primary immunodeficiency. Early recognition and immunoglobulin therapy can improve outcomes in common variable immunodeficiency. https://bit.ly/4qy2qoJ.

Conflict of interest statement

Conflict of interest: The authors have nothing to disclose.

- 20 references
- 4 figures

Supplementary info

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4

Review

Otolaryngol Clin North Am

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doi: 10.1016/j.otc.2026.04.005. Online ahead of print.

The Pulmonologist's Approach to the Diagnosis and Treatment of Cough

David Posner [1]

Affiliations Expand

- PMID: 42161710

- DOI: 10.1016/j.otc.2026.04.005

Abstract

Cough is one of the most common symptoms prompting medical consultation and represents a diagnostic challenge due to its multifactorial nature and often overlapping etiologies. This review outlines the pulmonologist's systematic approach to the evaluation and management of cough, emphasizing the importance of classifying cough as acute, subacute, or chronic to guide investigation and treatment. Overall, this article underscores the complexity of cough evaluation and the necessity of a comprehensive, patient-centered approach. This article describes the pulmonologist's approach to the diagnosis and treatment of cough and how it interplays with the otolaryngologist's evaluation. The need for an interdisciplinary approach to diagnoses and treat cough is emphasized.

Keywords: Acute cough; Asthma; Bronchiectasis; Bronchiolitis; Bronchitis; Chronic cough; Pneumonitis.

Conflict of interest statement

Disclosure The author has no conflicts of interest to disclose.

Supplementary info

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doi: 10.1186/s12890-026-04352-6. Online ahead of print.

Clinical and phenotypic characteristics of chronic cough patients without sputum eosinophilia

Qiaoli Chen [#1,2], Jingxuan Wang [#3], Jinghan Cai [4], Kaicheng Xu [4], Sihong Yang [4], Ye Lin [4], Zhuowen Zhang [4], Chenxi Wang [4], Qisen Yang [4], Zimo Xu [4], Yun Chen [1], Shan Zhong [1], Xin Zhao [5], Zheng Deng [6,7]

Affiliations Expand

- PMID: 42157039

- DOI: 10.1186/s12890-026-04352-6

Free article

Abstract

Background: Corticosteroid treatment has no effect in patients without sputum eosinophilia. Sputum neutrophils and lymphocytes contribute to chronic cough hypersensitivity. The characteristics of chronic cough patients without sputum eosinophilia have not been investigated.

Methods: This study included a total of 1061 patients at the First Affiliated Hospital of Guangzhou Medical University between July 2021 and June 2024 (Approval number: ES-2024-K117-02). We analyzed clinical characteristics, sputum cell profiles, spirometry, and pulmonary lesions across four groups: chronic cough patients with normal sputum (n = 180), lymphocytotic sputum (n = 270), neutrophilic sputum (n = 349), and mixed leukocytotic sputum (n = 262).

Results: Gastroesophageal reflux cough was the most prevalent disease in chronic cough patients with normal sputum. Atopic cough was more common in patients with lymphocytotic sputum. COPD and bronchiectasis were more prevalent in both neutrophilic and leukocytotic sputum groups. Advanced age was a characteristic of patients with neutrophilic or leukocytotic sputum. Patients with neutrophilic sputum had a higher prevalence of smoking history and a longer smoking duration. Pulmonary lesions were less severe in patients with lymphocytotic sputum but more severe in those with neutrophilic or leukocytotic sputum. Compared to patients with normal sputum, both neutrophilic and leukocytotic sputum groups exhibited marked reductions in overall lung function (FVC% of predicted, FEV1% of predicted, FEV1/FVC% of predicted, and PEF% of predicted) and small airway function (MMEF% of predicted, FEF75% of predicted, and FEF50% of predicted). Associations were observed among age, smoking history, sputum neutrophil percentages, pulmonary lesions, and declined lung functions. Elevated sputum neutrophils were independently associated with reduced lung function across multiple parameters (FVC% of predicted, FEV1/FVC% predicted, FEV1/VCmax% predicted, PEF% predicted, MMEF% of predicted, and FEF50% of predicted), despite

robust adjustment for age and the presence of COPD, bronchiectasis, and interstitial lung disease.

Conclusions: Advanced age and smoking history are risk factors for elevated sputum neutrophils in chronic cough patients. Neutrophil-mediated airway inflammation is associated with pulmonary lesions and declined lung functions in chronic cough patients.

Keywords: Chronic cough; Declined lung functions; Pulmonary lesions; Smoking history; Sputum neutrophils.

Conflict of interest statement

Declarations. Ethics approval and consent to participate: All subjects provided written informed consent for this study, which was approved by the Ethics Committee of the First Affiliated Hospital of Guangzhou Medical University (Approval number: ES-2024-K117-02). The study adhered to ethical standards and principles of research outlined by the Declaration of Helsinki. Consent for publication: Not applicable. Competing interests: The authors declare no competing interests.

Supplementary info

Grants and fundingExpand

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6

Respirology

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. 2026 May 19.

doi: 10.1002/resp.70265. Online ahead of print.

Active Cycle of Breathing Technique Versus Oscillating Positive Expiratory Pressure Therapy Versus Exercise With Huffing During an Exacerbation of Bronchiectasis: A Randomised, Controlled Trial

Jennifer Phillips [1 2], Rodney Pope [1 3], Wayne Hing [1], Ashleigh Canov [2], Nicole Harley [4], Annemarie L Lee [5 6]

Affiliations Expand

- **PMID: 42155584**

- **DOI: 10.1002/resp.70265**

Abstract

Background and objective: The relative effectiveness of airway clearance techniques (ACTs) during an exacerbation of bronchiectasis is unknown. This study aimed to compare the effects of three ACTs on sputum expectoration, health-related quality-of-life (HRQOL), and exacerbation rates in adults hospitalised with an exacerbation of bronchiectasis.

Methods: A randomised controlled trial of active cycle of breathing technique (ACBT), oscillating positive expiratory pressure (OPEP) therapy and walking with huffing. Sputum wet weight was collected during ACT sessions, 1-h post-session and the following 23 h on day 2 and day of discharge. HRQOL was assessed using the Quality of Life-Bronchiectasis (QoL-B) questionnaire and Leicester Cough Questionnaire (LCQ) on day 2 and day of discharge. Time to first exacerbation was explored for 6 months following discharge.

Results: Fifty-five participants were recruited. ACBT was associated with smaller sputum wet weight 1-h post session on day of discharge compared to walking with huffing (mean difference -2.58 g); no other significant differences between groups in sputum weights were observed. ACBT and walking with huffing significantly improved selected measures of HRQOL (LCQ total score and multiple QOL-B domains) at hospital discharge while OPEP therapy produced minimal changes. ACBT (158 days, 95% CI 139-177) resulted in a longer time to first exacerbation than walking with huffing (118 days, 95% CI 83-154) and OPEP therapy (89 days, 95% CI 69-111) but this finding should be interpreted with caution due to loss to follow-up.

Conclusion: Walking with huffing and ACBT gave similar improvements in sputum expectoration and HRQOL during hospitalisation in adults with an exacerbation of bronchiectasis.

Trial registration: The study was registered on the Australian and New Zealand Clinical Trials Registry (ACTRN12621000428864) on 16-04-2021.

Keywords: airway clearance; airway clearance techniques; bronchiectasis; exacerbation; physiotherapy.

- **49 references**

Supplementary info

Grants and fundingExpand

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7

Lancet Respir Med

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. 2026 May 19:S2213-2600(26)00089-5.

doi: 10.1016/S2213-2600(26)00089-5. Online ahead of print.

Rethinking bronchiectasis through a metabolic lens

Laura Garriga-Grimau [1]

Affiliations Expand

- PMID: 42155497

- DOI: 10.1016/S2213-2600(26)00089-5

No abstract available

Conflict of interest statement

I declare no competing interests.

Full text links

Cite

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Lancet Respir Med

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. 2026 May 19:S2213-2600(26)00057-3.

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Comorbid diabetes disease severity and microbial changes in patients with bronchiectasis: a combined analysis of data from the EMBARC, EMBARC-India, Australian, and BE-China registries

Rebecca C Hull [1], Yang Liu [2], Zu Cao [3], Kathryna Tan Li Xuan [1], Daniela Alferes de Lima Headley [1], Hollian Richardson [1], Chandani Hennayake [1], Holly Lind [1], Eve McIntosh [1], Jennifer Pollock [1], Chloe Hughes [1], Kateryna Viligorska [1], Hayoung Choi [4], Yonghua Gao [5], Sanjay H Chotirmall [6], Amelia Shoemark [1], Kara Robertson [1], Pierre-Regis Burgel [7], Montserrat Vendrell [8], Xianghuai Xu [2], Jie-Ming Qu [9], Yuanlin Song [10], Wei-Jie Guan [11], Rongchang Chen [12], Sheetu Singh [13], Deepak Talwar [14], B V Murali Mohan [15], Surya Kant Tripathi [16], Rajesh Swarnakar [17], Sonali Trivedi [2], Pieter C Goeminne [18], Michal Shteinberg [19], Anthony De Soyza [20], Josje Altenburg [21], Charles S Haworth [22], Oriol Sibila [23], Eva Polverino [24], Michael R Loebinger [25], Felix C Ringshausen [26], Pontus Mertsch [27], Natalie Lorent [28], Katerina Dimakou [29], Raul Mendez [30], Anne Marie Mclaughlin [31], Zoe Borrill [32], Robert Lord [33], Simon Finch [34], Francesco Blasi [35], Lucy Burr [36], Meg Crisafulli [37], Rebecca Keating [38], Peter G Middleton [39], Merete B Long [1], Stefano Aliberti [40], Lucy Morgan [41], Raja Dhar [42], James D Chalmers [43], Jin-Fu Xu [44]; EMBARC, EMBARC India, Australian bronchiectasis registry and BE-China

Affiliations Expand

- PMID: 42155496

- DOI: 10.1016/S2213-2600(26)00057-3

Abstract

Background: Bronchiectasis and diabetes commonly coexist and are associated with immune dysfunction and increased susceptibility to infection. Although diabetes is associated with worse prognosis in cystic fibrosis-related bronchiectasis, data are scarce for its impact on non-cystic fibrosis bronchiectasis. This study aimed to characterise the impact of diabetes on clinical outcomes and microbial and inflammatory profiles in patients with bronchiectasis.

Methods: This analysis comprised data from the European Bronchiectasis Registry (EMBARC), Respiratory Research Network of India (EMBARC-India), Chinese Bronchiectasis Registry (BE-China), and Australian Bronchiectasis Registry (ABR); 30 263 patients with CT-confirmed bronchiectasis in 33 countries were included in the analysis: 16 963 from EMBARC (Jan 12, 2015, to April 12, 2022), 2361 from EMBARC-India plus additional Asian countries (June 1, 2015, to Sept 1, 2017), 10 324 from BE-China (Jan 10, 2020, to March 31, 2024), and 615 from the ABR (March 7, 2016, to Sept 11, 2018). Clinical data were compared between patients with and without diabetes. Long-term outcome data were available in EMBARC and EMBARC-India. Microbiome and inflammatory profiles were characterised in a sub-cohort of EMBARC patients by sputum 16S rRNA sequencing (n=433) and serum Olink (n=479).

Findings: 2487 (8·2%) of 30 263 patients with bronchiectasis had diabetes. Patients with diabetes had a higher prevalence of comorbidities than those without diabetes,

including cardiovascular disorders (53·5% vs 21·8%, p<0·0001), asthma (27·5% vs 21·0%, p<0·0001), and chronic obstructive pulmonary disease (34·3% vs 19·0%, p<0·0001). Patients with diabetes had more severe disease than those without diabetes, with higher Bronchiectasis Severity Index scores (8 [IQR 5-12] vs 7 [4-10], p<0·0001) and UK Medical Research Council (MRC) dyspnoea scores (p<0·0001) and more hospital admissions in the previous year (p<0·0001). After adjustment for confounders, outcomes were significantly worse in patients with diabetes than in those without diabetes, including more frequent exacerbations (incidence rate ratio [IRR] 1·18 [95% CI 1·09-1·28], p<0·0001), hospital admissions (IRR 1·57 [1·40-1·76], p<0·0001), and higher 5-year mortality (hazard ratio 1·80 [1·53-2·12], p<0·0001). The sputum microbiome was significantly altered in patients with diabetes compared to those without diabetes, with increased isolation of Enterobacteriaceae (p<0·0001), Moraxella catarrhalis (p=0·0035), and Haemophilus influenzae (p=0·046). In serum, Gal-4 and GDF-15, established biomarkers of disease severity and cardiovascular risk in diabetes, were significantly increased in patients with diabetes (Gal-4, p<0·0001; GDF-15, p=0·0019).

Interpretation: Patients with diabetes and bronchiectasis are a high-risk population with more severe disease, worse outcomes, increased comorbidities, and increased risk of infections compared with patients without diabetes. These findings support inclusion of diabetes as a risk factor in individualised risk assessments for bronchiectasis.

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Conflict of interest statement

Declaration of interests HC reports grants or contracts from the Korean Ministry of Education (numbers RS-2025-25423084 and 2021R1I1A3052416) and AstraZeneca, consulting fees from Gilead, Boehringer Ingelheim, and Abbott, and lecture fees from Kolong, Boryung, Abbott, Otsuka, and Handok. SHC reports grants or contracts from the Singapore Ministry of Education and Singapore Ministry of Health's National Medical Research Council, with payments made to the institution; consulting fees from Boehringer Ingelheim, CSL Behring, Pneumagen, Sanofi, GSK and Zaccha Pte; lecture fees from AstraZeneca, CSL Behring, Boehringer Ingelheim, and Chiesi Farmaceutici; and participation on a data safety monitoring board or advisory board for Inovio Pharmaceuticals and Imam Abdulrahman Bin Faisal University. AS reports grants or contracts from Astrazeneca, Lifearc, and Insmed; fees for consulting or educational talks from Spirovant, Translate Bio, ReCode Therapeutics, Ethris, and Insmed; and leadership or fiduciary roles as Chair of the BEAT-PCD (Better Experimental Approaches to Treat Primary Ciliary Dyskinesia) European Respiratory Society clinical research consortium and involvement in European Respiratory Society Clinical Research Collaborations (EMBARC and AMR

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9

Review

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Impact of climate, air pollution, and urbanization on chronic respiratory infections

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Abstract

Introduction: chronic respiratory infections represent a significant source of global morbidity and mortality, especially among individuals with structural lung diseases or compromised defenses. Emerging evidence highlights the role of environmental factors - such as climate change, air pollution, and urbanization - in the epidemiology and progression of these infections.

Areas covered: this review synthesizes current research on the interactions between climate conditions, pollution, and urbanization in bronchiectasis, cystic fibrosis, nontuberculous mycobacterial (NTM) pulmonary disease, and chronic pulmonary aspergillosis. A search of relevant medical literature in the English language was conducted in Medline/PubMed, EMBASE and Scopus up to January 2026. Increases in temperature, fluctuations in humidity, extreme weather events (e.g. heatwaves, floods, and cold spells), and elevated concentrations of particulate matter contribute to both pathogen proliferation and increased host susceptibility, which impact the severity and incidence of chronic respiratory infections, particularly those caused by environmental pathogens such as non-tuberculous mycobacteria and Aspergillus spp. respiratory infections. Higher urban density and changes in microbial ecosystems further enhance transmission and chronicity.

Expert opinion: Understanding the complex interactions between environmental stressors and respiratory health and incorporating environmental risk assessment into clinical practice and public health policy is crucial for reducing disease burden in the context of accelerating climate change.

Keywords: Bronchiectasis; aspergillosis; climate; cystic fibrosis; non-tuberculous mycobacteria; pollution; urbanization; weather.

Supplementary info

Publication typesExpan