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

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Review

Cochrane Database Syst Rev

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doi: 10.1002/14651858.CD015930.pub2.

Alpha 1 antitrypsin augmentation therapy for alpha 1 antitrypsin deficiency-associated lung disease

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Affiliations Expand

- **PMID: 42626936**

- **DOI: 10.1002/14651858.CD015930.pub2**

Abstract

Rationale: Alpha-1 antitrypsin (AAT) is a protein produced by the liver that stops certain enzymes from harming body tissues, especially in the lungs. AAT deficiency (AATD) is a genetic condition that can manifest clinically as chronic obstructive pulmonary disease (COPD), causing cough and breathlessness. AAT augmentation

therapy could help prevent or slow the progression of COPD in people with AATD. Whilst correcting the protein deficit seems a logical approach to treating a condition caused by a protein deficiency, this intervention is only worthwhile if it leads to improvements in clinically important outcomes. The evidence synthesised in a previous Cochrane review (last updated in 2016) was insufficient to conclude whether AAT augmentation therapy influenced any clinical outcomes. However, no inhaled AAT augmentation therapy studies were available for inclusion in that review, only studies on intravenous AAT augmentation therapy.

Objectives: To assess the effects of alpha 1 antitrypsin (AAT) augmentation therapy on respiratory disease in people with alpha 1 antitrypsin deficiency (AATD).

Search methods: We searched CENTRAL, MEDLINE, Embase, and two trials registries to August 2025. We checked the reference lists of included articles and other related papers for any additional studies.

Eligibility criteria: We included randomised controlled trials (RCTs). Cluster-RCTs were also eligible if the data had been, or could be, adjusted for clustering. We included studies comparing AAT augmentation by any route (inhaled, intravenous, or subcutaneous) with AAT augmentation by a different route, placebo, or no treatment. We excluded studies that compared different doses of AAT via the same route, without a placebo or no treatment group.

Outcomes: Our critical outcomes were annual airway disease exacerbation rate, all-cause mortality, and participants experiencing one or more serious adverse events.

Risk of bias: We used the Cochrane risk of bias tool (RoB 2).

Synthesis methods: Two review authors independently extracted data and assessed the risk of bias. We conducted meta-analyses to calculate odds ratios (ORs) for dichotomous outcomes, and mean differences (MDs) or standardised mean differences (SMDs) for continuous outcomes, all with corresponding 95% confidence intervals (CIs). We used GRADE to assess the certainty of evidence for our critical outcomes.

Included studies: Six multicentre studies randomised a total of 526 people with AATD and analysed the results for 524 participants. The studies were conducted in Europe, North America, and Australia and were published between 1997 and 2025. The route of AAT administration was intravenous in four studies and inhaled in two studies. This review has three new studies compared to the 2016 Cochrane review.

Synthesis of results: Intravenous AAT augmentation therapy versus placebo Intravenous AAT augmentation therapy may increase the annual airway disease exacerbation rate slightly compared with placebo (MD 0.29 exacerbations, 95% CI 0.04 to 0.54; P = 0.02, I^2 = 0%; 2 studies, 257 participants; low-certainty evidence, downgraded for serious imprecision and indirectness). It may make little or no difference to all-cause mortality (OR 0.30, 95% CI 0.03 to 2.98; P = 0.31; 2 studies, 187 participants; low-certainty evidence, downgraded for very serious imprecision). We are uncertain whether intravenous AAT augmentation therapy has an impact on the risk of experiencing one or more serious adverse events (OR 0.67, 95% CI 0.32 to 1.41; P = 0.29, I^2 = 43%; 2 studies, 257 participants; very low-certainty evidence, downgraded for serious inconsistency and indirectness and very serious imprecision). Inhaled AAT augmentation therapy versus placebo We are uncertain if

inhaled AAT augmentation therapy has an impact on the annual airway disease exacerbation rate compared with placebo (MD 0.45 exacerbations, 95% CI -0.42 to 1.32; P = 0.31; 1 study, 168 participants; very low-certainty evidence, downgraded for serious indirectness and very serious imprecision). It may make little or no difference to the risk of experiencing one or more serious adverse events (OR 5.33, 95% CI 0.61 to 46.54; P = 0.13, I^2 = 0%; 2 studies, 204 participants; low-certainty evidence, downgraded for very serious imprecision). No studies reported all-cause mortality.

Authors' conclusions: Compared with placebo, intravenous AAT augmentation therapy may have little or no effect on all-cause mortality but may increase the annual airway disease exacerbation rate slightly. We are uncertain if intravenous AAT augmentation therapy has any effect on the risk of serious adverse events. Inhaled AAT augmentation therapy may have little or no effect on the annual airway disease exacerbation rate or the risk of serious adverse events.

Funding: This Cochrane review had no dedicated funding.

Registration: Protocol (2024) DOI: 10.1002/14651858.CD015930.

- 65 references

Supplementary info

Publication types, MeSH terms, SubstancesExpand

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Genet Med

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Development of a simple clinical score to prioritize detection of severe alpha-1 antitrypsin deficiency with PiZZ genotype

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- PMID: 42626852

- DOI: 10.1016/j.gim.2026.102690

Abstract

Purpose: Alpha-1 antitrypsin deficiency (AATD) is caused primarily by the PiZZ genotype in SERPINA1 and remains underdiagnosed despite its association with severe lung and liver diseases. We aimed to develop and validate a clinical score using electronic health record (EHR) data to identify individuals more likely to carry the PiZZ genotype.

Materials and methods: In the UK Biobank (UKB; N = 277,082), we developed the clinical score using logistic regression with variable selection based on medical conditions and anthropometric measurements. We evaluated its performance against random screening and targeted screening based on individual medical conditions in an independent UKB test dataset (N = 69,272) and the NIH All of Us Research Program (AoU; N = 162,198).

Results: The optimized clinical score included chronic obstructive pulmonary disease, bronchiectasis, cirrhosis, and height. In the UKB test dataset and AoU, the score outperformed any single phenotype in identifying PiZZ genotype. Targeting individuals in the top 0.5% of the score increased screening efficiency by >95% compared with random screening and outperformed all medical condition-based screening strategies.

Conclusion: Using readily available EHR data, the clinical score represents a starting point that may improve targeted case-finding and optimize allocation of diagnostic resources for AATD.

Keywords: Alpha-1 antitrypsin deficiency; Bronchiectasis; Chronic obstructive pulmonary disease; Cirrhosis; Clinical score.

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Associations of current and life-course smoking and indoor environmental exposures with lung function level in early adulthood

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- PMID: 42625685

- PMCID: PMC13490050

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Abstract

Background: Lung function, expressed as forced expiratory volume in 1 second (FEV_1), reaches its maximum at 20-30 years of age. A lower maximal lung function has been associated with a higher risk of chronic obstructive pulmonary disease in later adulthood, but the impact of smoking and indoor environmental exposures on this maximum remains unclear.

Methods: Using data from 858 participants of the Dutch PIAMA birth cohort (mean age: 25.7 years), we investigated associations between smoking, second-hand smoke (SHS), dampness or mold, furry pets, and gas cooking exposure with maximal lung function. Exposure data were collected via questionnaires from pregnancy through early adulthood, and life-course exposure trajectories were derived using latent class growth modeling. We assessed associations with FEV_1 and forced vital capacity (FVC) using linear regression, adjusting for potential confounders.

Results: Pre- and post-bronchodilator spirometry was available for 846 and 806 participants, respectively. We found no associations between exposure to dampness or mold, furry pets, or gas cooking and lung function. Current and life-course active smoking was associated with higher post-bronchodilator FEV_1, and pre- and post-bronchodilator FVC [regression coefficient β for pre-bronchodilator FVC (ml) (95% confidence interval): current (yes vs. no) 175 (68, 281), life-course (regular vs. occasional or none) 168 (55, 281)]. Current SHS was positively associated with post-bronchodilator FVC.

Conclusion: No associations were found between indoor environmental exposures and maximal lung function in early adulthood. The observed positive associations with active smoking likely reflect bias arising from a selective uptake of smoking by individuals with higher pre-existing lung function, rather than a true physiological effect.

Keywords: indoor environmental exposures; longitudinal data; lung function; smoking; spirometry.

Conflict of interest statement

We declare the following potential conflicts of interest: G.H.K. reports grants from the Lung Foundation Netherlands, TEVA the Netherlands, VERTEX, European Union (Horizon grant), ZON-MW (VICI grant), and Growth Fund the Netherlands outside the submitted work. His institution received compensation for lectures and/or consultancy from AZ, Boehringer Ingelheim, Sanofi, and PURE-IMS. The other authors declare no competing interests.

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Lancet Respir Med

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Symptom burden to characterise, predict, and prevent asthma attacks: a patient-level meta-analysis of randomised trials and translational prospective studies

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- **PMID: 42624803**

- DOI: 10.1016/S2213-2600(26)00150-5

Abstract

Background: Asthma symptoms often guide disease assessment and management, but their prognostic and predictive value is unclear. We evaluated the extent to which symptom burden measured by the 5-item Asthma Control Questionnaire (ACQ-5) predicts future severe asthma attacks and response to anti-inflammatory therapy.

Methods: We conducted an individual participant data meta-analysis of selected randomised controlled trials and translational observational cohort studies of asthma of varying severity. Primary analyses used the ORACLE2 patient-level meta-analysis (n=6513) of control-group participants from 22 randomised controlled trials. Additional datasets from studies assessing type 2 targeting anti-inflammatory therapies were included on the basis of availability of data, to provide insight into the association between ACQ-5 and sputum cell counts or mediator data. Additional datasets were the DREAM intravenous mepolizumab group (n=461); a cross-sectional severe asthma cohort (SA-OT, n=74); and two acute asthma cohorts (PRISMA, biologic-naive, n=53; BOOST, anti-interleukin-5-treated, n=60). Associations between baseline ACQ-5 scores and clinical, physiological, and inflammatory profiles, asthma attack risk, and anti-inflammatory treatment responses were examined.

Findings: Across five datasets encompassing 7161 distinct participants, asthma severity, lung function, inflammatory profiles, comorbidities, and ACQ-5 results varied widely. The proportion of patients with high symptom burden (ACQ-5 score >1·5) ranged from 39% to 100%. Baseline ACQ-5 showed no consistent cross-sectional association with other clinical, physiological, or inflammatory asthma features. Each 0·5-point increase in baseline ACQ-5 score was associated with a modest increase in future asthma attack risk (adjusted rate ratio [aRR] 1·09 [95% CI 1·06-1·12]; ΔR^2=0·02 vs multivariable prediction model without ACQ-5). Baseline ACQ-5 score did not alter relative and absolute attack risk reduction from intravenous mepolizumab in DREAM. By contrast, patients with high blood eosinophil counts and high fractional exhaled nitric oxide (FeNO) had the highest relative and absolute risk reduction (2·81 vs 1·17 attacks; aRR 0·38 [95% CI 0·25-0·57]). In the PRISMA and BOOST datasets, ACQ-5 was not associated with post-corticosteroid lung function change. Across studies, relative and absolute treatment effects showed consistent associations with blood eosinophil counts and FeNO.

Interpretation: In a large, individual patient-level meta-analysis of randomised controlled trials and translational prospective observational cohort studies, we observed little alignment of symptom burden with other clinical, physiological, or biological features of asthma and modest prognostic value for severe attacks. Conversely, type 2 biomarkers more reliably identified patients at high risk and those likely to respond to treatment. Symptoms might require contextual interpretation to guide anti-inflammatory escalation in asthma.

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Conflict of interest statement

Declaration of interests SC has received non-restricted research grants from the National Institute for Health and Care Research Oxford Biomedical Research Centre, the Quebec Respiratory Health Research Network, the Association Pulmonaire du Québec, the Academy of Medical Sciences, AstraZeneca, bioMérieux, Circassia Niox Group, and Sanofi-Genyme-Regeneron; is the holder of the Association Pulmonaire du Québec's Research Chair in Respiratory Medicine and is a clinical research scholar of the Fonds de recherche du Québec; has received speaker honoraria from AstraZeneca, GlaxoSmithKline, Sanofi-Regeneron, Circassia Niox Group, and Valeo Pharma; has received consultancy fees from FirstThought, Apogee Therapeutics, Connectio biopharma, Upstream Bio, AstraZeneca, GlaxoSmithKline, Sanofi-Regeneron, Access Biotechnology and Access Industries; has received sponsorship to attend or speak at international scientific meetings by or for AstraZeneca and Sanofi-Regeneron; is an advisory board member and holds stock options for Biometry (a company developing a fractional exhaled nitric oxide device called myBiometry); is co-inventor for the patent filed as Method for alleviating dyspnoea with neuromodulation; advised the Institut national d'excellence en santé et services sociaux for an update of the asthma general practice information booklet for general practitioners as well as therapeutic indications for Enerzair; and is a member of the asthma steering committee of the Canadian Thoracic Society. CC-P received an education scholarship from the Université de Sherbrooke within the submitted work, and outside the submitted work, received speaker honoraria from AstraZeneca, GlaxoSmithKline, and Sanofi-Regeneron, and consultancy fees from AstraZeneca, GlaxoSmithKline, and Sanofi-Regeneron. PL reports an investigator-initiated unrestricted research grant from Sanofi-Regeneron for the submitted work; outside the submitted work, he reports consulting fees from AstraZeneca, GlaxoSmithKline, and Sanofi-Regeneron, and speaker honoraria from AstraZeneca, GlaxoSmithKline, Sanofi-Regeneron, Boehringer Ingelheim, and Novartis. LGH has received grant funding, participated in advisory boards, and given lectures at meetings supported by Amgen, AstraZeneca, Boehringer Ingelheim, Circassia, Hoffmann la Roche, GlaxoSmithKline, Novartis, Theravance, Evelo Biosciences, Sanofi, and Teva; has received grants from MedImmune, Novartis UK, Roche Genentech, Glaxo Smith Kline, Amgen, Astra Zeneca, MedImmune, Glaxo Smith Kline, Aerocrine, and Vitalograph; has received sponsorship for attending international scientific meetings from AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, and Napp Pharmaceuticals; has taken part in asthma clinical trials sponsored by AstraZeneca, Boehringer Ingelheim, Hoffmann la Roche, and GlaxoSmithKline for which his institution received remuneration; and is the Academic Lead for the Medical Research Council Stratified Medicine UK Consortium in Severe Asthma, which involves industrial partnerships with a number of pharmaceutical companies including Amgen, AstraZeneca, Boehringer Ingelheim, GlaxoSmithKline, Hoffmann la Roche, and Janssen. PB has received research funding from Genentech via the University Hospitals of Leicester NHS Trust and DEShawResearch via the University of Leicester, consultancies for Genentech and DEShawResearch via the University of Leicester, one honorarium from AstraZeneca, and support to attend scientific meetings from GSK and Sanofi Genzyme. SR reports grants from the Charlies Research Foundation, the National Health and Medical Research Council, the Medical Research Future Fund, and the Raine Medical Research Foundation paid to

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from AstraZeneca, Aretriea, Circassia, Amgen, Novartis, Chiesi, Sanofi-Regeneron, Menarini, GSK, Teva, Merck, and Genentech, and holds stock options for Upstream Bio and Mybiometry. All other authors declare no competing interests.

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Thorax

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Impact of sex, socioeconomic deprivation, ethnicity and region on exacerbation rates and mortality of chronic respiratory diseases in England: population-based cohorts

Hannah Whittaker [1], Thomas Bolton [2 3], Ian Sinha [4], Liam G Heaney [5], John Busby [6], Gwyneth A Davies [7], Aziz Sheikh [8], Jennifer K Quint [9]; CVD-COVID-UK/COVID-Impact Consortium; CVD-COVID-UK/COVID-IMPACT Consortium

Collaborators, Affiliations Expand

- PMID: 42624774

- DOI: 10.1136/thorax-2026-224765

Abstract

Background: Inequalities in chronic respiratory diseases persist, yet up-to-date evidence on outcomes remains limited. We described national mortality and exacerbation rates in people with asthma and chronic obstructive pulmonary disease (COPD) since the beginning of the COVID-19 pandemic and assessed variation by inequalities.

Methods: England primary care records from the General Practice Extraction Service data for Pandemic Planning and Research were linked to Hospital Episode Statistics and Office for National Statistics mortality data. Cohorts of primary care diagnosed asthma and COPD were defined prior to 1 November 2019. Monthly age-sex-standardised exacerbation rates (Systematized Nomenclature of Medicine Clinical Terms (SNOMED-CT) and Internationl Classification of Diseases (ICD) 10

codes) and mortality rates (ICD-10 codes) were calculated from 1 November 2019 to 31 March 2025, stratified by sex, Index of Multiple Deprivation (IMD), ethnicity and region.

Results: The study included 7644 510 people with asthma and 1 211 975 with COPD. Mean monthly exacerbation rates were higher in females than males (33% and 30% higher for asthma and COPD, respectively), while mean monthly all-cause mortality rates were 13% and 15% higher in males than females. Mean monthly exacerbation and all-cause mortality rates were higher in IMD-1 compared with IMD-10 across all conditions (asthma: 123% and 100% higher, COPD: 68% and 41% higher, respectively). Mean monthly all-cause mortality and exacerbation rates were higher in the northeast than the southwest (asthma: 22% and 69% COPD: 15% and 42% higher, respectively). Outcome rates varied by ethnicity across conditions.

Conclusions: Inequalities in chronic respiratory disease outcomes persist across England despite sustained policy focus on reducing health inequalities.

Keywords: Asthma Epidemiology; COPD epidemiology; COVID-19.

Conflict of interest statement

Competing interests: HW reports a grant from NIHR BRC for work conducted in the NHSE SDE. AS reports grants from HDRUK and ISCF for the submitted work and from asthma and lung UK outside the submitted work. JKQ reports grants from Industrial Strategy Challenge Fund, MRC and HDR UK for the submitted work and from GSK, Evidera, Chiesi and AZ outside the submitted work. TB, JB, LH and GD have no conflicts of interest.

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Trends and disparities in mortality due to coexisting diabetes mellitus and chronic obstructive pulmonary disease among adults in the U.S. (1999-2023): insights from the CDC WONDER database

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- PMID: 42624461

- DOI: 10.1016/j.jcjd.2026.07.004

Abstract

Background: Diabetes mellitus (DM) and chronic obstructive pulmonary disease (COPD) are major health concerns in the United States, with both diseases contributing significantly to mortality. However, the trends in mortality due to the co-occurrence of these conditions from 1999 to 2023 remain underexplored.

Methods: This study utilized data from the CDC WONDER database, focusing on death certificates with both DM and COPD listed as causes. We analyzed deaths among individuals aged 35 and older, categorized by demographic (age, sex, race/ethnicity) and geographic factors. Crude mortality rates (CMRs) and age-adjusted mortality rates (AAMRs) were calculated. Joinpoint regression analysis was used to assess mortality trends, with the annual percent change (APC) and average annual percent change (AAPC) determining rate shifts across time periods.

Results: From 1999 to 2023, the AAMR for DM and COPD increased by 1.5 times, peaking in 2021 before declining by 2023. Significant increases in mortality were observed across sexs, with males consistently showing higher rates. Racial disparities were evident, with non-Hispanic Black and American Indian populations experiencing higher AAMRs. Age group analysis revealed a sharp rise in mortality among older adults, particularly those aged 65+. Geographically, rural areas exhibited higher AAMRs than metropolitan regions, with the South showing the highest mortality rates.

Conclusions: The mortality burden from coexisting DM and COPD has significantly increased over the past two decades, particularly among older adults and certain racial/ethnic groups. These findings highlight the need for targeted public health interventions and healthcare strategies to address these disparities.

Keywords: CDC WONDER; Chronic obstructive pulmonary disease; Diabetes mellitus; Health disparities; Mortality.

Comparative Study

PLoS One

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Synthetic data augmentation for CT-based emphysema subtype classification: A comparative evaluation of generative and classical approaches

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- DOI: 10.1371/journal.pone.0355850

Free article

Abstract

Data scarcity is a persistent challenge in medical image analysis. Synthetic data generation using deep generative models has been proposed as a potential approach to address this limitation, yet its performance in small-data settings remains poorly characterized. This study compared three class-conditional generative approaches, a conditional variational autoencoder (cVAE), a conditional shallow-decoder VAE variant (cSD-VAE), and a conditional Wasserstein GAN with gradient penalty (cWGAN-GP), against classical geometric augmentation for emphysema subtype classification on 168 CT patches (three classes: normal tissue, centrilobular emphysema, and paraseptal emphysema). Each method was evaluated at three synthetic-to-real ratios (0.5x, 1.0x, 2.0x) using patient-level 70/30 splits across 10 random seeds, with an ImageNet-pretrained ResNet18 as the downstream classifier. No individual augmentation strategy produced a statistically significant improvement in balanced accuracy over the unaugmented baseline (0.522 ± 0.067). The conditional WGAN-GP at 1.0x achieved the highest individual balanced accuracy (0.548 ± 0.068, Cohen's d = 0.47 versus baseline), but did not reach statistical significance (p = 0.084). A pre-specified ensemble combining all four augmentation methods at the 1.0x multiplier did not significantly improve balanced accuracy over baseline (0.541 ± 0.088 versus 0.522 ± 0.067; Cohen's d = 0.32, Wilcoxon p = 0.275). Neither pixel-space nor feature-space distributional fidelity was associated with downstream classification performance. Overall, no benefit was detected from class-conditional generative augmentation in this small-data, texture-driven setting. Future work should focus on improving generative modeling under

small-data conditions, including task-aware objectives and pathology-constrained synthesis.

Conflict of interest statement

The authors have declared that no competing interests exist.

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Clin Chem Lab Med

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Added value of leukocyte-derived data for identifying exacerbations in chronic obstructive pulmonary disease

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- PMID: 42618552

- DOI: 10.1515/cclm-2026-0877

No abstract available

Keywords: chronic obstructive pulmonary disease acute exacerbation; emergency department; inflammation biomarkers; neutrophil cell population data; neutrophil-lymphocyte ratio.

- 9 references

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Chest

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Mepolizumab and Dupilumab Show No Significant Difference in Reducing Exacerbations in Patients with COPD and an Eosinophilic Phenotype: Matching-Adjusted Indirect Treatment Comparison

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Affiliations Expand

- PMID: 42617837

- DOI: 10.1016/j.chest.2026.07.5242

Abstract

Background: Mepolizumab and dupilumab are monoclonal antibodies targeting type 2 inflammation that are both approved as add-on maintenance treatment in patients with inadequately controlled chronic obstructive pulmonary disease (COPD) and an eosinophilic phenotype.

Research question: What is the comparative efficacy of mepolizumab and dupilumab in reducing the risk of exacerbations and improving health-related quality of life in patients with COPD and an eosinophilic phenotype?

Study design and methods: This study used a robust matching-adjusted indirect comparison (MAIC) approach to compare pooled efficacy data from three Phase III, randomized, placebo-controlled COPD trials of mepolizumab (METREX [NCT02105948], METREO [NCT02105961], and MATINEE [NCT04133909]) with two trials of dupilumab (BOREAS [NCT03930732] and NOTUS [NCT04456673]). An

indirect comparison was performed using MAIC, reweighting individual patient data from mepolizumab trials using propensity score-based methods to match the aggregate baseline characteristics of the dupilumab trial populations. To match the more restrictive eligibility criteria of the dupilumab trials, patients from the mepolizumab studies were included in this MAIC if they had blood eosinophil counts ≥300 cells/μL at screening, modified Medical Research Council scale grade ≥2, moderate-to-severe airflow limitation, and chronic bronchitis (CB) (defined by investigator assessment or St George's Respiratory Questionnaire for COPD [SGRQ-C]). Outcomes included rate/risk of exacerbations and health-related quality of life (SGRQ-C).

Results: No statistically significant differences were observed in the reduction of the annualized rate of moderate/severe exacerbations (rate ratio [95% confidence interval]: 0.91 [0.60, 1.37] using investigator-assessed CB and 1.13 [0.80, 1.58] using SGRQ-C CB definition). No statistically significant differences were observed in SGRQ-C changes.

Interpretation: In this MAIC study, there were no statistically significant differences between mepolizumab and dupilumab in the magnitude of effect in reducing moderate/severe exacerbations and improving health-related quality-of-life outcomes.

Keywords: Biologics; chronic obstructive pulmonary disease; eosinophilic phenotype; indirect treatment comparison; interleukin-5; matching-adjusted indirect comparison; type 2 inflammation.

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J Am Med Inform Assoc

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. 2026 Aug 19:ocag117.

doi: 10.1093/jamia/ocag117. Online ahead of print.

SMART: structured, meaningful, auditable, responsible, and transparent documentation for clinical AI

Ankur Lohachab [1], Frédéric Jung [2], Stef Rommes [2], Gökhan Ertaylan [2], Anshu Ankolekar [3 4], Visara Urovi [1]

Affiliations Expand

- PMID: 42616679

- DOI: 10.1093/jamia/ocag117

Abstract

Objective: Clinical AI systems and models increasingly need traceable documentation that makes intended use, performance evidence, transparency, and lifecycle status explicit, yet existing model cards, datasheets, reporting guidelines, and other documentation approaches do not consistently bring together structured clinical fields, vocabulary-linked cohort descriptions, structured performance reporting, and governed documentation history. We introduce Structured, Meaningful, Auditable, Responsible, and Transparent (SMART), a framework that adapts the model card concept into structured, lifecycle-aware documentation with OMOP integration, role-based lifecycle governance, and a blockchain-backed audit trail for verifying documentation integrity and lifecycle history.

Materials and methods: Following a design-science-informed approach, we analyzed documentation requirements, reviewed existing approaches, implemented SMART through open-source packages and smart contracts, and evaluated it using example SMART model cards, an illustrative COPD exacerbation risk-prediction documentation case study, and blockchain-governed lifecycle experiments.

Results: The design process resulted in the SMART framework in which documentation provisions are reflected across Schema, Lifecycle, and Chain (ie, Blockchain) components. Evaluation showed that, in multi-party settings, documentation history remains independently verifiable because lifecycle actions are role-attributed and linked to content hashes; median testnet gas use ranged from 352 722 to 852 399 gas across the evaluated lifecycle operations.

Discussion: SMART positions clinical AI documentation as a shared infrastructure for preliminary model assessment, making role attribution, lifecycle state, and documentation changes more transparent and traceable over time.

Conclusion: By providing an implementable framework, SMART illustrates how clinical AI documentation can be structured, clinically contextualized, auditable, responsible, transparent, and lifecycle-aware.

Keywords: artificial intelligence; blockchain; documentation; electronic health records; medical records systems computerized; reproducibility of results.

Supplementary info

Grants and fundingExpand

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Cite

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Randomized Controlled Trial

Pulmonology

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. 2026 Dec;32(1):2718606.

doi: 10.1080/25310429.2026.2718606. Epub 2026 Aug 19.

Elastic tape as an add-on strategy to potentiate pulmonary rehabilitation outcomes in nonobese males with moderate-to-very severe COPD: A randomised clinical trial

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- PMID: 42614062

- DOI: 10.1080/25310429.2026.2718606

Free article

Abstract

Background and objective: Pulmonary rehabilitation (PR) improves exercise capacity but has limited effects on ventilatory constraints in severe COPD. Application of elastic tape (ET) is a potential adjunctive strategy that improves ventilatory efficiency, but its effects during PR remain un lear. This study investigated whether ET potentiates PR benefits on exercise capacity, health status, psychological symptoms, and health-related quality of life (HRQoL) in individuals with COPD.

Methods: Forty-two nonobese men with moderate-to-very severe COPD were randomised to ET or Sham groups during an 8-week PR programme. The primary outcome was endurance shuttle walk test (ESWT) time; secondary outcomes included COPD Assessment Test (CAT), Chronic Respiratory Questionnaire (CRQ), and Hospital Anxiety and Depression Scale (HADS).

Results: ESWT improved by +329s in the ET group, exceeding the MCID. Greater CAT improvements (p = 0.02), and a higher proportion achieving minimal clinically

important difference (MCID) (48% vs. 29%; $p = 0.02$) were observed in the ET group. Only ET group achieved MCIDs for depression ($p = 0.003$) and anxiety ($p = 0.02$). HRQoL improved similarly in both groups. The only outcome with a significant time × group interaction was HADS-D ($p = 0.001$), improved by ET. Only This study was performed in accordance with the Declaration of Helsinki. This human study was approved by Ethics Committee for Analysis of Research Projects (CAPPesq) of School of Medicine of the University of São Paulo - Hospital das Clínicas (approval 55 617 321.20000.0068). All adult participants provided written informed consent to participate in this study. Clinical Trial Registration number NCT05939999 (https://clinicaltrials.gov), registered on October 26th, 2025.ET group presented moderate-to-large effect sizes for ESWT (d = 0.89), HADS-A (d = 0.51) and HADS-D (d = 1.02).

Conclusions: ET potentiates PR benefits on exercise capacity, health status, and psychological symptoms in individuals with moderate-to-very severe COPD.

Keywords: Moderate-to-very severe COPD; elastic tape; exercise capacity; health status; pulmonary rehabilitation.

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Eosinophilic Inflammation in Severe Asthma: Pathophysiology, Clinical Identification, and Therapeutic Implications

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Affiliations Expand

- PMID: 42613890

- DOI: 10.1080/02770903.2026.2721170

Abstract

Objective: To provide a clinically grounded and pathobiological review of eosinophilic inflammation in severe asthma, addressing mechanisms, diagnostic interpretation, and implications for biologic therapy selection.Data Sources: Narrative review of guidelines, pivotal phase 2-3 randomized controlled trials, meta-analyses, registry data, and key translational studies evaluating eosinophils, type 2 (T2) inflammation, and targeted biologic therapies in severe asthma and eosinophilic chronic obstructive pulmonary disease.Study Selections: Publications were selected based on clinical relevance, methodological rigor, and impact on contemporary severe asthma management. Evidence was critically appraised and integrated with expert clinical perspective. No predefined systematic protocol or formal risk-of-bias assessment was undertaken.

Results: Eosinophils are central effector cells in T2-high severe asthma, contributing to airway inflammation, epithelial injury, mucus plugging, and remodelling. Interleukin (IL)-5 is the principal regulator of eosinophil maturation and survival, while IL-4, IL-13, and epithelial alarmins modulate tissue recruitment and amplification of inflammation. Blood eosinophil count (BEC) remains the most accessible biomarker in practice; however, its interpretation requires contextualization, considering corticosteroid exposure, biological variability, age at onset, and comorbidities. No single biomarker fully reflects airway eosinophilia, supporting a multidimensional assessment integrating clinical phenotype, longitudinal biomarkers, imaging, lung function, and therapeutic response. Biologics have transformed outcomes, with greater efficacy generally observed at higher BEC levels.

Conclusion: Eosinophilia should be interpreted as a contextual biomarker within a comprehensive clinical framework. Precision phenotyping is essential to optimize biologic selection and advance toward sustained disease control and clinical remission in severe asthma.

Keywords: Biologic therapy; Precision Medicine; Severe Asthma; eosinophilic inflammation; tissue eosinophilia.

Supplementary info

Publication typesExpand

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13

Review

Eur Respir Rev

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. 2026 Aug 18;35(181):260144.

doi: 10.1183/16000617.0144-2026. Print 2026 Jul.

The future of home oxygen therapy

Anne E Holland [1 2 3], Jerry A Krishnan [4], Yves Lacasse [5], Humberto Gomes [6], Filip Björklund [7], Richard Casaburi [8], Joao de Andrade [9], Michelle N Eakin [10], David Hui [11], Susan S Jacobs [12], Shohei Kawachi [13], Yet H Khor [14 3 15 16], François Maltais [5], Christine F McDonald [3 15 16], Hugh Musick [4], Chris Ryerson [17], Magnus Ekström [7 18]

Affiliations Expand

- PMID: 42613080

- PMCID: PMC13482683

- DOI: 10.1183/16000617.0144-2026

Abstract

Home oxygen therapy is a well-accepted treatment for advanced respiratory disease; however, there are substantial evidence gaps and implementation challenges. The patient experience varies widely; oxygen therapy devices are often poorly matched to patient needs; and adherence is suboptimal. Recent clinical trials have failed to demonstrate positive outcomes of home oxygen therapy across a range of indications and patient groups, raising new questions regarding which patients will benefit. We convened a home oxygen therapy summit, bringing together experts in the fields of hypoxia biology, biomarkers, home oxygen therapy, behavioural science, and clinical trials, to identify the critical steps necessary to advance the science and practice of home oxygen therapy. Prescription of oxygen therapy depends on identification of hypoxaemia, with or without evidence of end-organ dysfunction. However, this does not acknowledge that hypoxaemia does not always yield hypoxia, and ignores adaptation to hypoxia. There is a pressing need for a hypoxia biomarker that is sensitive and specific, reflects the mechanisms of adaptation and maladaptation to chronic hypoxia, and is responsive to change with supplemental oxygen. Advances in research and clinical care will require more

"usable" devices that meet the needs of patients and provide value for payers. Optimising oxygen devices will require new technologies with greater portability and greater capacity for oxygen delivery. Registry-based clinical trials may allow measurement of long-term outcomes and identification of patients most likely to benefit from oxygen therapy. Collaborations between patients, clinicians, researchers, payers and industry will be critical to drive this field forward.

Conflict of interest statement

Conflict of interest: A.E. Holland, M. Ekström, F. Björklund, S.S. Jacobs, C. Ryerson, D. Hui, Y. Lacasse, M.N. Eakin, F. Maltais, H. Musick and S. Kawachi declare no conflicts of interest related to this work. Unrelated to this work, M. Ekström has received a research grant from ResMed; and personal fees from AstraZeneca, Boehringer Ingelheim, Novartis and Roche. Unrelated to this work, Y. Lacasse and F. Maltais report participation in Innovair, a company that holds shares in OxyNov, the owner of FreeO2, an automated oxygen delivery system. A.E. Holland, Y.H. Khor, M. Ekström and C.F. McDonald report in-kind support for a clinical trial from BOC Australia. A.E. Holland, Y.H. Khor, and C.F. McDonald report non-financial support from Air Liquide Healthcare, outside the submitted work. Y.H. Khor reports grants and personal fees from Boehringer Ingelheim, and personal fees from Chiesi, outside the submitted work. J.A. Krishnan reports research grants from the US National Heart, Lung, and Blood Institute, Patient Centered Outcomes Research Institute, COPD Foundation, American Lung Association and BioVie; and consulting fees from AstraZeneca, DynaMed/EBSCO, Genentech, Inogen, MedImmune and Verona Pharmaceuticals. J. de Andrade reports consulting fees from Inogen. H. Gomes is an employee of Linde GmbH. R. Casaburi has served on advisory boards for Inogen. A.E. Holland is a member of the European Respiratory Review editorial board.

- 31 references
- 3 figures

Supplementary info

Publication types, MeSH terms, SubstancesExpand

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14

Review

Physiother Theory Pract

. 2026 Aug 18:1-14.

doi: 10.1080/09593985.2026.2717391. Online ahead of print.

Arm exercise training in chronic obstructive pulmonary disease: an umbrella review of systematic reviews and meta-analyses

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Affiliations Expand

- PMID: 42610692

- DOI: 10.1080/09593985.2026.2717391

Abstract

Background: Due to systemic inflammation, long-term oxygen therapy, corticosteroids, and symptoms, skeletal muscle dysfunctions or myopathies are observed in patients with chronic obstructive pulmonary disease (COPD). To manage the extrapulmonary features of COPD, arm exercise training has gained increasing attention as a component of pulmonary rehabilitation. However, there is no consensus regarding the level of evidence for arm exercises.

Purpose: This umbrella review is aimed at synthesizing the findings about arm exercise training in patients with COPD.

Methods: This umbrella review was registered at PROSPERO (CRD420251230948). Six databases were screened from inception to May 2026 and results were imported into Rayyan AI tool for detailed screening. Systematic reviews and meta-analysis that investigated arm exercise were included. The AMSTAR-2 tool was used for methodological quality. The GRADE framework was used to determine the certainty of evidence for the findings.The overlap among primary studies was assessed using the corrected covered area.Results:A total of 1,835 patients with COPD were included in eight studies (5 meta-analyses and 3 systematic reviews). The methodological quality of the reviews was rated as high in one review, moderate in two reviews, low in three reviews, and critically low in two reviews.Arm exercises improved dyspnea with moderate certainty evidence and arm exercise capacity and muscle strength with low-certainty evidence. Moreover, the effects of arm exercise training on fatigue were inconsistent with low certainty, and quality of life and activities of daily living were inconsistent with very low certainty.

Conclusions: Arm exercise training may improve dyspnea and may enhance arm exercise capacity and muscle strength. However, confidence in these findings is limited by methodological weaknesses of the included reviews, overlap among primary studies, and heterogeneity in exercise interventions and outcome

measures.It may be considered as an adjunct to pulmonary rehabilitation to improve these outcomes.

Keywords: Chronic obstructive pulmonary disease; Dyspnea; arm; exercise; upper extremity.

Supplementary info

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15

ERJ Open Res

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. 2026 Aug 17;12(4):01625-2025.

doi: 10.1183/23120541.01625-2025. eCollection 2026 Jul.

Periostin and airway mucus plugs in nonasthmatic former smokers with and without COPD

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Affiliations Expand

- PMID: 42609798
- PMCID: PMC13478885
- DOI: 10.1183/23120541.01625-2025

Abstract

In nonasthmatic former smokers with high YKL-40, elevated serum periostin was associated with greater airway mucus plugs on CT, suggesting IL-13-mediated type 2 inflammation on neutrophilic inflammation drives mucus plugging https://bit.ly/4aApyyr.

Conflict of interest statement

Conflict of interest: N. Tanabe and T. Hirai reported grants from FujiFilm and Daiichi Sankyo. S. Sato reports grants or contracts from Nippon Boehringer Ingelheim, FujiFilm, Philips Japan, Fukuda Denshi, Fukuda Lifetec and Keiji. The remaining authors have no conflicts of interest to declare.

- 15 references
- 1 figure

Supplementary info

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ERJ Open Res

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. 2026 Aug 17;12(4):01559-2025.

doi: 10.1183/23120541.01559-2025. eCollection 2026 Jul.

Healthy diet is associated with better lung function, especially in individuals with COPD: findings from the Lifelines cohort study

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Affiliations Expand

- **PMID: 42609796**
- **PMCID: PMC13478883**
- **DOI: 10.1183/23120541.01559-2025**

Abstract

Objective: To investigate whether the association between diet and lung function (LF) differs according to asthma or COPD status in the Lifelines cohort study.

Methods: We included adults from Lifelines with valid dietary and spirometry data. Dietary quality was calculated at baseline using the Lifelines diet score (LLDS) (range 0-48, where higher scores indicate a healthier diet). LF was assessed *via* pre-bronchodilator spirometry (forced expiratory volume in 1 s (FEV_1), forced vital capacity (FVC) and FEV_1/FVC) at baseline and two follow-ups (~10 years). Cross-sectional associations between diet and LF were examined using linear regression and longitudinal associations with linear mixed-effects models. Interactions between diet and asthma or COPD were included.

Results: Higher LLDS was associated with higher LF and slower decline. In cross-sectional analyses (n=83 460, 59% female, mean age 44±13 years), higher LLDS was associated with higher FEV_1 and FEV_1/FVC levels in participants with asthma (FEV_1 $\beta_{interaction}$ (β_{int})=2.48 mL, 95% CI 0.68-4.27; FEV_1/FVC β_{int}=0.027%, 0.003-0.052) and COPD (FEV_1 β_{int}=8.31 mL, 6.93-9.69; FEV_1/FVC β_{int}= 0.094%, 0.079-0.109) compared with those without asthma or COPD. In longitudinal analyses (n=37 752, 59% female, age 46±11 years) in COPD-patients higher LLDS was associated with slower FEV_1 decline (β_{int}=0.18 mL·yr^{-1}, 0.04-0.33), FVC (β_{int}=0.23 mL·yr^{-1}, 0.04-0.41) and FEV_1/FVC (β_{int}=0.002%·yr^{-1}, 0.000-0.005) compared with those without COPD.

Conclusions: Higher diet quality was associated with better LF, particularly in those with asthma or COPD, and with slower decline in participants with COPD. These findings suggest that diet may be a modifiable factor in respiratory health.

Conflict of interest statement

Conflict of interest: All authors have confirmed that they have no conflicts of interest to declare.

- 39 references
- 3 figures

Full text links

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Cite

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. 2026 Aug 17:hcag217.

doi: 10.1093/qjmed/hcag217. Online ahead of print.

Associations Between Glucagon-like Peptide-1 Receptor Agonists and Respiratory Outcomes in Chronic Obstructive pulmonary disease and Diabetes

Kuang-Ming Liao [1 2], Ya-Wen Tsai [3], Konstantinos Kostikas [4], Gerard J Criner [5 6], Jheng-Yan Wu [7 8], Chih-Cheng Lai [9 10]

Affiliations Expand

- PMID: 42606949

- DOI: 10.1093/qjmed/hcag217

Abstract

Background: Chronic obstructive pulmonary disease (COPD) is frequently complicated by acute respiratory failure, pneumonia, exacerbations, and premature mortality, particularly in patients with comorbid type 2 diabetes (T2D). Glucagon-like peptide-1 receptor agonists (GLP-1RAs) possess anti-inflammatory and metabolic properties that may confer protective effects against COPD-related respiratory complications, but comparative evidence remains limited.

Methods: We conducted a retrospective cohort study using data from the TriNetX global federated health research network. Adults aged 40 years or older with both COPD and T2D who newly initiated GLP-1RAs, dipeptidyl peptidase-4 inhibitors (DPP-4is), sulfonylureas (SUs), or metformin between January 1, 2017, and May 31, 2025, were identified. An active-comparator, new-user design with 1:1 propensity score matching was applied. The primary outcome was incident acute respiratory failure. Secondary outcomes included all-cause mortality, all-cause hospitalization, acute exacerbation of COPD, and pneumonia, assessed over one year of follow-up.

Results: After propensity score matching, GLP-1RA use was associated with significantly lower risk of acute respiratory failure compared with DPP-4is (HR, 0.77; 95% CI, 0.73-0.81), SUs (HR, 0.80; 95% CI, 0.76-0.84), and metformin (HR, 0.91; 95% CI, 0.85-0.98). GLP-1RA use was also consistently associated with reduced risks of all-cause mortality, all-cause hospitalization, acute exacerbation of COPD, and pneumonia across all three comparator groups. Subgroup analyses demonstrated consistent protective trends across sex, age, exacerbation history, and inhaled bronchodilator regimen.

Conclusions: In patients with COPD and T2D, initiation of GLP-1RAs was associated with significantly lower risks of acute respiratory failure, pneumonia, acute exacerbation, hospitalization, and all-cause mortality compared with DPP-4is, SUs, and metformin. These findings suggest that GLP-1RA therapy may offer meaningful respiratory and survival benefits in this high-risk population.

Keywords: Chronic Obstructive Pulmonary Disease; acute exacerbation; diabetes mellitus; glucagon-like Peptide-1 Receptor Agonists.

Cite

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Respir Care

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. 2026 Aug 17:19433654261473335.

doi: 10.1177/19433654261473335. Online ahead of print.

Bronchoscopic and Surgical Interventions for Patients With COPD: A State-of-the-Art Review

Gerard J Criner [1]

Affiliations Expand

- PMID: 42606276

- DOI: 10.1177/19433654261473335

Abstract

COPD remains a leading cause of global morbidity and mortality, and a substantial minority of patients remain disabled by hyperinflation, chronic bronchitis, and exacerbations despite optimized inhaled pharmacotherapy and pulmonary rehabilitation. Over the past two decades, bronchoscopic interventions have matured from clinical trial investigation into guideline-endorsed treatments for patients with refractory symptoms despite optimal medical treatment. This state-of-the-art review synthesizes the mechanistic rationale, evidence-based clinical trial data, patient-selection criteria, key controversies, and future research needs for bronchoscopic lung volume reduction (BLVR) and airway-directed therapies. In rigorously selected patients with severe emphysema, hyperinflation, and absence of interlobar collateral ventilation, endobronchial valves deliver clinically meaningful, durable improvements in FEV_1, 6-min walk distance, dyspnea, and quality of life with moderate-to-high certainty and carry the highest guideline rating (GOLD Evidence A). Pneumothorax, occurring in roughly 18-34% of valve recipients, is the principal early complication, necessitating several days of in-patient monitoring that add

complexity and cost to care. Endobronchial coils and thermal vapor ablation offer fissure-independent but more modest benefit; airway scaffolds are an emerging, tissue-sparing option that may extend candidacy to patients ineligible for existing bronchoscopic approaches; targeted lung denervation may stabilize lung function and symptoms but did not reduce exacerbations in its pivotal trial; and bronchial rheoplasty and metered cryospray are emerging options for the chronic bronchitis phenotype. The field is now advancing toward expanding candidacy for endobronchial valve therapy through collateral ventilation conversion, individualized complication prediction, and phenotype-matched airway therapies. Multidisciplinary, imaging-driven patient selection that addresses the key features of a patient's symptoms while avoiding significant comorbidity remains the cornerstone of successful outcomes.

Keywords: COPD; airway scaffold; bronchoscopic lung volume reduction; chronic bronchitis.; collateral ventilation; emphysema; endobronchial valve; pneumothorax; targeted lung denervation.

Cite

19

Book

Typical Bacterial Pneumonia

Andrew D. Nguyen [1], Venkat Rajasurya [2]

In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2026 Jan.

2026 Aug 16.

Affiliations Expand

- PMID: 30485000

- Bookshelf ID: NBK534295

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Excerpt

Pneumonia is a common lower respiratory tract infection that results in significant morbidity and is a leading cause of hospitalization and mortality globally. Pneumonia can occur at any age, even without risk factors. However, it is more common in children younger than 5, adults older than 75, and those with risk factors such as cigarette smoking and chronic obstructive pulmonary disease.

Worldwide, pneumonia is the second most common cause of death in children younger than 5. In the United States, it is the second most common cause of hospitalization in children and adults. Depending on when and where the patient acquired the infection, pneumonia can be classified as community- or hospital-acquired pneumonia.

Community-acquired pneumonia is defined as pneumonia acquired in the community without prior contact with a healthcare setting. With the advent of rapid diagnostic tests, the organisms responsible for community-acquired pneumonia can now be identified faster, appropriate antimicrobial therapy can be administered sooner, and empiric antimicrobials can be de-escalated, thereby supporting good antimicrobial stewardship. Typical and atypical bacteria, as well as viruses, can cause community-acquired pneumonia.

These rapid diagnostics have also demonstrated that respiratory viruses play a more significant role in the epidemiology of community-acquired pneumonia than initially thought. These viruses can be the sole cause of pneumonia or its initial cause, followed by a secondary bacterial infection with a typical bacterium, such as *Streptococcus pneumoniae* or *Staphylococcus aureus.* This activity focuses on typical bacteria, including *S pneumoniae*, *Haemophilus influenzae*, *S aureus*, and *Moraxella catarrhalis.* Despite advancements in the prevention, diagnosis, and treatment of pneumonia, including vaccines, newer antimicrobials, and more rapid diagnostics, mortality is still high in older adults, especially those who present with respiratory failure or shock.

Conflict of interest statement

Disclosure: Andrew Nguyen declares no relevant financial relationships with ineligible companies.

Disclosure: Venkat Rajasurya declares no relevant financial relationships with ineligible companies.

- 59 references

Supplementary info

Publication typesExpand

Full text links

StatPearls [Internet]

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Cite

20

J Am Heart Assoc

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. 2026 Aug 18;15(16):e046201.

doi: 10.1161/JAHA.125.046201. Epub 2026 Aug 7.

Proteomic Mediators of Chronic Obstructive Pulmonary Disease Phenotypes and Coronary Artery Calcification Burden in Ever Smokers

Asghar Abbasi [1 2], Khadije Ahmad [3], Katherine A Pratte [4], Jeff Moore [1 2], Dawn L DeMeo [5], Venkat S Manubolu [3], April Kinninger [3], Nicholas B Tiller [1], Russell P Bowler [6], Mathew Budoff [3], Richard Casaburi [1 2], Harry B Rossiter [1 2]

Affiliations Expand

- PMID: 42568067

- DOI: 10.1161/JAHA.125.046201

Free article

Abstract

Background: Chronic obstructive pulmonary disease (COPD) increases cardiovascular disease risk. Coronary artery calcification (CAC) predicts cardiovascular events and mortality in COPD. We hypothesized that plasma proteins linked to pulmonary phenotypes mediate CAC burden.

Methods: Pulmonary function, emphysema, airway wall thickening, Agatston CAC scores (inverse normal transformed), and relative abundance of 1305 plasma proteins (log-transformed) were assessed in 989 Phase 1 COPDGene (Genetic Epidemiology of COPD) participants. Proteins associated with both pulmonary phenotypes (FEV_1[forced expiratory volume in 1 second]%predicted, FVC [forced vital capacity], FEV_1/FVC, emphysema, airway wall thickness, wall area percentage) and CAC (false discovery rate $P \leq 0.20$) were evaluated using multivariable mediation. Model adjustments included sex, age, race, body mass index, smoking, comorbidities, and medications. Adjustment for pulmonary artery-to-aortic diameter ratio-a marker of pulmonary vascular pressure-was also explored. The95% bootstrap CIs that excluded zero were considered significant.

Results: FEV_1%predicted ($P=0.026$) and FEV_1/FVC ($P=0.010$) were associated with CAC. After adjusting for FEV_1, visual emphysema, and visual airway wall thickening remained associated with CAC. Five proteins (TSP2 [thrombospondin-2], renin, MMP-7 [matrix metalloproteinase-7], ERBB1 [epidermal growth factor receptor], MIC-1 [macrophage inhibitory cytokine-1]) mediated the FEV_1%predicted and CAC association. All except MIC-1 mediated FEV_1/FVC and CAC. All except renin

mediated quantitative airway wall thickness or wall area percentage and CAC. Additionally, α2-antiplasmin (alpha-2 antiplasmin) mediated airway wall thickness and CAC. ERBB1 mediated visual paraseptal emphysema and CAC. Pulmonary artery-to-aortic diameter ratio adjustment reduced or eliminated some mediation effects. ERBB1 remained an independent mediator across multiple phenotypes.

Conclusions: Six plasma proteins mediated associations between COPD phenotypes and CAC burden. These effects were partially influenced by pulmonary artery-to-aortic diameter ratio A, suggesting shared molecular pathways linking lung dysfunction to cardiovascular risk in COPD.

Keywords: chronic obstructive pulmonary disease; coronary artery calcification; coronary artery disease; plasma mediators; pulmonary artery-to-aorta ratio.

Chin Med J (Engl)

. 2026 Aug 20;139(16):2392-2408.

doi: 10.1097/CM9.0000000000004208. Epub 2026 Jul 13.

Extracellular vesicles in senescence-associated chronic lung diseases

Ruiying Wang [1], Yahong Chen [2], Xiansheng Liu [1 3], Peter J Barnes [4]

Affiliations Expand

- PMID: 42438973
- PMCID: PMC13485837

- DOI: 10.1097/CM9.0000000000004208

Abstract

Chronic lung diseases, such as chronic obstructive pulmonary disease, idiopathic pulmonary fibrosis, obstructive sleep apnea, asthma, bronchiectasis, and lung cancer, are intricately linked to the aging process. These diseases are characterized by a high prevalence rate and a paucity of effective treatment options. Emerging evidence highlights the critical role of extracellular vesicles (EVs) in the pathogenesis and progression of these diseases. EVs, released by senescent cells, mediate intercellular communication and modulate immune responses through their cargo of microRNAs, proteins, and other molecules. These vesicles contribute to disease progression by promoting inflammation, fibrosis, tissue remodeling, and cellular senescence. Specifically, certain microRNAs, such as miR-21, miR-34a, and miR-570-3p, along with several proteins in EVs, have been identified as key factors influencing these processes. Additionally, EVs play significant roles in immune regulation and have potential anti-inflammatory effects, making them promising candidates for therapeutic applications. Recent advances in the use of EVs as therapeutic agents, including their application in nanotechnology for targeted drug delivery, have demonstrated potential in reducing inflammation, modulating immune responses, and enhancing tissue repair. Understanding the role of EVs in these diseases offers insights into potential therapeutic targets to mitigate disease progression and improve patient outcomes. Future research should focus on standardizing EV isolation and characterization methods, verifying the safety and efficacy of EV-based therapies in clinical trials, and elucidating the complex biological mechanisms of EVs in aging and disease.

Keywords: Asthma; Bronchiectasis; Chronic obstructive pulmonary disease (COPD); Extracellular vesicles; Idiopathic pulmonary fibrosis (IPF); Lung cancer; Obstructive sleep apnea; Senescence.

UPDATE 23 AUG 2026

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Am J Respir Crit Care Med

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. 2026 Aug 22:aamag438.

doi: 10.1093/ajrccm/aamag438. Online ahead of print.

Failure of ECCO$_2$R, or failure of the delivered extracorporeal dose?

Raphaël Giraud [1 2 3], Benjamin Assouline [1 2 3], Carlo Banfi [2], Karim Bendjelid [1 2 3]

Affiliations Expand

- PMID: 42633558

- DOI: 10.1093/ajrccm/aamag438

No abstract available

Keywords: COPD exacerbation; $ECCO_2R$; Extracorporeal carbon dioxide removal; extracorporeal blood flow; hypercapnic respiratory failure; respiratory unloading.

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Review

J Inflamm Res

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. 2026 Aug 18:19:605211.

doi: 10.2147/JIR.S605211. eCollection 2026.

Gut Microbiota-Immune Interactions in Chronic Lung Diseases: An Emerging Cross-Disease Perspective Gut-Lung Axis in Chronic Lung Disease

Qi Zhu [1], Chunyang Zhang [1], Yulong Niu [2], Mingjin Lv [2], Biao Wang [1], Yao Pan [1], Bin Zhu [3], Yudong Ma [2]

Affiliations Expand

- PMID: 42633442

- PMCID: PMC13499551

- DOI: 10.2147/JIR.S605211

Abstract

Chronic lung diseases, including asthma, chronic obstructive pulmonary disease (COPD), bronchiectasis and pulmonary fibrosis, remain major causes of morbidity and mortality despite advances in pharmacological treatment. Emerging evidence suggests that these conditions are influenced by a bidirectional gut-lung axis, through which intestinal microbiota, microbial metabolites, epithelial barrier integrity and mucosal immune programming shape pulmonary inflammation, tissue remodelling and host defence. In this narrative review, we synthesise current clinical and experimental evidence linking gut microbiota-immune interactions to these four chronic lung diseases. Rather than treating dysbiosis as a uniform process, we distinguish shared and disease-specific microbial signatures, including depletion of short-chain fatty acid (SCFA)-producing taxa, delayed microbial maturation, reduced faecal microbial diversity, expansion of pathobionts and altered bile-acid or tryptophan metabolism. We further summarise how SCFAs, tauroursodeoxycholic acid, tryptophan-derived indole metabolites and microbial fragments may regulate Th2 and Th17 inflammation, Th17/Treg balance, neutrophil function, epithelial barrier integrity and fibrotic remodelling. Microbiota-targeted strategies, including dietary fibre and prebiotic approaches, probiotics, synbiotic formulations, faecal microbiota transplantation and selected microbiota-modulating compounds, have shown protective effects in multiple preclinical models, whereas clinical evidence remains limited by small sample sizes, short follow-up, heterogeneous interventions and incomplete mechanistic endpoints. We also discuss unresolved issues, including animal-to-human translation and the difficulty of distinguishing gut-derived from airway-derived microbial signals. A more precise understanding of shared and disease-specific gut-lung circuits may support the rational development of mechanism-informed microbiota-targeted adjunctive strategies for chronic lung disease.

Keywords: chronic lung disease; gut–lung axis; microbiota-targeted therapy; probiotics; short-chain fatty acids.

Conflict of interest statement

The authors declare that they have no competing interests.

Supplementary info

Publication typesExpand

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3

Review

Int J Chron Obstruct Pulmon Dis

. 2026 Aug 18:21:619864.

doi: 10.2147/COPD.S619864. eCollection 2026.

The Current Status, Challenges, and Optimization Strategies for Self-Management in Patients with COPD: A Review

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Affiliations Expand

- PMID: 42633424
- PMCID: PMC13499544
- DOI: 10.2147/COPD.S619864

Abstract

This article aims to review the current status, challenges, and optimization strategies of self-management in patients with Chronic Obstructive Pulmonary Disease (COPD). As a core component of comprehensive COPD treatment, self-management plays a key role in controlling symptoms, preventing acute exacerbations, improving quality of life, and reducing the healthcare burden. This narrative review comprehensively outlines the core definitions, current implementation models, key influencing factors, and evaluation systems of self-management, and provides an in-depth analysis of the current bottlenecks in patient adherence, knowledge and skill acquisition, psychosocial support, and integration of medical resources. Based on these findings, this article proposes the integration of behavioral change theory, digital health technologies (such as mobile applications, remote monitoring), home monitoring and early warning systems, and minimal resource rehabilitation interventions as strategic approaches to overcome these barriers. This review concludes that building a personalized, technology-enabled, and sustainable support system is crucial for improving the effectiveness of COPD self-management and reducing the healthcare burden.

Keywords: Chronic obstructive pulmonary disease (COPD); behavioral change theory; digital health technologies; home monitoring and early warning systems; minimal resource rehabilitation; self-management.

Conflict of interest statement

The authors report no conflicts of interest in this work.

Supplementary info

Publication types, MeSH termsExpand

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Int J Chron Obstruct Pulmon Dis

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. 2026 Aug 18:21:591959.

doi: 10.2147/COPD.S591959. eCollection 2026.

Continuity of Care and Risks of Hospitalization and Mortality in COPD: A Nationwide Cohort Study

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Affiliations Expand

- PMID: 42633418
- PMCID: PMC13499550
- DOI: 10.2147/COPD.S591959

Abstract

Purpose: Chronic obstructive pulmonary disease (COPD) is characterized by unpredictable patterns of exacerbations, making continuity of care (CoC) a critical component in disease management. CoC influences COPD exacerbation-related hospitalization and mortality. Therefore, we assessed the impact of CoC levels on subsequent hospital admissions and all-cause mortality among individuals with COPD.

Patients and methods: This retrospective nationwide cohort study utilized National Health Insurance Service-Senior cohort data (2002-2019) and included 29,316 patients newly diagnosed with COPD. The primary exposure was longitudinal CoC

level categorized as low (<0.7) or high (≥0.7). Alternative continuity indices (usual care provider, sequential continuity, and modified continuity indices) were also evaluated. Outcomes were COPD exacerbation-related hospitalization and all-cause mortality within 1 year of diagnosis. Cox proportional hazards models estimated hazard ratios (HRs), Kaplan-Meier curves, and cumulative incidence rates were used to assess outcomes, and the Log rank test was used for between-group comparisons.

Results: Low CoC level were associated with an increased risk of 3-year COPD exacerbation-related hospitalization (HR 1.63, 95% CI 1.45-1.83) and all-cause mortality (HR 1.25, 95% CI 1.11-1.40) compared with high CoC level. Intermediate (0.4-0.7) and low (<0.4) CoC level showed progressively increased hospitalizations (HR 1.61, 95% CI 1.40-1.86 vs HR 1.65, 95% CI 1.38-1.97), and mortality (HR 1.24, 95% CI 1.07-1.43 vs HR 1.26, 95% CI 1.05-1.51), respectively. These findings remained consistent across alternative continuity indices. Low CoC level were associated with an increased risk of emergency (HR 1.48, 95% CI 1.19-1.83) and general hospital admissions (HR 1.70, 95% CI 1.47-1.95).

Conclusion: Lower CoC scores level consistently associated with higher risks of COPD hospitalization and all-cause mortality across multiple continuity indices. Subgroup and sensitivity analyses indicated that fragmented outpatient care increased adverse outcomes. Strengthening longitudinal patient-provider relationships may reduce preventable hospitalizations and premature deaths in patients with COPD.

Keywords: chronic obstructive pulmonary disease; cohort study; continuity of care; hospitalization; mortality; outpatient care.

Conflict of interest statement

The authors declare that they have no competing interests in this work.

Supplementary info

MeSH termsExpand

Full text links

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5

Intern Emerg Med

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. 2026 Aug 21.

doi: 10.1007/s11739-026-04479-8. Online ahead of print.

Strategies for therapeutic optimization and proactive care in chronic obstructive pulmonary disease (COPD): an Italian expert opinion

Paola Rogliani [1], Massimo Andreoni [2], Francesco Dentali [3], Claudio Micheletto [4], Andrea Montagnani [5], Nicola Montano [6 7], Alberto Papi [8], Alessandro Rossi [9], Pierachille Santus [10]

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- PMID: 42629534

- DOI: 10.1007/s11739-026-04479-8

Abstract

Chronic obstructive pulmonary disease (COPD) remains a major public health challenge, characterized by substantial underdiagnosis, high morbidity and mortality, and significant healthcare burden. In Italy, the gap between estimated and diagnosed prevalence highlights the need for improved early detection and proactive management. This expert opinion, developed by a multidisciplinary panel, translates current evidence into practical recommendations tailored to the Italian healthcare context. Patient characterization has moved from a spirometry-centered approach to a proactive, multidimensional model integrating symptom burden, exacerbation history, and cardiopulmonary risk. Early diagnosis should be driven by structured case-finding in primary care and internal medicine, using spirometry for confirmation. Early identification of uncontrolled patients relies on standardized tools, including symptom quantification (CAAT score) and indirect markers like recurrent antibiotic or oral corticosteroid use. Exacerbations are critical events that accelerate both pulmonary and cardiovascular deterioration, identifying a high-risk phase requiring prompt reassessment and optimization. In this context, single-inhaler triple therapy (SITT) is the only pharmacological strategy consistently associated with reduced exacerbations and all-cause mortality in high-risk populations. Timely SITT use may also reduce cardiopulmonary risk. Furthermore, preventing exacerbations limits antibiotic and systemic corticosteroid use, promoting antimicrobial stewardship and mitigating resistance. This expert opinion emphasizes the need for integrated care pathways, standardized clinical tools, and multidisciplinary coordination to overcome therapeutic inertia. A shift toward early identification, timely intervention, and prevention-oriented strategies is essential to improve outcomes and reduce the systemic burden of COPD.

Keywords: Antimicrobial stewardship; COPD; COPD management; Cardiopulmonary risk; Chronic obstructive pulmonary disease; Exacerbation; SITT; Single-inhaler triple therapy.

Conflict of interest statement

Declarations. Conflict of interest: C.M. received fees as a speaker in congresses from Astrazeneca, GSK, Sanofi, Roche, Chiesi, Menarini, Lusofarmaco, Firma, Zambon, Insmed, Orion, and Boehringher. D.F. reported grants and personal fees for lectures and consultancy from Alfa Wassermann, Alfasigma, AstraZeneca, Bayer, Boehringer, BMS-Pfizer, Daiichi Sankyo, IL, GSK, Menarini, Novartis, Sandoz, Sanofi, and Tillots Pharma AG. P.R. reported grants/research support to her institution from Arcede Pharma, AstraZeneca, Boehringer Ingelheim, Chiesi Farmaceutici, Sanofi, and Verona Pharma and honoraria or consultation fees from AstraZeneca, Boehringer Ingelheim, Chiesi Farmaceutici, GlaxoSmithKline, Menarini Group, Pfizer, Recipharm, Regeneron, Roche, and Sanofi. A.P. declared payments to his institution from Chiesi, AstraZeneca, GlaxoSmithKline, and Sanofi; consultancy fees from AstraZeneca, Avillion, Chiesi, GlaxoSmithKline, Moderna, Regeneron, Roche, Sanofi, Zambon, and Zentiva; and payment or honoraria for lectures, presentations, and speakers' bureaus, from AstraZeneca, Avillion, Chiesi, GlaxoSmithKline, Moderna, Regeneron, Roche, Sanofi, and Zambon. P.S. received honoraria for lectures from AstraZeneca, Berlin-Chemie, GlaxoSmithKline, Gilead Sciences, and Sanofi; grants or contracts from AstraZeneca, Edmond Pharma, and GlaxoSmithKline; and consultancy fees from AstraZeneca, Berlin-Chemie, Dompé Farmaceutici, Edmond Pharma, GlaxoSmithKline, Neopharmed Gentili, Sanofi, Roche, and Armstrong Lab. M.A. reported payment or honoraria for lectures, presentations, manuscript writing, or educational events from Gilead Sciences, AbbVie, ViiV Healthcare, and Pfizer; support for attending meetings and/or travel from AstraZeneca and Gilead Sciences; participation on a Data Safety Monitoring Board or Advisory Board for Moderna and Gilead Sciences. A.R. declared personal fees for participation on advisory boards and consultancy from GSK, AstraZeneca, Seqirus, and MSD. Human and animal rights: This manuscript does not report research involving human participants and does not include identifiable patient data. Informed consent: Therefore, ethics committee approval and informed consent were not required.

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Chest

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. 2026 Aug 19:S0012-3692(26)06435-4.

doi: 10.1016/j.chest.2026.08.014. Online ahead of print.

Incidental Emphysema on Health Screening Chest CT and All-Cause Mortality in a Korean Cohort

Yoojin Nam [1], Hye Ree Cho [2], Eunji Kim [2], Nak Gyeong Ko [3], Pa Hong [4], Hyun Kyu Cho [5]

Affiliations Expand

- PMID: 42617836

- DOI: 10.1016/j.chest.2026.08.014

Abstract

Background: Incidental emphysema on health-screening chest CT is common, yet its prognostic significance in asymptomatic populations is poorly characterized.

Research question: Is incidental emphysema on health screening chest CT independently associated with all-cause mortality?

Study design and methods: This retrospective cohort comprised 41,291 adults undergoing chest CT during routine Korean health checkups (2002-2019). Emphysema was a binary variable from structured radiology reports, and the primary outcome was all-cause mortality via national death-registry linkage. The primary analysis was a complete-case Cox model adjusted for age, sex, BMI, and smoking status; sensitivity analyses used multiple imputation, ever-smoker restriction, scanner-era adjustment, a time-varying exposure, and competing-risks models.

Results: Emphysema was present in 3,774 participants (9.1%), rising from 2.6% in never-smokers to 14.6% in current smokers; over a median of 8.5 years, 284 deaths occurred. Emphysema was associated with all-cause mortality in the designated complete-case analysis (HR, 1.54; 95% CI, 1.05-2.25), among ever-smokers after pack-years adjustment (1.63; 1.09-2.43), and when exposure was updated at repeat imaging (1.69; 1.18-2.41). Full-cohort pack-years imputation was non-significant (1.36; 0.97-1.91), diluted by never-smokers, among whom no participant with emphysema died. An exploratory cancer signal (HR, 2.25) was concentrated in lung cancer (13 events). Adding emphysema to a smoking-inclusive model improved discrimination by ≤0.004.

Interpretation: Among ever-smokers, incidental emphysema on screening chest CT is associated with mortality after adjustment for pack-years, although residual smoking-intensity confounding cannot be excluded. Once smoking history is known, the report adds almost nothing to discrimination and should not be used alone to stratify prognosis; whether it should prompt evaluation for undiagnosed COPD we did not address. In the full screening population the association did not reach significance, but with 284 deaths, half the number needed for 80% power, that result is inconclusive rather than negative.

Clinical trial registration: Not applicable (observational retrospective cohort study).

Keywords: all-cause mortality; chest CT; competing risks; emphysema; health screening; smoking.

Cite

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Review

J Asthma

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. 2026 Aug 18:1-16.

doi: 10.1080/02770903.2026.2721170. Online ahead of print.

Eosinophilic Inflammation in Severe Asthma: Pathophysiology, Clinical Identification, and Therapeutic Implications

Miguel Jiménez-Gómez [1], Carlos Almonacid-Sánchez [2], Marina Blanco-Aparicio [3], Hemily Izaguirre-Flores [4], Mariana Muñoz-Esquerre [5], Gerardo Pérez-Chica [6], Juan Luis García-Rivero [7], Alicia Padilla-Galo [8], José Gregorio Soto-Campos [9]

Affiliations Expand

- PMID: 42613890

- DOI: 10.1080/02770903.2026.2721170

Abstract

Objective: To provide a clinically grounded and pathobiological review of eosinophilic inflammation in severe asthma, addressing mechanisms, diagnostic interpretation, and implications for biologic therapy selection.Data Sources: Narrative review of guidelines, pivotal phase 2-3 randomized controlled trials, meta-analyses, registry data, and key translational studies evaluating eosinophils, type 2 (T2) inflammation, and targeted biologic therapies in severe asthma and eosinophilic chronic obstructive pulmonary disease.Study Selections: Publications were selected based on clinical relevance, methodological rigor, and impact on contemporary severe asthma management. Evidence was critically appraised and

integrated with expert clinical perspective. No predefined systematic protocol or formal risk-of-bias assessment was undertaken.

Results: Eosinophils are central effector cells in T2-high severe asthma, contributing to airway inflammation, epithelial injury, mucus plugging, and remodelling. Interleukin (IL)-5 is the principal regulator of eosinophil maturation and survival, while IL-4, IL-13, and epithelial alarmins modulate tissue recruitment and amplification of inflammation. Blood eosinophil count (BEC) remains the most accessible biomarker in practice; however, its interpretation requires contextualization, considering corticosteroid exposure, biological variability, age at onset, and comorbidities. No single biomarker fully reflects airway eosinophilia, supporting a multidimensional assessment integrating clinical phenotype, longitudinal biomarkers, imaging, lung function, and therapeutic response. Biologics have transformed outcomes, with greater efficacy generally observed at higher BEC levels.

Conclusion: Eosinophilia should be interpreted as a contextual biomarker within a comprehensive clinical framework. Precision phenotyping is essential to optimize biologic selection and advance toward sustained disease control and clinical remission in severe asthma.

Keywords: Biologic therapy; Precision Medicine; Severe Asthma; eosinophilic inflammation; tissue eosinophilia.

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Respiration

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. 2026 Aug 18:1.

doi: 10.1159/res/aepag003. Online ahead of print.

Identification of Clinical Phenotypes in Young Patients with Acute Exacerbations of COPD: A Multicenter Cohort Study

Jiaqi Pu, Hailong Wei, Huiqing Ge, Huiguo Liu, Jian-Chu Zhang, Xianhua Li, Pinhua Pan, Xiufang Xie, Menggiu Yi, Lina Cheng, Hui Zhou, Jiarui Zhang, Lige Peng, Jiaxin Zeng, Xueqing Chen, Haixia Zhou, Qun Yi

- PMID: 42611830

- DOI: 10.1159/res/aepag003

Abstract

Background: Despite the rising recognition of chronic obstructive pulmonary disease (COPD) in younger adults (20-50 years), the clinical heterogeneity of this population during acute exacerbations (AECOPD) remains undefined, obscuring precision risk stratification and personalized management.

Methods: This study analyzed data from a nationwide, multicenter, prospective cohort across 10 tertiary hospitals in China (Sep 2017-Jul 2021). From 13,993 eligible patients, we identified 334 young AECOPD cases. Unsupervised K-means clustering was applied using nine biomarkers of inflammation, hematologic function, and structural lung damage. To contextualize its clinical relevance, the disease severity of the identified high-risk phenotype was benchmarked against the elderly AECOPD cohort (n=13,659).

Results: Cluster analysis identified two distinct phenotypes. The "Systemic Inflammatory Phenotype" (n=179) was characterized by a pervasive inflammatory state (elevated CRP, neutrophils, WBC, PCT, and fibrinogen) and significantly worse lung function. In contrast, the "Eosinophilic Phenotype" (n=155) exhibited an eosinophil-predominant profile. Critically, the Systemic Inflammatory Phenotype experienced a more severe hospital course, with significantly higher rates of invasive mechanical ventilation (3.9% vs. 0.0%, p=0.017), non-invasive ventilation (23.5% vs. 10.3%, p=0.003), and ICU admission (6.7% vs. 1.3%, p=0.026). Notably, the overall disease severity of this high-risk phenotype were comparable to the elderly AECOPD cohort.

Conclusion: We identified a high-risk systemic inflammatory phenotype among young AECOPD inpatients, demonstrating clinical acuity on par with elderly patients. These findings challenge the conventional age-centric risk paradigm and advocate for a shift towards phenotype-driven assessment to enable early identification and targeted management of young AECOPD patients at the greatest risk.

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EMBO Mol Med

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. 2026 Aug 17.

doi: 10.1038/s44321-026-00501-w. Online ahead of print.

When sugar takes your breath away: how diabetes accelerates COPD progression

Annabelle Elisabeth Kruf [1], Kathrin Maedler [2]

Affiliations Expand

- PMID: 42608563

- DOI: 10.1038/s44321-026-00501-w

Free article

No abstract available

Conflict of interest statement

Disclosure and competing interests statement. The authors declare no competing interests.

- 10 references

Full text links

EMBO Molecular Medicine FREE UNIMORE

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QJM

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. 2026 Aug 17:hcag217.

doi: 10.1093/qjmed/hcag217. Online ahead of print.

Associations Between Glucagon-like Peptide-1 Receptor Agonists and Respiratory Outcomes in Chronic Obstructive pulmonary disease and Diabetes

Kuang-Ming Liao [1 2], Ya-Wen Tsai [3], Konstantinos Kostikas [4], Gerard J Criner [5 6], Jheng-Yan Wu [7 8], Chih-Cheng Lai [9 10]

Affiliations Expand

- PMID: 42606949

- DOI: 10.1093/qjmed/hcag217

Abstract

Background: Chronic obstructive pulmonary disease (COPD) is frequently complicated by acute respiratory failure, pneumonia, exacerbations, and premature mortality, particularly in patients with comorbid type 2 diabetes (T2D). Glucagon-like peptide-1 receptor agonists (GLP-1RAs) possess anti-inflammatory and metabolic properties that may confer protective effects against COPD-related respiratory complications, but comparative evidence remains limited.

Methods: We conducted a retrospective cohort study using data from the TriNetX global federated health research network. Adults aged 40 years or older with both COPD and T2D who newly initiated GLP-1RAs, dipeptidyl peptidase-4 inhibitors (DPP-4is), sulfonylureas (SUs), or metformin between January 1, 2017, and May 31, 2025, were identified. An active-comparator, new-user design with 1:1 propensity score matching was applied. The primary outcome was incident acute respiratory failure. Secondary outcomes included all-cause mortality, all-cause hospitalization, acute exacerbation of COPD, and pneumonia, assessed over one year of follow-up.

Results: After propensity score matching, GLP-1RA use was associated with significantly lower risk of acute respiratory failure compared with DPP-4is (HR, 0.77; 95% CI, 0.73-0.81), SUs (HR, 0.80; 95% CI, 0.76-0.84), and metformin (HR, 0.91; 95% CI, 0.85-0.98). GLP-1RA use was also consistently associated with reduced risks of all-cause mortality, all-cause hospitalization, acute exacerbation of COPD, and pneumonia across all three comparator groups. Subgroup analyses demonstrated consistent protective trends across sex, age, exacerbation history, and inhaled bronchodilator regimen.

Conclusions: In patients with COPD and T2D, initiation of GLP-1RAs was associated with significantly lower risks of acute respiratory failure, pneumonia, acute exacerbation, hospitalization, and all-cause mortality compared with DPP-4is, SUs, and metformin. These findings suggest that GLP-1RA therapy may offer meaningful respiratory and survival benefits in this high-risk population.

Keywords: Chronic Obstructive Pulmonary Disease; acute exacerbation; diabetes mellitus; glucagon-like Peptide-1 Receptor Agonists.

Cite

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J Am Heart Assoc

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. 2026 Aug 18;15(16):e046201.

doi: 10.1161/JAHA.125.046201. Epub 2026 Aug 7.

Proteomic Mediators of Chronic Obstructive Pulmonary Disease Phenotypes and Coronary Artery Calcification Burden in Ever Smokers

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Affiliations Expand

- PMID: 42568067

- DOI: 10.1161/JAHA.125.046201

Free article

Abstract

Background: Chronic obstructive pulmonary disease (COPD) increases cardiovascular disease risk. Coronary artery calcification (CAC) predicts cardiovascular events and mortality in COPD. We hypothesized that plasma proteins linked to pulmonary phenotypes mediate CAC burden.

Methods: Pulmonary function, emphysema, airway wall thickening, Agatston CAC scores (inverse normal transformed), and relative abundance of 1305 plasma proteins (log-transformed) were assessed in 989 Phase 1 COPDGene (Genetic Epidemiology of COPD) participants. Proteins associated with both pulmonary phenotypes (FEV_1[forced expiratory volume in 1 second]%predicted, FVC [forced vital capacity], FEV_1/FVC, emphysema, airway wall thickness, wall area percentage) and CAC (false discovery rate $P \leq 0.20$) were evaluated using multivariable mediation. Model adjustments included sex, age, race, body mass index, smoking, comorbidities, and medications. Adjustment for pulmonary artery-to-aortic diameter ratio-a marker of pulmonary vascular pressure-was also explored. The95% bootstrap CIs that excluded zero were considered significant.

Results: FEV_1%predicted ($P=0.026$) and FEV_1/FVC ($P=0.010$) were associated with CAC. After adjusting for FEV_1, visual emphysema, and visual airway wall thickening

remained associated with CAC. Five proteins (TSP2 [thrombospondin-2], renin, MMP-7 [matrix metalloproteinase-7], ERBB1 [epidermal growth factor receptor], MIC-1 [macrophage inhibitory cytokine-1]) mediated the FEV_1%predicted and CAC association. All except MIC-1 mediated FEV_1/FVC and CAC. All except renin mediated quantitative airway wall thickness or wall area percentage and CAC. Additionally, α2-antiplasmin (alpha-2 antiplasmin) mediated airway wall thickness and CAC. ERBB1 mediated visual paraseptal emphysema and CAC. Pulmonary artery-to-aortic diameter ratio adjustment reduced or eliminated some mediation effects. ERBB1 remained an independent mediator across multiple phenotypes.

Conclusions: Six plasma proteins mediated associations between COPD phenotypes and CAC burden. These effects were partially influenced by pulmonary artery-to-aortic diameter ratio A, suggesting shared molecular pathways linking lung dysfunction to cardiovascular risk in COPD.

Keywords: chronic obstructive pulmonary disease; coronary artery calcification; coronary artery disease; plasma mediators; pulmonary artery-to-aorta ratio.

12

Review

Chin Med J (Engl)

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. 2026 Aug 20;139(16):2392-2408.

doi: 10.1097/CM9.0000000000004208. Epub 2026 Jul 13.

Extracellular vesicles in senescence-associated chronic lung diseases

Ruiying Wang [1], Yahong Chen [2], Xiansheng Liu [1 3], Peter J Barnes [4]

Affiliations Expand

- PMID: 42438973

- PMCID: PMC13485837

- DOI: 10.1097/CM9.0000000000004208

Abstract

Chronic lung diseases, such as chronic obstructive pulmonary disease, idiopathic pulmonary fibrosis, obstructive sleep apnea, asthma, bronchiectasis, and lung cancer, are intricately linked to the aging process. These diseases are characterized by a high prevalence rate and a paucity of effective treatment options. Emerging evidence highlights the critical role of extracellular vesicles (EVs) in the pathogenesis and progression of these diseases. EVs, released by senescent cells, mediate intercellular communication and modulate immune responses through their cargo of microRNAs, proteins, and other molecules. These vesicles contribute to disease progression by promoting inflammation, fibrosis, tissue remodeling, and cellular senescence. Specifically, certain microRNAs, such as miR-21, miR-34a, and miR-570-3p, along with several proteins in EVs, have been identified as key factors influencing these processes. Additionally, EVs play significant roles in immune regulation and have potential anti-inflammatory effects, making them promising candidates for therapeutic applications. Recent advances in the use of EVs as therapeutic agents, including their application in nanotechnology for targeted drug delivery, have demonstrated potential in reducing inflammation, modulating immune responses, and enhancing tissue repair. Understanding the role of EVs in these diseases offers insights into potential therapeutic targets to mitigate disease progression and improve patient outcomes. Future research should focus on standardizing EV isolation and characterization methods, verifying the safety and efficacy of EV-based therapies in clinical trials, and elucidating the complex biological mechanisms of EVs in aging and disease.

Keywords: Asthma; Bronchiectasis; Chronic obstructive pulmonary disease (COPD); Extracellular vesicles; Idiopathic pulmonary fibrosis (IPF); Lung cancer; Obstructive sleep apnea; Senescence.

Conflict of interest statement

None.

- 168 references
- 4 figures

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

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Eur J Epidemiol

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. 2026 Aug 20.

doi: 10.1007/s10654-026-01453-8. Online ahead of print.

Comorbidity-adjusted life expectancy using comprehensive summary measures of medical history: nationwide, population-based study in Sweden

Marcus Westerberg [1], Hans Garmo [2], Jonas F Ludvigsson [3 4 5], Pär Stattin [2], Rolf Gedeborg [2]

Affiliations Expand

- PMID: 42623001

- DOI: 10.1007/s10654-026-01453-8

Abstract

A multidimensional diagnosis-based comorbidity index (MDCI) and a drug comorbidity index (DCI) have demonstrated superior discrimination of mortality risk compared to the Charlson Comorbidity Index (CCI) in smaller specific populations. We aimed to evaluate performance of these indices in an entire population according to age, sex, and to estimate comorbidity-adjusted life expectancy (CALE), i.e. life expectancy conditional on age and comorbidity. Open cohort study of all adults residing in Sweden in 2006-2022. Discrimination of mortality risk at one year of follow-up was assessed through the C-index. CALE was estimated using parametric survival models based on age and comorbidity. 10 079 529 individuals were included. The MDCI (C-index 0.882 [95% CI 0.882-0.882]) and DCI (C-index 0.871 [95% CI 0.870-0.871]) improved discrimination of mortality risk compared to the CCI (C-index 0.811 [95% CI 0.811-0.812]). For each age above 40 the combination of MDCI and DCI clearly separated risk of death within levels of CCI and identified a wider range of CALE than CCI. At age 70 CALE based on the combination of MDCI and DCI varied from 7.0 to 17.9 years at the 5th and 95th percentile in men, and from 8.9 to 20.2 years in women. CALE based on CCI varied from 11.0 to 16.1 years in men and 11.7 to 18.4 years in women. Comprehensive comorbidity indices improved discrimination of mortality risk over the CCI in all age groups in men and women and identified a wider range of comorbidity-adjusted life expectancy in individuals of the same age.

Keywords: Comorbidity; Discrimination; Life expectancy; Multimorbidity; Survival.

Conflict of interest statement

Declarations. Conflict of interest: Dr Ludvigsson has received financial support from Merck/MSD for a study on inflammatory bowel disease and fibrosis; and for developing a paper reviewing national healthcare registers in China. Dr Ludvigsson also has an ongoing research collaboration on celiac disease with Takeda. Earlier support includes a grant from Janssen for an unrelated study on behalf of the Swedish IBD quality register (SWIBREG). The other authors report no conflicts of interest. Rolf Gedeborg is also employed by the Medical Products Agency (MPA) in Sweden. The MPA is a Swedish Government Agency. The views expressed in this article may not represent the views of the MPA.

- **42 references**

Full text links

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. 2026 Aug 17:16:26335565261478101.

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Obesity as a risk factor for multimorbidity: a 23-years population-based prospective study

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Abstract

Background: Obesity and multimorbidity are increasing challenges for public health. While obesity is a well-recognized risk factor for multimorbidity, evidence

commonly comes from cross-sectional studies using body mass index (BMI). Evidence on the body roundness index (BRI), a novel indicator of central obesity, remains limited.

Objectives: This study assessed midlife obesity as a risk factor for multimorbidity in a Finnish population cohort during 23 years of follow-up.

Methods: A total of 1007 participants born between 1933 and 1956 and living in the Savitaipale municipality were enrolled between 1994 and 1996. Baseline data were collected using questionnaires and clinical examinations. Information on 38 chronic diseases was obtained from health registers. Obesity was assessed using BMI, waist circumference (WC), and BRI. Cox proportional hazards models estimated associations with incident multimorbidity, and receiver operating characteristic (ROC) analysis was used to derive BMI, WC and BRI thresholds with the best sensitivity-specificity balance.

Results: Over 23 years, obesity defined by BMI and WC, as well as higher BRI, was associated with increased multimorbidity risk. Hazard ratios ranged from 1.52 (95% CI: 1.21-1.92) to 2.17 (95% CI: 1.59-2.97) in women and from 2.41 (95% CI: 1.82-3.19) to 2.79 (95% CI: 2.00-3.90) in men, depending on obesity and multimorbidity definitions. ROC-derived thresholds for multimorbidity prediction were: BMI 26.4 in women and 26.1 in men; WC 76.3 cm and 93.3 cm; and BRI 3.41 and 3.70, respectively.

Conclusion: This 23-year study highlights midlife obesity as a risk factor for multimorbidity in later life.

Keywords: body mass index; body roundness index; multimorbidity; obesity; waist circumference.

Conflict of interest statement

The authors declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: JT owns stocks in Orion Pharma, Oriola, Aktivolabs and Digostics. Other authors report that there are no conflicting interests to declare.

- 61 references
- 3 figures

3

Review

Int Immunopharmacol

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. 2026 Aug 17:188:117217.

doi: 10.1016/j.intimp.2026.117217. Online ahead of print.

Conceptual comorbidity networks in autoimmune thyroid disease: A PRISMA-guided review of clinical patterns, immunological links, and emerging disease clusters

Nagavali Saka [1], K Sri Vijaya [2], Chetla Chandra Mohan [3], Nasaramma Kadiyam [4], R V V N Bheema Rao [5], Venkata Raghu Veeramachineni [6]

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Abstract

Autoimmune thyroid disease (AITDs), including Hashimoto's thyroiditis and Graves' disease, are among the most prevalent organ-specific autoimmune disorders and are increasingly recognized as components of broader multimorbidity patterns rather than isolated endocrine conditions. While previous studies have largely examined individual comorbid associations or disease-pair relationships, a comprehensive synthesis that conceptualizes AITDs within an integrated disease-clustering and network-based framework remains limited. This review presents a semi-systematic literature synthesis informed by PRISMA reporting principles to enhance transparency in literature identification and study selection, drawing on approximately 60 studies published between 2010 and 2024. The evidence is systematically organized into endocrine autoimmune, non-endocrine autoimmune, dermatological, gastrointestinal, and non-autoimmune comorbidity domains. Beyond descriptive aggregation, this review critically examines consistencies, contradictions, and variations across studies and links observed clustering patterns to shared genetic susceptibility, convergent immunological pathways, and environmental and hormonal modulators. A central contribution of this work is the development of a conceptual disease-clustering framework that positions AITDs as dynamic hub conditions within interconnected comorbidity networks, moving beyond traditional disease-pair models toward a systems-level understanding of multimorbidity. This framework integrates clinical observations with biological mechanisms and highlights potential pathways for disease progression and risk amplification. The principal contribution of this review is the development of a qualitative conceptual disease-clustering framework that synthesizes evidence across endocrine, autoimmune, dermatological, gastrointestinal, and systemic

comorbidity domains. Rather than performing a quantitative graph-theoretical network analysis, this review adopts a network medicine perspective to integrate published evidence on shared biological mechanisms, disease co-occurrence patterns, and potential mechanistic bridges linking autoimmune thyroid disease with associated disorders. This conceptual synthesis provides a systems-oriented interpretation of multimorbidity, highlights clinically relevant disease clusters, and identifies opportunities for future studies employing formal network analytics and multi-omics approaches.

Keywords: AITD; Comorbidity networks; Disease clustering; Immunological mechanisms; Multimorbidity.

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.

Supplementary info

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Observational Study

JAMA

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. 2026 Aug 18;336(7):577-586.

doi: 10.1001/jama.2026.8492.

Lifestyle and Metformin Interventions and Risk of Multimorbidity in Adults With Prediabetes

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Huckfeldt [8], Shihchen Kuo [9], Elsa S Strotmeyer [10], Marinella Temprosa [11], Elizabeth M Venditti [12]; DPP Research Group

Collaborators, Affiliations Expand

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- PMCID: PMC13270327 (available on 2026-12-15)
- DOI: 10.1001/jama.2026.8492

Abstract

Importance: Studying how to prevent or delay not just 1 disease but multiple chronic conditions is of great importance for public health; however, few interventions have demonstrated success during long-term follow-up.

Objective: To examine the association of lifestyle or metformin compared with placebo on long-term multimorbidity in adults with prediabetes.

Design, setting, and participants: Observational follow-up cohort study of a randomized clinical trial conducted at 27 sites in the United States from June 1, 1996, to December 31, 2021. From June 1, 1996, through May 28, 1999, 3234 adults at high risk of diabetes enrolled in the 3-year Diabetes Prevention Program (DPP). They were subsequently enrolled in the DPP Outcomes Study (DPPOS). Of this cohort, Centers for Medicare & Medicaid Services (CMS) morbidity data were available through 2021 for 1173 participants who provided consent. Data were analyzed from June 5, 2024, to November 7, 2025.

Exposures: Participants in DPP were randomly assigned to intensive lifestyle intervention, metformin, or placebo. During DPPOS, medications were unmasked with discontinuation of placebo; metformin was continued. Group booster classes were offered to the lifestyle group semiannually and all participants were offered lifestyle classes quarterly until 2014.

Main outcomes and measures: The primary outcome was multimorbidity (presence of ≥2 of 15 prevalent conditions, defined in CMS' Chronic Condition Data Warehouse and adapted for Medicare Advantage encounters). Cox proportional hazard models were applied to estimate associations between randomized treatment groups and time to development of outcomes.

Results: Of the 1173 participants (median age, 74 years [IQR, 70-80]; 795 [68%] were female), 997 (85%) experienced greater than or equal to 2 conditions (median, 5 [IQR, 3-7]) by the end of follow-up (316 of 385 [82%], 327 of 385 [85%], and 350 of 403 [87%], respectively, among lifestyle, metformin, and placebo groups). The risk of multimorbidity was lower among lifestyle compared with placebo participants (hazard ratio [HR], 0.79; 95% CI, 0.68-0.93) after adjustment for relevant covariates. There was no difference between participants in the metformin and placebo groups (HR, 0.91; 95% CI, 0.78-1.07). These relationships persisted when diabetes was excluded from the multimorbidity definition. When restricted to dyads of the

costliest conditions, the association with lifestyle vs placebo yielded an HR of 0.57 (95% CI, 0.38-0.85).

Conclusions and relevance: Among adults with prediabetes at baseline, lifestyle intervention, but not metformin, was associated with a lower burden of multimorbidity. Lifestyle programs may persistently lower the development of chronic conditions.

Trial registration: ClinicalTrials.gov Identifier: DPP, NCT00004992; DPPOS, NCT00038727.

Conflict of interest statement

Conflict of Interest Disclosures: Dr Strotmeyer reported grants from Amgen and consulting fees from George Washington University during the conduct of the study. No other disclosures were reported.

Comment in

- Addressing Multimorbidity Challenges in Diabetes-Lifestyle and Beyond.

Florez H, Foster C, Vizcaino G.JAMA. 2026 Aug 18;336(7):554-556. doi: 10.1001/jama.2026.10080.PMID: 42295750 No abstract available.

- 35 references

Supplementary info

Publication types, MeSH terms, Substances, Associated data, Grants and fundingExpand

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Comment

JAMA

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. 2026 Aug 18;336(7):554-556.

doi: 10.1001/jama.2026.10080.

Addressing Multimorbidity Challenges in Diabetes-Lifestyle and Beyond

Hermes Florez [1], Caroline Foster [1], Gilberto Vizcaino [2]

Affiliations Expand

- PMID: 42295750

- DOI: 10.1001/jama.2026.10080

No abstract available

Comment on

- Lifestyle and Metformin Interventions and Risk of Multimorbidity in Adults With Prediabetes.

Salive ME, Tjaden AH, Ames JR, Crandall JP, Dabelea D, Hazuda HP, Heckman-Stoddard BM, Huckfeldt PJ, Kuo S, Strotmeyer ES, Temprosa M, Venditti EM; DPP Research Group.JAMA. 2026 Aug 18;336(7):577-586. doi: 10.1001/jama.2026.8492.PMID: 42295772

Supplementary info

Publication types

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

1

Review

J Inflamm Res

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doi: 10.2147/JIR.S605211. eCollection 2026.

Gut Microbiota-Immune Interactions in Chronic Lung Diseases: An Emerging Cross-Disease Perspective Gut-Lung Axis in Chronic Lung Disease

Qi Zhu [1], Chunyang Zhang [1], Yulong Niu [2], Mingjin Lv [2], Biao Wang [1], Yao Pan [1], Bin Zhu [3], Yudong Ma [2]

Affiliations Expand

- **PMID: 42633442**

- **PMCID: PMC13499551**

- **DOI: 10.2147/JIR.S605211**

Abstract

Chronic lung diseases, including asthma, chronic obstructive pulmonary disease (COPD), bronchiectasis and pulmonary fibrosis, remain major causes of morbidity and mortality despite advances in pharmacological treatment. Emerging evidence suggests that these conditions are influenced by a bidirectional gut-lung axis, through which intestinal microbiota, microbial metabolites, epithelial barrier integrity and mucosal immune programming shape pulmonary inflammation, tissue remodelling and host defence. In this narrative review, we synthesise current clinical and experimental evidence linking gut microbiota-immune interactions to these four chronic lung diseases. Rather than treating dysbiosis as a uniform process, we distinguish shared and disease-specific microbial signatures, including depletion of short-chain fatty acid (SCFA)-producing taxa, delayed microbial maturation, reduced faecal microbial diversity, expansion of pathobionts and altered bile-acid or tryptophan metabolism. We further summarise how SCFAs, tauroursodeoxycholic acid, tryptophan-derived indole metabolites and microbial fragments may regulate Th2 and Th17 inflammation, Th17/Treg balance, neutrophil function, epithelial barrier integrity and fibrotic remodelling. Microbiota-targeted strategies, including dietary fibre and prebiotic approaches, probiotics, synbiotic formulations, faecal microbiota transplantation and selected microbiota-modulating compounds, have shown protective effects in multiple preclinical models, whereas clinical evidence remains limited by small sample sizes, short follow-up, heterogeneous interventions and incomplete mechanistic endpoints. We also discuss unresolved issues, including animal-to-human translation and the difficulty of distinguishing gut-derived from airway-derived microbial signals. A more precise understanding of shared and disease-specific gut-lung circuits may support the rational development of mechanism-informed microbiota-targeted adjunctive strategies for chronic lung disease.

Keywords: chronic lung disease; gut–lung axis; microbiota-targeted therapy; probiotics; short-chain fatty acids.

Conflict of interest statement

The authors declare that they have no competing interests.

Supplementary info

Publication typesExpand

Full text links

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J Allergy Clin Immunol Pract

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. 2026 Aug 22:S2213-2198(26)00699-9.

doi: 10.1016/j.jaip.2026.08.019. Online ahead of print.

Corticosteroid Stewardship: Can it help us avoid the corticosteroid trap? Journal of Allergy and Clinical Immunology: In Practice

Stanley J Szefler [1]

Affiliations Expand

- PMID: 42632540

- DOI: 10.1016/j.jaip.2026.08.019

Abstract

With an almost 20-year experience with asthma biologics, it is now clear that a major impact of all available asthma biologics is the opportunity to reduce the frequency of asthma exacerbations, along with the concomitant use of systemic corticosteroids. The asthma biologics allow for the reduction and occasionally discontinuation of maintenance systemic corticosteroids and permit reduction of high dose inhaled corticosteroid dosing in patients with severe asthma. The risk of corticosteroid adverse effects in asthma has prompted experts to suggest that there be closer monitoring of corticosteroids and the term "corticosteroid stewardship" has emerged. This commentary will summarize advantages and limitations of developing a program for corticosteroid stewardship. There is an opportunity for asthma specialists to take a leadership position in developing a core stewardship program with elements including patient education materials and prototypes for shared decision-making approaches. Then, once this approach is refined, a more systematic approach within a health care system can evolve, especially with insurance providers as a partner. On one hand, corticosteroid stewardship could be viewed as adding extra burden. Done correctly, it should be viewed as the way to go to enhance overall population asthma care within a health care system.

Keywords: artificial intelligence; asthma; asthma management; chronic disease management; corticosteroid stewardship; treatable traits.

Cite

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Ann Allergy Asthma Immunol

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. 2026 Aug 22:S1081-1206(26)00409-6.

doi: 10.1016/j.anai.2026.08.012. Online ahead of print.

Impulse oscillometry reference values and small airway reversibility in the assessment of asthma

Yi-Luen Shen [1], Pin-Kuei Fu [2], Po-Chun Lo [3], KangCheng Su [4], Jui-Yuan Lin [5], Yu-Chi Chiu [6], Yen-Fu Chen [7], Chien-Wen Huang [8], Tzu-I Chuang [9], Chia-Ni Liu [10], YiHan Hsiao [11], Diahn-Warng Perng [3]; Taiwan Small Airway Research Alliance (TSARA) Investigators

Affiliations Expand

- PMID: 42632486

- DOI: 10.1016/j.anai.2026.08.012

Abstract

Background: The currently recommended bronchodilator reversibility (BDR) criteria have relatively low diagnostic sensitivity in asthma. Reference values and small airway reversibility (SAR) determined by impulse oscillometry (IOS) have been reported, but how they should be applied in the assessment of asthma remains unclear.

Objective: To generate IOS reference values in healthy adults and to evaluate the diagnostic performance of baseline IOS parameters and SAR in treatment-naïve asthma.

Methods: A total of 289 healthy controls and 290 treatment-naïve asthma patients were enrolled. Sex-specific reference equations for IOS-derived Z-scores were generated from the healthy cohort. The diagnostic performance of baseline IOS

parameters and SAR indices for discrimination between asthma and healthy controls was evaluated.

Results: Reference-defined small airway dysfunction (SAD) was present in 15.2% to 24.5% of asthmatic patients versus 3.1% to 6.6% of healthy controls across the three IOS parameters (R5-R20, X5 and AX). ROC-derived cutoffs lay within the reference range. Among baseline values, R5-R20 discriminated best (AUROC 0.74; cutoff > 0.08 kPa/L/s, sensitivity 66.9%, specificity 68.5%), followed by AX (0.69) and X5 (0.63). A positive SAR criterion, defined as a significant change in any IOS parameter, achieved a diagnostic sensitivity of 77.8%, substantially higher than conventional spirometric BDR (24.5%). Among patients with preserved pulmonary function (PPF) and absent BDR, SAR maintained a sensitivity of 71.5%.

Conclusion: IOS reference values characterize SAD rather than identify asthma. ROC-derived SAR thresholds may complement spirometry by improving sensitivity, particularly in patients with PPF and absent BDR.

Conflict of interest statement

Declaration of competing interest The authors declare that they have no conflict of interest related to this subject matter or materials discussed in this article.

Cite

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Adv Ther

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. 2026 Aug 22.

doi: 10.1007/s12325-026-03692-3. Online ahead of print.

Clinical Remission is Achievable for Adult Patients with Severe Asthma Receiving Mepolizumab: A European Retrospective Chart Review

Stephen G Noorduyn [1], Samantha N Valliant [2], Steven Gould [3], Louise H Yu [4], Rose Chang [4], Rui Song [4], Megan Pinaire [4], Leili Young-Xu [4], Mei S Duh [4], Stefano Aliberti [5 6]

Affiliations Expand

- PMID: 42631798

- **DOI: 10.1007/s12325-026-03692-3**

Abstract

Introduction: The introduction of precision therapy in severe asthma is shifting treatment goals from asthma control towards the more ambitious target of clinical remission. This study evaluated clinical remission in patients with severe asthma receiving mepolizumab in Europe.

Methods: A retrospective, physician panel-based chart review was conducted based on anonymised data from patients who initiated mepolizumab in Italy, Germany, and France from 30 June 2017 to 30 June 2022. Primary outcome was clinical remission at Year 1 post-initiation, defined as the absence of severe or clinically significant asthma exacerbations, no maintenance oral corticosteroid use in Month 12, and an Asthma Control Test score ≥ 20, plus either lung function stabilisation (no worsening of forced expiratory volume in 1 s [FEV_1] from baseline) or lung function optimisation (FEV_1 ≥ 80% predicted). Individual components of clinical remission were compared before versus after mepolizumab initiation, and clinical remission at Year 2 was also assessed.

Results: Data from 308 patients were included by 117 physicians. Clinical remission based on lung function stabilisation was achieved by 37.8% of patients (101/267) at Year 1 and 58.7% (108/184) at Year 2. Remission based on lung function optimisation was achieved by 18.8% (58/308) at Year 1 and 28.6% (55/192) at Year 2. Regardless of the lung function definition used, ≥ 90% of patients who achieved remission at Year 1 maintained it until Year 2 (among those with evaluable data). Individual components of clinical remission, including FEV_1 ≥ 80% predicted, showed significant improvements at 12 months compared with baseline (all $p < 0.001$).

Conclusion: This real-world study demonstrates that clinical remission is an ambitious and achievable treatment goal for patients with severe asthma treated with mepolizumab in Europe. Graphical abstract available for this article.

Keywords: Asthma exacerbations; Clinical remission; Lung function; Oral corticosteroids; Retrospective study.

Plain language summary

Mepolizumab is an injectable treatment for severe asthma. As effective treatments like mepolizumab are developed for severe asthma, some patients reach a point where they have no severe asthma attacks, do not need to use steroid-based tablets, have their asthma under control, and have either stable lung function (i.e. lung function did not get worse) or optimal lung function (i.e. lung function reaches the level of a healthy adult) for at least 1 year. This is referred to as being in "clinical remission". The goal of this study was to determine whether patients treated with mepolizumab could achieve clinical remission. Doctors reviewed the medical records of 308 patients treated with mepolizumab in Europe (France, Germany, and Italy) from 2017 to 2022. Using lung function stabilisation as the measure, 38% of patients achieved clinical remission after 1 year, increasing to 59% after 2 years. Using lung function optimisation as the measure, 19% of patients achieved remission after 1 year, rising to 29% by the 2nd year. Most patients who achieved

remission in the 1st year also achieved remission in the 2nd year, regardless of the definition used. This study showed that clinical remission is an ambitious and achievable goal for many people with severe asthma treated with mepolizumab.

Conflict of interest statement

Declarations. Conflict of Interest: Stephen G. Noorduyn and Steven Gould are employed by GSK and hold financial equities in GSK. Samantha N. Valliant was a university worker employed by GSK at the time of the study; she is currently employed by Daiichi Sankyo. Louise H. Yu, Rose Chang, Megan Pinaire, Leili Young-Xu, and Mei S. Duh are employees of Analysis Group, Inc., which received payment from GSK to conduct this study. Rui Song was employed by Analysis Group, Inc. at the time of the study; they are currently employed by Bayer. Stefano Aliberti has received consultancy or speaker fees from GSK, unrelated to this study. Ethical Approval: The study was conducted in accordance with applicable laws regarding participant privacy. No direct patient contact or primary collection of individual human data occurred, and all data were anonymised; therefore, informed consent was not required. The study received an exemption from Pearl institutional review board and was registered with the Paul-Ehrlich Institute in Germany.

- 40 references

Supplementary info

Grants and fundingExpand

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Medicine (Baltimore)

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. 2026 Aug 21;105(34):e50266.

doi: 10.1097/MD.0000000000050266.

Gut microbiota, inflammatory proteins, and allergic diseases: A bidirectional Mendelian randomization study

Hao Zhu [1], Minghang Dou, Xianggun Jin

Affiliations Expand

- **PMID: 42629664**

- **DOI: 10.1097/MD.0000000000050266**

Free article

Abstract

Some authors suggest a link between gut microbiota and allergic diseases; however, the genetically predicted relationship and the role of inflammatory proteins as mediators are still uncertain. Gut microbiota, inflammatory proteins, and 5 types of allergic diseases, namely allergic rhinitis (AR), atopic dermatitis, allergic conjunctivitis, food allergy, and asthma, were identified from large-scale genome-wide association studies summary data. In a 2-sample, bidirectional Mendelian randomization (MR) study, we systematically conducted 2980 primary tests (298 exposures tested bidirectionally against 5 allergic diseases). We used the inverse-variance weighted method as our primary estimator, with a prespecified false discovery rate threshold of q < 0.1 to identify robust associations. We further employed a 2-step MR and multivariable MR approach to test for potential mediation by inflammatory proteins. This study provides evidence of potential genetically predicted associations between specific gut microbiota, inflammatory proteins, and allergic diseases, along with exploratory mechanistic observations regarding mediation. These findings support that host-gut microbiota interactions may play a role in allergic disease susceptibility, although further validation using colocalization and cis-protein Quantitative Trait Locus analyses is required to establish clinical relevance. We identified numerous potential genetically predicted associations between the gut microbiota, inflammatory proteins, and the 5 allergic diseases. Notably, 2 of these associations remained robust after stringent false discovery rate correction and were identified as robust MR-supported associations. Specifically, a 1 standard deviation increase in genetically predicted relative abundance log-ratio of the species Collinsella aerofaciens was associated with a 23.5% higher risk of AR (odds ratio = 1.235, 95% confidence interval = 1.097-1.391, P = 4.83 × 10-4, adjustP = .098). Furthermore, genetically predicted higher levels of the CD40L receptor (CD40) were associated with a reduced risk of asthma (odds ratio = 0.939, 95% confidence interval = 0.906-0.974, P = 7.52 × 10-4, adjustP = .068). In exploratory mediation analyses, Fractalkine (CX3CL1) was found to potentially mediate the genetically predicted association between the genus Flavonifractor and AR (mediated proportion 18.5%; P = .024), and CD40 potentially mediated the genetically predicted association between the species Ruminococcus obeum and asthma (mediated proportion 11.02%; P = .046).

Keywords: GWAS; Mendelian randomization; allergic diseases; gut microbiota; inflammatory proteins.

Conflict of interest statement

The authors have no conflicts of interest to disclose.

- **93 references**

Supplementary info

MeSH terms, Grants and fundingExpand

Full text links

Proceed to details

Cite

6

Br J Dermatol

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. 2026 Aug 22:ljag352.

doi: 10.1093/bjd/ljag352. Online ahead of print.

Does the higher asthma prevalence in preterm children with atopic dermatitis indicate a distinct allergic pathway?

Fatih Kaplan [1]

Affiliations Expand

- **PMID: 42628975**

- **DOI: 10.1093/bjd/ljag352**

No abstract available

Full text links

Proceed to details

Cite

7

Published Erratum

Int Arch Allergy Immunol

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. 2026 Aug 21:1-11.

doi: 10.1159/000553551. Online ahead of print.

Erratum

No authors listed

- PMID: 42627772

- DOI: 10.1159/000553551

Free article

Abstract

In the article "House Dust Mite Sublingual Immunotherapy for Allergic Rhinoconjunctivitis: Comprehensive Review and Meta-Analytical Evidence" [Int Arch Allergy Immunol. 2026; https://doi.org/10.1159/000551015] by Alqutub et al., Table 1 was published with an error.Table 1.Summary of included studiesStudy IDStudy designCountryTotal participantsIntervention/comparatorsFollow-up, monthsInclusion criteriaConclusionBergmann 2014 [26]RCT7 European countries466HDM SLIT tablets (Stallergenes) 300IR, 500IR, or placebo12Patients (18-50 y) with HDM AR (≥1 y); controlled asthma allowed. The patient must have a positive HDM SPT and sIgE test results. The patient must have baseline symptoms12 months of 300 IR and 500 IR HDM SLIT tablets were efficacious and well tolerated. Efficacy was maintained during the treatment-free follow-up yearGuo 2017 [43]RCTChina96SLIT with a mixture of Der p and Der f extract (Pangramin SLIT; ALK-Abello) or placebo12Patients (5-55 y) with HDM AR (≥1 y) and +/-mild intermittent asthma had positive SPT and/or sIgE responses to HDMSLIT with mixed HDM extract significantly relieved AR symptoms reduced the need for antiallergic drugs compared to placebo, and was well toleratedRoux 2016 [59]RCTCanada266Sublingual tablets of HDM allergen extracts (STG320, Stallergenes) 500IR, 300IR, 100IR, or placebo6Patients (18-55 y) with uncontrolled HDM AR (≥1 y). The patients tested positive for HDM SPT and sIgE. Required baseline allergen challenge symptomsDose-dependent effect of sublingual HDM immunotherapy demonstrated in EEC. 300IR and 500IR doses are to be further evaluated. Well tolerated, AEs were mostly local and mildHoshino 2020 [44]RCTJapan111SQ-HDM SLIT tablet (Torii/ALK-Abello) plus pharmacotherapy or pharmacotherapy alone11Patients (20-65 y) with HDM AR. Positive NPT & sIgE to HDMHigh serum periostin levels at enrollment predict the clinical response (RQLQ improvement) to SQ-HDM SLIT. Serum periostin appears to be a useful biomarkerBozek 2013 [29]RCTPoland32Sublingual allergen-specific immunotherapy (SLIT) with HDM allergens (Staloral 300R, Stallergenes) or placebo36Patients (60-75 y) with HDM AR. Positive SPT, sIgE, and NPT to HDMSLIT for HDM generated significant clinical improvement (nasal symptoms, medication use) in elderly patients compared to placebo, particularly during the heating season. Well toleratedBush 2011 [32]RCTUSA (Madison, WI)21High-dose (4200 AU/d; ∼70 µg Der f

1/d) or low-dose (60 AU/d; ~1 µg Der f 1/d) Der f SLIT vaccine (Greer Laboratories), or placebo12-18Patients (18-50 y) with Der f AR, +/- mild intermittent asthma. Positive sIgE to Der fHigh-dose Der f SLIT was generally tolerable, increased serum Der f-specific IgG4, and improved bronchial threshold to allergen. Larger US trials are warrantedLin 2015 [47]RCTChina121SLIT with Der.f drops or pharmacotherapy (oral antihistamines)48Patients (4-69 y) with moderate-to-severe Der f AR (≥1.5 y). Positive SPT & sIgEThe 3-year SLIT course was more efficacious than 1-year or 2-year courses. Patients achieved 1-year long-term clinical benefits from HDM SLITTonnel 2004 [62]RCTFrance32SLIT with Der p and Der f 50/50 allergen extract (Stallergenes) tablets (100 IR) or placebo24Patients (7-45 y) with chronic rhinitis +/- moderate asthma. HDM sensitized (SPT & RAST). Required baseline symptomsSLIT tablets showed superiority over placebo for rhinitis scores (total, blocked nose, itching) after 1 and 2 years. Low medication use in all. No serious AEsWang 2013 [63]RCTChina120SLIT with Der p and Der f extract (Zhejiang Wolwo Bio-Pharmaceutical)6Patients (4-60 y) with moderate-to-severe persistent AR +/- asthma. Positive HDM SPT & sIgESLIT with mixed HDM extract is effective and safe for HDM-induced AR. Onset of action as early as 14 weeksNolte 2016 [14]RCTUSA, Canada1,482Daily SQ HDM SLIT-tablet (12 SQ-HDM; Merck/ALK) or placebo for approx. 52 weeks12Patients (≥12 y) with HDM AR/C +/- controlled asthma. Positive HDM SPT & sIgE. Required baseline symptoms12 SQ-HDM SLIT-tablet was well tolerated and improved HDM rhinitis symptoms in North American adolescents and adults. TCRS improved 17% vs. placeboOkamoto 2016 [52]RCTJapan927HDM SLIT tablets (Shionogi/Stallergenes) 300 IR, 500 IR, or placebo12Patients (12-64 y) with HDM AR +/- intermittent asthma. Positive sIgE & NPT. Required baseline symptomsOne-year treatment with 300 IR and 500 IR HDM tablets was effective and safe for AR. The recommended therapeutic dose is 300 IROkubo 2016 [53]RCTJapan946SQ HDM SLIT-tablet (TO-203, Torii/ALK/Merck) 10,000 JAU or 20,000 JAU, or placebo12Patients (12-64 y) with moderate-to-severe HDM AR. Positive sIgE & NPTSQ HDM SLIT-tablet (both doses) confirmed efficacy and a favorable safety profile in Japanese patients with moderate to severe HDM AR. TCRS reduced from week 12Passalacqua 2006 [54]RCTItaly (multicenter)56SLIT with monomeric carbamylated allergoid of HDM (Lais; Lofarma S.p.A.) tablets (1000 AU biweekly) or placebo24Patients (18-50 y) with mild persistent AR +/- mild intermittent asthma. Positive HDM SPT & RASTSLIT with carbamylated allergoid was clinically effective (symptoms, nasal obstruction, drug intake in year 1; QoL item "change in health status") and safe in mite-induced mild diseaseMosbech 2015 [50]RCTEurope (multinational)241SQ HDM SLIT-tablet (1, 3, or 6 SQ-HDM; ALK) or placebo12Patients (≥14 y) with HDM AR & mild-to-moderate HDM asthma. Positive HDM SPT & sIgEEfficacy in mild to severe AR of 6 SQ-HDM vs. placebo was demonstrated by statistically significant improvements in TCRS and RQLQ scores in subjects with AR present at baseline. Well toleratedDidier 2016 [37]RCTFrance, Spain219SLITone ULTRA® HDM mix (50% DP/50% DF) at 50, 150, or 300 SRU.6Patients (≥18 y) with moderate-to-severe persistent HDM AR +/- asthma. Positive SPT & sIgE. Required baseline symptomsDose-response for immunological markers (IgE-blocking factor, IgG4) and safety. 300 SRU showed a better immunological response and was considered the optimal maintenance dose. AEs increased with dose, mostly mild to moderateMacedo 2025 [48]RCTBrazil65SLIT with liquid drops combining extracts of Der p (1 µg Der p 1/day) and Blo t (753 UBE Blo t/day) or placebo12Patients (12-60 y) with moderate/severe persistent AR (≥ 2 y). Sensitized to Der p & B. tropicalis (SPT or sIgE)After 1 year, SLIT drops significantly reduced antihistamine use vs. placebo with a good safety profile. No significant

**changes in serum total IgE, sIgE, or IgG4 for either allergen vs. placeboHüser 2016 [67]RCTGermany12712-week treatment with sublingual monomeric allergoid tablets (carbamylated, Der p and f; Lofarma S.p.A.) at 300, 1,000, 2000, or 3000 UA/day, or placebo3Patients (18-75 y) with HDM allergic rhinoconjunctivitis (≥2 y). Positive sIgE, SPT, & CPT12-week daily treatment with 2000 UA/day monomeric allergoid SLIT tablets is well tolerated and reduces CPT reaction in HDM-allergic patients. (The primary endpoint of mean allergic severity decrease was not statistically significant)Demoly 2016 [35]RCT12 European countries992SQ HDM SLIT-tablet (ALK) at 6 SQ-HDM or 12 SQ-HDM, or placebo12Patients (18-65y) with moderate-to-severe HDM AR despite pharmacotherapyBoth 6 SQ-HDM and 12 SQ-HDM SLIT tablets confirmed efficacy (reduced TCRS, symptoms, improved QoL) and favorable safety profile in adults with HDM-induced AR. The treatment effect was observed starting from 14 weeks onwardDemoly 2020 [36]RCTEurope, USA, Canada, Israel, Russia1,476300 IR HDM SLIT tablet (Der p: Der f 1:1 extract; Stallergenes Greer) or placebo12Patients (≥12y) with moderate-to-severe HDM ARThe 300 IR sublingual HDM tablet is an effective, safe treatment for HDM-induced allergic rhinitis in adults and adolescents, with clinically meaningful benefits and good tolerabilityPotter 2015 [57]RCTSouth Africa60HDM SLIT (Staloral 300 IR/mL, Der p; Stallergenes) or placebo24Patients (18-60 y) with persistent Der p rhinitis. Positive SPTA good clinical response (≥60% improvement in symptoms and QoL) to 2 years of HDM SLIT is associated with significant decreases in IL-5, IL-13, and IL-4 relative to IFN-γ. Both SLIT and placebo groups showed clinical improvementNolte 2015 [51]RCTAustria (Vienna Challenge Chamber)124HDM SLIT tablet (MK-8237; Merck/ALK-Abello) at 12 DU, 6 DU, or placebo6Patients with HDM AR/C +/- asthma (for EEC study)MK-8237 (12 DU) HDM SLIT-tablet reduced nasal and ocular symptoms in an EEC, exceeding WAO clinical efficacy criteria. The onset of action for 12 DU was week 8. Dose- and time-dependent improvements were observed. Well toleratedGunawardana 2017 [42]RCTUK2312 SQ-HDM SLIT-tablet (MK-8237; Merck & Co/ALK) or placebo3Patients (18-55 y) with HDM AR. Positive SPT & sIgE. Required NAC symptom scores12 SQ-HDM SLIT-tablet significantly increased serum HDM-specific IgG4 and IgE blocking factor and significantly decreased early-phase nasal symptoms after NAC. No significant effects on mucosal cytokinesGuez 2000 [41]RCTFrance72SLIT with Der p f 50/50 allergen extract (Staloral 300 IR/mL; Stallergenes) or placebo24Patients (6-51 y) with chronic rhinitis +/- moderate asthma. HDM sensitized (SPT & RAST). Required baseline symptomsActive SLIT treatment was superior to placebo for rhinitis scores (total, blocked nose, itching) after 1 and 2 years. Low medication use. No serious AEs. Availability of a solid form (tablet) would be progressChen 2020 [34]RCTChina86Treatment group: SLIT with Der f drops (CHANLLERGEN®, WolwoBiotech) + pharmacotherapy on demand. Control group: Standard pharmacotherapy only24Patients (60-75 y) with moderate/severe persistent AR (≥2 y). Positive sIgE to HDMSLIT plus pharmacotherapy provided a greater clinical benefit (CSMS, VAS) than pharmacotherapy alone at 2 years in elderly patients (60-75 years) with HDM-induced AR. 41.9% of patients dropped out within 2 years of SLITJordakieva 2017 [45]RCTAustria77Intervention: HDM allergen challenge in a chamber.
 Groups: Placebo SLIT, Low-dose HDM SLIT, High-dose HDM SLIT.3-16Patients (18-65 y) with HDM AR +/- mild intermittent asthma. Confirmed HDM sensitization (SPT & sIgE)Airway allergen challenge in HDM-allergic subjects leads to a significant decrease in circulating erythrocytes and an increase in neutrophils, regardless of prior SLIT. SLIT had no impact on this acute responseBozek 2021 [30]RCTPoland30SQ-HDM SLIT tablets or placebo12Patients (>18 y) with LAR to**

HDM & mild-to-moderate asthma. Positive NPT, negative SPTSLIT improved nasal and bronchial symptoms and reduced symptomatic treatment in patients with LAR and asthma with hyperresponsiveness to HDMsBożek 2023 [31]Prospective, observational studyPoland60SLIT (Staloral mites) or SCIT (Purethal mites) for HDM.120Patients (>60 y) with perennial AR. Monosensitized to HDMAIT (SLIT and SCIT) may be beneficial for treating seniors with HDM-allergic rhinitis. Sustained decrease in clinical symptoms relative to placebo after 7 years of follow-up. sIgG4 is constantly presentGao 2020 [40]Prospective observational studyChina135SLIT with Der f drops (Chanllergen; Zhejiang Wolwo Bio-Pharmaceutical)36Patients (4-60 y) with moderate-to-severe HDM AR. Positive sIgESix months might be a critical time point for efficacy assessment and dosage adjustment for AR patients after SLIT. In patients with low response, dosage enhancement within a specific range may enhance effectivenessSoh 2016 [60]Prospective observational studySingapore39Standardized Staloral® HDM extract (Der p, Der f, and/or B. tropicalis)24Patients with persistent AR. Positive SPT to Der p, Der f, or B. tropicalisSublingual immunotherapy with HDM extracts (including B. tropicalis) is efficacious for HDM allergic rhinitis over 2 years. Symptom and QoL scores improvedKim 2010 [46]Prospective observational studyKorea58SLIT with standardized HDM extracts (50% Der p/50% Der f; Pangramin SLIT; ALK-Abello)12Patients with AR are monosensitized to HDM. Positive SPT and/or sIgESLIT improved symptoms and medication scores in Korean patients with HDM AR. Changes in ECP and sIgE for Der f were observed. High ECP may predict effectivenessXu 2015 [65]Prospective observational studyChina50SLIT with Der f drops for >1 year. Monosensitized (n = 20) vs. Polysensitized (n = 30) groups>12Patients (4-60 y) with moderate-to-severe dust mite AR. Positive SPT & sIgENo significant difference in SLIT efficacy between dust mite monosensitized and polysensitized AR patientsBaba 2021 [12]Prospective observational studyIndia (Kashmir)244SLIT tablets (HDM-specific: Df, Dp, Blomia) vs. SLIT+PT vs. PT alone36Patients with mild-moderate persistent asthma and/or moderate-severe AR. HDM monosensitized (confirmed by SPT)SLIT demonstrated sustained clinical improvement, ICS dose/duration reduction, and prevention of desensitization in HDM-sensitized endobronchial allergies. No significant change in skin reactivity or sIgE/total IgE ratioMeng 2016 [49]Prospective observational studyChina46HDM SLIT (Der f drops; Chanllergen)12Patients with moderate-to-severe persistent AR. HDM sensitized (SPT and/or sIgE)HDM SLIT downregulated Th2-type immune responses mediated by the TSLP-OX40L signaling pathway. TNSS, INSS, and TSLP in nasal lavage decreasedTempels-Pavlica 2024 [61]Prospective observational studyNetherlands415Daily intake of 12 SQ-HDM SLIT-tablet (ACARIZAX; ALK-Abelló)12Patients (18-65 y) with HDM AR +/- asthma were prescribed an HDM SLIT-tablet (real-world evidence)HDM SLIT-tablet is a safe and well-tolerated AR treatment in Dutch daily clinical practice. AEs occur often but are mostly mild and decrease during the first year. CARAT scores improved, and medication use decreasedZhu 2021 [66]Prospective observational studyChina78SLIT (standardized Der f allergen drops; Wolwo Pharma Biotechnology)36Patients with HDM AR. Positive SPT and/or sIgESerum sST2 levels increased in HDM-induced AR, correlated with severity, and sST2 is a potential biomarker for predicting SLIT responseChan 2019 [33]Prospective case-controlled studyHong Kong120SLIT with allergen extract (SLITone Ultra HDM ALK-Abello)12Patients with HDM perennial AR. Positive sIgE or SPTSLIT was an adjunctive therapy that improved not only allergic rhinitis outcomes but also comorbid allergic conditions (asthma, allergic conjunctivitis, and atopic dermatitis). Treatment-related adverse reactions were mild

and self-limitingReiber 2021 [58]Prospective observational studyGermany1,525Standardized quality (SQ) HDM SLIT-tablet (ACARIZAX, ALK)12Patients with HDM AR +/- asthma were prescribed SQ HDM SLIT tablet in routine practice (real-world evidence)SQ HDM SLIT-tablet was effective and well-tolerated in real-life clinical practice. ADRs consistent with RCT data. Asthma control improvedPei 2025 [55]Retrospective observational studyChina74SLIT with standard Der f drops (Zhejiang Wolwo Bio-Pharmaceutical)12Patients (4-60 y) with moderate-to-severe AR with epistaxis. Positive HDM SPTSLIT with Der f drops was effective and safe for AR patients with epistaxis, improving rhinitis symptoms while relieving epistaxis. BS correlated with CSMS and VASWang 2024 [68]Retrospective observational studyChina258Individualized dynamic ascending high-dose HDM-SLIT drops or regular-dose HDM-SLIT drops24Patients (4-57 y) with moderate-to-severe HDM AR. Positive SPTA 2-year dynamic dose-ascending regimen for HDM-SLIT offers superior efficacy for AR patients compared to a regular dose while maintaining safetyFritzsching 2022 [39]Retrospective observational studyGermany8,570Allergen immunotherapy (AIT)-various forms, including SLIT tablets for HDM, grass, tree, cedar, and ragweed108Patients with a confirmed diagnosis of AR +/- asthma receiving AIT (retrospective database study)AIT demonstrated longer-term and sustained real-world effectiveness in AR and asthma, including reduced medication, exacerbations, and pneumoniaPfaar 2024 [56]Post hoc analysis of RCT (Demoly 2020)9 European countries818300 IR HDM SLIT tablets (Stallergenes Greer) or a placebo daily for 12 months (original trial)12Patients with moderate-to-severe HDM-AR Positive HDM IgE & SPT. Required baseline symptomsThis sub-analysis confirmed the 300 IR HDM SLIT tablet is an effective and safe treatment for European adults/adolescents with HDM-AR, with clinically meaningful benefits, even better than in the overall trial populationWorm 2024 [64]Pooled analysis of 8 RCTsMultinational3,171300IR HDM-SLIT tablet (Actair®/Orylmyte®/Aitmyte®) vs. placeboUp to 12Patients (5-65 y) with HDM AR (≥1 y) +/- controlled asthma. Confirmed HDM sensitization (pooled analysis)The 300IR HDM-SLIT tablet has a favorable safety profile, confirmed by both RCTs and real-world experience. It is well-tolerated in adults, adolescents, and children, regardless of asthma statusBernstein 2018 [27]Pooled analysis of 5 RCTsUSA, Canada, Europe2,923SQ HDM SLIT-tablet (12 SQ-HDM; ALK-Abelló/Merck)Up to 13Patients (often ≥12 or ≥18 y) with HDM AR/C (≥1 y) +/- asthma Positive HDM SPT and/or sIgE. Required baseline symptoms (pooled analysis)12 SQ-HDM SLIT-tablet consistently improved symptoms and was well tolerated in relevant subgroups. Local application site reactions were typically mild-to-moderate and transientEmminger 2017 [38]Pooled analysis of 2 RCTsEurope1,215SQ HDM SLIT-tablet (12 SQ-HDM) vs. placebo12-19Patients with HDM respiratory allergy (rhinitis and/or asthma) (pooled analysis)The SQ HDM SLIT tablet is well tolerated. The safety profile was comparable for subjects with HDM respiratory allergic disease, irrespective of their asthma status or control levelBlaiss 2024 [28]Pooled analysis of 11 RCTEurope, North America (original trials)2,221SQ SLIT tablets for grass, tree, ragweed, and HDM (ALK)VariablePatients with AR/C (from original trials) (pooled analysis)Consistent and statistically significant improvements in overall RQLQ scores across all 4 SQ SLIT tablets (including HDM) vs. placeboAbbreviations: AE (Adverse Event), AIT (Allergen Immunotherapy), AR (Allergic Rhinitis), AR/C (Allergic Rhinitis and/or Conjunctivitis), AU/d (Allergen Units per day), Blo t (Blomia tropicalis), BS (baseline symptom scores), CARAT (Control of Allergic Rhinitis and Asthma Test), CPT (Conjunctival Provocation Test), CSMS (Combined Symptom and Medication Score), Der f (Dermatophagoides farinae), Der p (Dermatophagoides

pteronyssinus), DU (Developmental Unit), EEC (Environmental Exposure Chamber), HDM (House Dust Mite), ICS (Inhaled Corticosteroid), IgE (Immunoglobulin E), IgG4 (Immunoglobulin G4), INSS (Individual Nasal Symptom Score), IR (Index of Reactivity), JAU (Japanese Allergy Unit), LAR (Local Allergic Rhinitis), NAC (Nasal Allergen Challenge), NPT (Nasal Provocation Test), OX40L (OX40 Ligand), QoL (Quality of Life), RAST (Radioallergosorbent Test), RCT (Randomized Controlled Trial), RQLQ (Rhinoconjunctivitis Quality of Life Questionnaire), SCIT (Subcutaneous Immunotherapy), sIgE (specific Immunoglobulin E), sIgG4 (specific Immunoglobulin G4), SLIT (Sublingual Immunotherapy), SPT (Skin Prick Test), SQ (Standardized Quality), SRU (Standard Reactivity Unit), sST2 (soluble Suppression of Tumorigenicity 2), TCRS (Total Combined Rhinitis Score), TNSS (Total Nasal Symptom Score), TSLP (Thymic Stromal Lymphopoietin), UA/day (Units of Allergoid per day), VAS (Visual Analog Scale), WAO (World Allergy Organization), y (year).The corrected Table 1 is shown on the following pages.

Erratum for

- House Dust Mite Sublingual Immunotherapy for Allergic Rhinoconjunctivitis: Comprehensive Review and Meta-Analytical Evidence.

Alqutub A, Abumohssin AG, Alqutub ST, Alghamdi AM, Alqutub A, Alghanmi SA, Aljuhani A, Alrdeeni RA, Alharbi N, Mogharbel A, AlHindi A, Muathen SH.Int Arch Allergy Immunol. 2026 Feb 27:1-33. doi: 10.1159/000551015. Online ahead of print.PMID: 41758730

Supplementary info

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Thorax

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Impact of sex, socioeconomic deprivation, ethnicity and region on exacerbation rates and mortality of chronic respiratory diseases in England: population-based cohorts

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Collaborators, Affiliations Expand

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- DOI: 10.1136/thorax-2026-224765

Abstract

Background: Inequalities in chronic respiratory diseases persist, yet up-to-date evidence on outcomes remains limited. We described national mortality and exacerbation rates in people with asthma and chronic obstructive pulmonary disease (COPD) since the beginning of the COVID-19 pandemic and assessed variation by inequalities.

Methods: England primary care records from the General Practice Extraction Service data for Pandemic Planning and Research were linked to Hospital Episode Statistics and Office for National Statistics mortality data. Cohorts of primary care diagnosed asthma and COPD were defined prior to 1 November 2019. Monthly age-sex-standardised exacerbation rates (Systematized Nomenclature of Medicine Clinical Terms (SNOMED-CT) and Internationl Classification of Diseases (ICD) 10 codes) and mortality rates (ICD-10 codes) were calculated from 1 November 2019 to 31 March 2025, stratified by sex, Index of Multiple Deprivation (IMD), ethnicity and region.

Results: The study included 7644 510 people with asthma and 1 211 975 with COPD. Mean monthly exacerbation rates were higher in females than males (33% and 30% higher for asthma and COPD, respectively), while mean monthly all-cause mortality rates were 13% and 15% higher in males than females. Mean monthly exacerbation and all-cause mortality rates were higher in IMD-1 compared with IMD-10 across all conditions (asthma: 123% and 100% higher, COPD: 68% and 41% higher, respectively). Mean monthly all-cause mortality and exacerbation rates were higher in the northeast than the southwest (asthma: 22% and 69% COPD: 15% and 42% higher, respectively). Outcome rates varied by ethnicity across conditions.

Conclusions: Inequalities in chronic respiratory disease outcomes persist across England despite sustained policy focus on reducing health inequalities.

Keywords: Asthma Epidemiology; COPD epidemiology; COVID-19.

Conflict of interest statement

Competing interests: HW reports a grant from NIHR BRC for work conducted in the NHSE SDE. AS reports grants from HDRUK and ISCF for the submitted work and from asthma and lung UK outside the submitted work. JKQ reports grants from Industrial Strategy Challenge Fund, MRC and HDR UK for the submitted work and

from GSK, Evidera, Chiesi and AZ outside the submitted work. TB, JB, LH and GD have no conflicts of interest.

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Review

J Asthma

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The Efficacy and Safety of Dupilumab for Moderate-to-severe Asthma: A Systematic Review and Meta-analysis

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- DOI: 10.1080/02770903.2026.2721186

Abstract

Objective: Asthma poses a heavy global health burden, and severe cases are poorly controlled by conventional therapy. Dupilumab is indicated for patients aged ≥6 years with severe eosinophilic or Type 2 asthma. Patients with different baseline characteristics may respond differently to this agent. Therefore, a comprehensive analysis of its efficacy and safety was performed.Data Sources: PubMed, EMBASE, the Cochrane Library, and ClinicalTrials.gov were searched from database inception to January 28, 2026.Study Selections:Only randomized controlled trials (RCTs) of dupilumab for moderate-to-severe asthma were included; non-RCTs and reviews were excluded.

Results: Compared with placebo, dupilumab significantly cut annualized exacerbation rate (RR = 0.45, 95% *CI*: 0.39-0.51), improved Asthma Control Questionnaire-5 (ACQ-5) scores (12 weeks MD = -0.36, 95% CI: -0.47 to -0.25; 24

weeks MD = -0.26, 95% CI: -0.32 to -0.21, all *P* < 0.05) and Asthma Quality of Life Questionnaire (AQLQ) scores (12 weeks MD = 0.20, 95% *CI*: 0.11 to 0.29; 24 weeks MD = 0.25, 95% *CI*: 0.18 to 0.32, all *P* < 0.05), and enhanced Forced Expiratory Volume in one second(FEV_1) (12 weeks MD = 0.15, 95% *CI*: 0.12 to 0.18; 24 weeks MD = 0.16, 95% *CI*: 0.12 to 0.20, all *P* < 0.05). These benefits were stronger in patients with blood eosinophils ≥300 cells/μL. The safety profile of dupilumab was similar to placebo.

Conclusions: Dupilumab effectively alleviates asthma symptoms, improves lung function and quality of life, with favorable safety, proving its clinical value for severe asthma patients, particularly those with high eosinophils.

Keywords: Dupilumab; Meta-analysis; asthma; bronchial asthma; clinical application; dupilumab; eosinophilic; literature review; quantitative synthesis; safety profile; therapeutic effect.

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Serum von Willebrand Factor and Thymic Stromal Lymphopoietin Levels Are Associated With Asthma Predictive Index in Preschool Children With Recurrent Wheezing

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- DOI: 10.1111/apa.70729

Abstract

Aim: Recurrent wheezing is a very common condition among preschool children. One third of these patients will develop asthma. Early risk stratification is essential. This can be done through a standardized clinical index, the Asthma Predictive Index (API), but its predictive accuracy may be improved through the integration of biological markers.

Methods: We conducted a prospective cohort study, enrolling children aged 1 to 5 years with recurrent wheezing. The API was calculated to classify participants as API-positive (Group 1) or API-negative (Group 0). Blood samples were collected in order to perform a complete blood count and measurement of total Immunoglobulin E, thymic stromal lymphopoietin (TSLP) and von Willebrand factor (vWF) levels.

Results: The study included 92 children. The median TSLP level was 0.473 fg/mL and the median vWF level was 107.4%. According to the API, 74 were API-positive and 18 API-negative. TSLP (0.48 vs. 0.39 fg/mL; p = 0.045) and vWF levels (111.6% vs. 91.7%; p = 0.012) were significantly higher in API-positive children. In multivariable analysis, elevated TSLP and vWF levels were independently associated with API positivity.

Conclusions: These findings suggest an association between vWF, TSLP, and API status; however, longitudinal studies are required to determine their value in predicting future asthma development.

Keywords: asthma prediction; biomarkers; preschool wheezing; thymic stromal lymphopoietin; von Willebrand factor.

- **29 references**

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Review

J Asthma

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T2-Low Asthma: Mechanistic Pathways, Biomarkers, and Emerging Therapeutic Strategies

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- PMID: 42619443

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Abstract

Objective: To synthesize current definitions, mechanistic pathways, biomarker limitations, and evidence-graded therapeutic strategies for T2-low asthma as a heterogeneous clinical and translational construct.

Data sources: This narrative review searched PubMed/MEDLINE, Embase, the Cochrane Library, and reference lists of key articles from database inception to June 2026.

Study selections: Peer-reviewed human studies, randomized trials, post hoc analyses, systematic reviews, meta-analyses, guidelines, severe-asthma registries, biomarker cohorts, and mechanistic asthma studies were prioritized. Preclinical studies were used only when human evidence was limited and were interpreted as hypothesis-generating.

Results: T2-low asthma is usually defined by low eosinophils, low fractional exhaled nitric oxide, and limited evidence of canonical type 2 inflammation, but this remains an exclusionary definition. The construct includes neutrophilic, paucigranulocytic, obesity-associated, exposure-related, infection-linked, bronchiectasis-overlap, and remodeling-dominant presentations. Candidate pathways include Th1/Th17 signaling, CXCL8/CXCR2-mediated neutrophil recruitment, inflammasome activation, IL-6-associated immunometabolic inflammation, epithelial alarmins, dysbiosis, and small-airway dysfunction. No positive biomarker currently identifies treatment-responsive T2-low asthma in routine practice. Management relies on diagnostic confirmation, optimized inhaled therapy, repeated phenotyping, treatable-traits care, and selected add-on options including tezepelumab, azithromycin, or bronchial thermoplasty in appropriate patients. A total of 63 references were synthesized in this review.

Conclusion: T2-low asthma is clinically important but mechanistically diverse. Progress requires validated positive biomarkers, harmonized phenotyping, and biomarker-enriched trials that test therapies in coherent subgroups without overstating readiness for routine care.

Keywords: IL-6; T2-low asthma; airway remodeling; alarmins; azithromycin; biomarkers; inflammasome; neutrophilic inflammation; non-eosinophilic inflammation; paucigranulocytic asthma; severe asthma; tezepelumab; treatable traits.

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The effect of biologics on pulmonary function tests and small airways in patients with severe asthma: a real-life study

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Affiliations Expand

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- DOI: 10.1080/02770903.2026.2721175

Abstract

Introduction: Significant advances have been made in the treatment and management of severe asthma with the development of biological treatments.

Objective: The aim of this study was to investigate changes in lung function tests potentially reflecting distal airflow limitation in patients with T2-high severe asthma treated with biological agents.

Methods: The study included a total of 80 patients diagnosed with T2-high severe asthma who were treated with biologics (omalizumab (*n* = 36 (45%)), mepolizumab (*n* = 35 (43.8%)), or benralizumab (*n* = 9 (11.2%)) for at least 1 year. The demographic data, comorbid diseases, asthma control test (ACT) scores, exacerbation rates, and pulmonary function test results of the patients were evaluated retrospectively.

Results: The rate of male patients was higher in the benralizumab group (*p* = 0.017), allergic rhinitis and atopy were significantly higher in the omalizumab group (*p* < 0.001), and CRSwNP was higher in the mepolizumab and benralizumab groups

compared to the omalizumab group ($p < 0.001$). At 12 months after treatment with omalizumab and mepolizumab, all pulmonary function tests (FEV1, FVC, FEV1/FVC, FEF25, FEF50, FEF75, FEF25-75, PEF) showed a statistically significant increase, ACT score increased, blood eosinophil count decreased, and the number of annual asthma exacerbations decreased ($p < 0.05$). At 12 months after treatment with benralizumab, the increase in FEF50 and FEV1/FVC and the decrease in the number of annual asthma exacerbations were statistically significant ($p < 0.05$).

Conclusion: In conclusion, the findings of this study support that biologics were associated with improvements in spirometric parameters potentially reflecting distal airflow limitation.

Keywords: Asthma; allergy; biologics; severe asthma; small airways dysfunction.

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J Osteopath Med

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. 2026 Aug 20.

doi: 10.1515/jom-2026-0084. Online ahead of print.

Efficacy of benralizumab, dupilumab, and tezepelumab in severe asthma: a meta-analysis with eosinophil-stratified subgroup analysis

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Affiliations Expand

- PMID: 42618555

- DOI: 10.1515/jom-2026-0084

Free article

Abstract

Context: Severe asthma affects 3-10 % of all asthma patients but accounts for disproportionately high morbidity and mortality. These patients tend to experience more frequent hospitalization compared to mild-to-moderate controlled asthmatics or the general population. Despite optimized inhaler therapy, many patients

experience persistent symptoms and impaired lung function. Biologics targeting type-2 inflammation, including benralizumab, dupilumab, and tezepelumab, have emerged as add-on treatments that improve lung function and quality of life. Blood eosinophil count has been identified as a predictor of treatment response (i.e., ≥150 cells/μL). Although individual randomized controlled trials have evaluated these biologics separately, no prior meta-analysis has compared their effects within a unified framework or systematically examined whether treatment benefits differ by baseline eosinophil levels.

Objectives: The objective of this meta-analysis was to evaluate the efficacy of benralizumab, dupilumab, and tezepelumab in adults with severe asthma. The primary outcome was the change in prebronchodilator forced expiratory volume in 1 s (FEV_1). Secondary outcomes included the Asthma Control Questionnaire (ACQ) and Asthma Quality of Life Questionnaire (AQLQ) scores. Analyses were stratified by baseline blood eosinophil count (≥300 vs. <300 cells/μL), with interaction testing to determine whether eosinophil levels modify treatment response.

Methods: A systematic literature search identified phase 3 randomized controlled trials evaluating benralizumab, dupilumab, and tezepelumab in adults with severe asthma. Data were extracted from the SIROCCO, QUEST, and PATHWAY/NAVIGATOR trials. Pooled estimates were calculated utilizing a random-effects meta-analysis model. Continuous outcomes were summarized as mean differences with 95 % confidence intervals (CIs), and subgroup analyses were performed by baseline eosinophil count (≥300 vs. <300 cells/μL). Interaction was assessed utilizing Cochran's Q test for subgroup differences, with statistical significance defined as $p<0.05$.

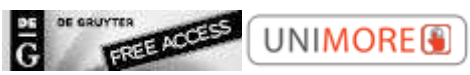
Results: The pooled improvement in prebronchodilator FEV_1 was 0.133 L (95 % CI, 0.107-0.159; $p<0.001$), exceeding the minimal clinically important difference (MCID) of 0.10 L. Effects were comparable across agents: benralizumab 0.130 L, dupilumab 0.132 L, and tezepelumab 0.135 L. The ACQ score improved by -0.293 (95 % CI, -0.358 to -0.227), and the AQLQ score increased by 0.283 (95 % CI, 0.214-0.351). Patients with eosinophils ≥300 cells/μL had greater FEV_1 gains (0.201 L; 95 % CI, 0.165-0.237) than those with <300 cells/μL (0.057 L; 95 % CI, 0.023-0.090), with significant subgroup heterogeneity ($p<0.001$).

Conclusions: All three biologics produced similar, clinically meaningful improvements in lung function. Higher baseline eosinophil counts predicted a greater response. Patient-reported outcomes improved modestly but did not reach MCID thresholds, possibly due to ceiling effects in patients already receiving maximal inhaler therapy.

Keywords: benralizumab; biologics; dupilumab; severe asthma; tezepelumab; uncontrolled asthma.

- **32 references**

Full text links



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Practice Guideline

Rev Mal Respir

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[French guidelines for severe asthma management]

[Article in French]

J-M Perotin [1], L Guilleminault [2], C Chenivesse [3], J-P Oster [4], L Portel [5], G Garcia [6], E Blanchard [7], G Peiffer [8], J Perriot [9], A Bourdin [10], J-F Papon [11], G Chassagnon [12], E Burnet [13], V Doyen [14], C Taille [15], C Barnig [16]

Affiliations Expand

- PMID: 42618353

- DOI: 10.1016/j.rmr.2026.07.005

No abstract available

Conflict of interest statement

Déclaration de liens d'intérêts J.M. Perotin déclare des activités d'expertise et/ou une prise en charge de frais de déplacement de la part des laboratoires AstraZeneca, GSK, Stallergenes Greer, Sanofi, ALK, en dehors du cadre des travaux présentés. L. Guilleminault déclare avoir reçu des subventions de recherche, des honoraires et un soutien non financier de la part d'AstraZeneca, des honoraires et un soutien non financier de la part de GSK, Novartis, Sanofi, Celltrion, Menarini et Chiesi ainsi que des honoraires et une subvention de la part de Bayer et des honoraires de la part de MSD en dehors du cadre des travaux présentés. C. Chenivesse déclare avoir reçu des bourses de recherche de AstraZeneca, GSK, Novartis, Santelys, des honoraires de ALK-Abello, AstraZeneca, Boehringer-Ingelheim, Celltrion, Chiesi, GSK, Sanofi et des financements de congrès par AstraZeneca, Boehringer-Ingelheim, Celltrion, Chiesi, Novartis, Sanofi, en dehors du cadre des travaux présentés. J.P. Oster n'a rien à déclarer. L. Portel déclare avoir reçu des honoraires pour des activités de conférencier de la part d'AstraZeneca, GSK, Sanofi ; de conseil de la part d'AstraZeneca, Sanofi ; soutien non financier de

la part d'ALK, AstraZeneca, Sanofi, en dehors du cadre des travaux présentés. G. Garcia déclare avoir été investigateur pour les laboratoires AstraZeneca, GSK, Sanofi, Celltrion, a eu des activités d'expertise ou de conseil pour les laboratoires AstraZeneca, GSK, Sanofi, Chiesi, ALK, LeoPharma, en dehors du cadre des travaux présentés. E. Blanchard déclare avoir perçu des honoraires pour actions de formation pour les laboratoires AstraZeneca, GSK, Chiesi, Pfizer, MSD, Moderna, GILEAD, SANOFI, Boehringer Ingelheim, GSK, Seqirus Vifor, et a participé à des groupes d'experts à visée de conseils pour le compte de Pfizer, MSD, AstraZeneca, SEQIRUS, Moderna, GSK, en dehors du cadre des travaux présentés. G. Peiffer n'a rien à déclarer. J. Perriot n'a rien à déclarer. A. Bourdin déclare des honoraires et soutien non financier des laboratoires Boeringher Ingelheim, Novartis, AstraZeneca, Sanofi Regeneron, GSK, Chiesi, AB science, Celltrion, Cipla, Areteia, en dehors du cadre des travaux présentés. J.F. Papon déclare des honoraires et soutien non financier pour des activités d'orateur invité de la part de GlaxoSmithKline, SANOFI-Genzyme, Medtronic, Amplifon, Audika ; Conseil/animation de formations : ALK-Abello, SANOFI-Genzyme, GlaxoSmithKline, AstraZeneca, Aptar ; Investigateur dans protocole de recherche clinique : SANOFI-Genzyme, AstraZeneca, en dehors du cadre des travaux présentés. G. Chassagnon déclare des honoraires de la part de Boehringer Ingelheim, Chiesi SA, Gleamer SA et Insmed, en dehors du cadre des travaux présentés. E. Burnet déclare un lien d'intérêt avec les laboratoires Chiesi et Vertex, en dehors du cadre des travaux présentés. V. Doyen déclare avoir reçu des grants des laboratoires Astra-Zeneca, Chiesi, GSK, et a participé a un advisory board pour le laboratoire Chiesi, en dehors du cadre des travaux présentés. C. Taille déclare des activités d'investigatrice pour les laboratoires AstraZeneca, GSK, Sanofi, Celltrion, et d'expertise ou de conseil pour les laboratoires AstraZeneca, GSK, Novartis, Sanofi, Chiesi, Stallergenes, LeoPharma, en dehors du cadre des travaux présentés. C. Barnig déclare une activité d'investigatrice pour des essais cliniques pour GlaxoSmithKline, Sanofi-Regeneron et AstraZeneca ; Membre d'une association qui reçoit des dons et des subventions : AstraZeneca, Chiesi, GlaxoSmithKline, Novartis, Sanofi-Regeneron, ALK et Stallergènes.

Supplementary info

Publication typesExpand

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15

Review

J Asthma

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. 2026 Aug 18:1-16.

doi: 10.1080/02770903.2026.2721170. Online ahead of print.

Eosinophilic Inflammation in Severe Asthma: Pathophysiology, Clinical Identification, and Therapeutic Implications

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Affiliations Expand

- PMID: 42613890

- DOI: 10.1080/02770903.2026.2721170

Abstract

Objective: To provide a clinically grounded and pathobiological review of eosinophilic inflammation in severe asthma, addressing mechanisms, diagnostic interpretation, and implications for biologic therapy selection.Data Sources: Narrative review of guidelines, pivotal phase 2-3 randomized controlled trials, meta-analyses, registry data, and key translational studies evaluating eosinophils, type 2 (T2) inflammation, and targeted biologic therapies in severe asthma and eosinophilic chronic obstructive pulmonary disease.Study Selections: Publications were selected based on clinical relevance, methodological rigor, and impact on contemporary severe asthma management. Evidence was critically appraised and integrated with expert clinical perspective. No predefined systematic protocol or formal risk-of-bias assessment was undertaken.

Results: Eosinophils are central effector cells in T2-high severe asthma, contributing to airway inflammation, epithelial injury, mucus plugging, and remodelling. Interleukin (IL)-5 is the principal regulator of eosinophil maturation and survival, while IL-4, IL-13, and epithelial alarmins modulate tissue recruitment and amplification of inflammation. Blood eosinophil count (BEC) remains the most accessible biomarker in practice; however, its interpretation requires contextualization, considering corticosteroid exposure, biological variability, age at onset, and comorbidities. No single biomarker fully reflects airway eosinophilia, supporting a multidimensional assessment integrating clinical phenotype, longitudinal biomarkers, imaging, lung function, and therapeutic response. Biologics have transformed outcomes, with greater efficacy generally observed at higher BEC levels.

Conclusion: Eosinophilia should be interpreted as a contextual biomarker within a comprehensive clinical framework. Precision phenotyping is essential to optimize biologic selection and advance toward sustained disease control and clinical remission in severe asthma.

Keywords: Biologic therapy; Precision Medicine; Severe Asthma; eosinophilic inflammation; tissue eosinophilia.

Supplementary info

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Lancet Respir Med

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. 2026 Aug 18:S2213-2600(26)00197-9.

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Mepolizumab effectiveness for patients with severe, uncontrolled chronic rhinosinusitis with nasal polyps in Italy (MEPOREAL): a real-life, multicentre, phase 4 trial

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Collaborators, Affiliations Expand

- **PMID: 42612655**

- **DOI: 10.1016/S2213-2600(26)00197-9**

Abstract

Background: Real-life data on mepolizumab in chronic rhinosinusitis with nasal polyps (CRSwNP) remain heterogeneous. This large, multicentre study aimed to

evaluate mepolizumab effectiveness and safety in patients with severe, uncontrolled CRSwNP. Here, we present the results from the first 12-month treatment.

Methods: This real-life, multicentre, ambispective, phase 4 study was conducted across 25 Italian tertiary referral rhinology clinics experienced in the management of severe, uncontrolled CRSwNP and biological therapies. Patients with severe, uncontrolled CRSwNP who started mepolizumab 100 mg every 4 weeks were enrolled. Demographics and clinical data (symptom scores, olfactory measures, endoscopic findings, laboratory parameters, and comorbidities) were collected at baseline and after 1, 3, 6, 9, and 12 months. Primary outcomes were changes in nasal polyp score and sino-nasal outcome test-22 (SNOT-22). Secondary outcomes and exploratory analyses included changes in symptoms, olfactory function, blood eosinophils, disease control rate, and progression towards remission. We also included subpopulation analyses according to asthma, non-steroidal anti-inflammatory drug-exacerbated respiratory disease (NSAID-ERD), and previous exposure to biologics. This study is registered with ClinicalTrials.gov, NCT06258772, and is completed.

Findings: Between Dec 1, 2023, and March 15, 2024, 621 patients treated with mepolizumab were enrolled. At 12 months, the median nasal polyp score and SNOT-22 score decreased significantly from baseline (p<0·0001). All major symptoms and olfaction improved, although 186 (38%) of 495 patients remained anosmic. Patients with comorbid asthma showed either greater or more rapid improvements in SNOT-22 and self-reported symptoms. Disease control was reached by 206 (42%) of 519 patients at 12 months, and at the same timepoint, 104 (20%) of 519 patients met the definition of being on the way to remission (ie, patients who met the remission criteria but had not yet completed the required 12-month duration for remission definition). Higher visual analogue scale smell score and lower SSIT-16 score at baseline negatively predicted control at 3-12 months, whereas a lower baseline nasal polyp score was the only independent predictor of progression towards remission at 12 months (odds ratio 0·72, 95% CI 0·59-0·87; p=0·0008). Mepolizumab was well-tolerated: 29 (5%) of 621 patients developed adverse events, with grade 1 adverse events being the most common.

Interpretation: Mepolizumab progressively improved outcomes during the first 12 months of treatment. Long-term, prospective studies are warranted to further elucidate the rate of remission and control after 12 months.

Funding: None.

Conflict of interest statement

Declaration of interests EDC reports lecture fees and participation in expert board meetings for GSK, Novartis, Sanofi, Firma, and AstraZeneca. VS reports lecture fees and participation in expert board meetings for GSK, Sanofi, AstraZeneca, and Firma. CP reports lecture fees from Sanofi, Regeneron, GSK, and AstraZeneca; and participation in expert board meetings for Sanofi and Regeneron. FRC reports lecture fees and participation in expert board meetings of Sanofi and GSK. AU reports lecture fees from Sanofi and Regeneron. GO reports lecture fees from AstraZeneca, GSK, Sanofi, Firma, and Neopharma Gentili; and participation in

expert board meetings for Sanofi, GSK, and AstraZeneca. CC reports lecture fees from GSK, Sanofi, and Menarini; and participation in expert board meetings for GSK and Sanofi. AM reports lecture fees and participation in expert board meetings for GSK, Novartis, Sanofi, Regeneron, and AstraZeneca. GM reports lecture fees and participation in expert board meetings for Novartis, GSK, and Sanofi. ILM reports lecture fees from NOOS and GSK; and participation in expert board meetings for AstraZeneca, GSK, and Sanofi. FP and ST report lecture fees from Sanofi, GSK, and Firma. EC, GF, MG, FMP, AL, LD'A, MCo, and CM report lecture fees from Sanofi and GSK. RA and MCa report lecture fees from GSK. EP reports participation in expert board meetings for Sanofi, GSK, Medtronic, and AstraZeneca. FA reports lecture fees from GSK, Sanofi, and Abiogen; and participation in expert board meetings for Sanofi. LMD'A reports lecture fees from Sanofi. SG reports lecture fees from GSK, Sanofi, and AstraZeneca. All other authors declare no competing interests.

Supplementary info

Associated dataExpand

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ERJ Open Res

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. 2026 Aug 17;12(4):01559-2025.

doi: 10.1183/23120541.01559-2025. eCollection 2026 Jul.

Healthy diet is associated with better lung function, especially in individuals with COPD: findings from the Lifelines cohort study

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Affiliations Expand

- **PMID: 42609796**
- **PMCID: PMC13478883**

- DOI: 10.1183/23120541.01559-2025

Abstract

Objective: To investigate whether the association between diet and lung function (LF) differs according to asthma or COPD status in the Lifelines cohort study.

Methods: We included adults from Lifelines with valid dietary and spirometry data. Dietary quality was calculated at baseline using the Lifelines diet score (LLDS) (range 0-48, where higher scores indicate a healthier diet). LF was assessed *via* pre-bronchodilator spirometry (forced expiratory volume in 1 s (FEV_1), forced vital capacity (FVC) and FEV_1/FVC) at baseline and two follow-ups (~10 years). Cross-sectional associations between diet and LF were examined using linear regression and longitudinal associations with linear mixed-effects models. Interactions between diet and asthma or COPD were included.

Results: Higher LLDS was associated with higher LF and slower decline. In cross-sectional analyses (n=83 460, 59% female, mean age 44±13 years), higher LLDS was associated with higher FEV_1 and FEV_1/FVC levels in participants with asthma (FEV_1 $\beta_{interaction}$ (β_{int})=2.48 mL, 95% CI 0.68-4.27; FEV_1/FVC β_{int}=0.027%, 0.003-0.052) and COPD (FEV_1 β_{int}=8.31 mL, 6.93-9.69; FEV_1/FVC β_{int}= 0.094%, 0.079-0.109) compared with those without asthma or COPD. In longitudinal analyses (n=37 752, 59% female, age 46±11 years) in COPD-patients higher LLDS was associated with slower FEV_1 decline (β_{int}=0.18 mL·yr^{-1}, 0.04-0.33), FVC (β_{int}=0.23 mL·yr^{-1}, 0.04-0.41) and FEV_1/FVC (β_{int}=0.002%·yr^{-1}, 0.000-0.005) compared with those without COPD.

Conclusions: Higher diet quality was associated with better LF, particularly in those with asthma or COPD, and with slower decline in participants with COPD. These findings suggest that diet may be a modifiable factor in respiratory health.

Conflict of interest statement

Conflict of interest: All authors have confirmed that they have no conflicts of interest to declare.

- 39 references
- 3 figures

Full text links

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18

ERJ Open Res

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doi: 10.1183/23120541.01652-2025. eCollection 2026 Jul.

Add-on mepolizumab in patients with severe asthma on medium-dose inhaled corticosteroids

Ruchong Chen [1,2], Liping Wei [3,2], Meiling Jin [4,2], Yi Jiang [5], Xinglin Gao [6], Li Zhao [7], Limin Wang [8], Shengming Liu [9], Peter Howarth [10], Cui Xiong [11], Jie Huang [12], Peiwen Liang [12], Xiao Hu [12], Nanshan Zhong [1]

Affiliations Expand

- PMID: 42609784
- PMCID: PMC13478892
- DOI: 10.1183/23120541.01652-2025

Abstract

Background: Mepolizumab is clinically beneficial for patients with severe asthma with an eosinophilic phenotype (SA-EP) but lacks randomised controlled trial efficacy data in those on medium-dose inhaled corticosteroids (ICS). This analysis assessed mepolizumab's efficacy in a subgroup of patients on medium-dose ICS from a Chinese phase 3 trial (NCT03562195).

Methods: Eligible SA-EP patients had received daily ≥500 µg·day^{-1} fluticasone propionate or equivalent. In this *post hoc* evaluation, we included patients who were on baseline medium-dose ICS. Outcomes assessed were rate of clinically significant exacerbations (CSEs) at week 52, time to first CSE, St George's Respiratory Questionnaire (SGRQ) score, pre-bronchodilator forced expiratory volume in 1 s (FEV_1), asthma control questionnaire-5 (ACQ-5) score and rate of clinical remission.

Results: At week 52, in the medium-dose ICS subgroup, mepolizumab (n=115) *versus* placebo (n=104) significantly reduced the rate of CSEs (0.53 *versus* 1.30 events·yr^{-1}; rate ratio 0.41 (95% CI 0.25-0.66); p<0.001), with a lower probability of CSE (Kaplan-Meier estimate, 27.0% *versus* 49.3%; HR 0.47 (95% CI 0.30-0.73); p<0.001), greater improvements, as measured by difference in least-square mean, in SGRQ score (-5.58, 95% CI -10.73 to -0.44), FEV_1 (119.06 mL, 95% CI 6.66-231.45) and ACQ-5 score (-0.25, 95% CI -0.46 to -0.04), and a higher proportion of patients achieving three- or four-component clinical remission (31.3-57.4% *versus* 13.5-36.5%). The rate of clinical remission was higher in patients on medium-dose ICS than those on high-dose ICS.

Conclusions: Mepolizumab provided greater clinical benefit across multiple outcomes including clinical remission *versus* placebo in Chinese SA-EP patients on medium-dose ICS. Earlier treatment could increase the chance of clinical remission.

Conflict of interest statement

Conflict of interest: R. Chen reports grants and speaker's fees from AstraZeneca, GSK, GENRIX BIO, Novartis and Sanofi, outside the scope of this work; and serves as an Associate Editor of ERJ Open Research. L. Wei, Y. Jiang, X. Guo, L. Zhao, L. Wang, S. Liu and N. Zhong have no relevant conflicts of interest. M. Jin received honoraria from Sanofi, AstraZeneca and Novartis. J. Huang, P. Liang and X. Hu are GSK employees. P. Howarth and C. Xiong are GSK employees and hold GSK shares.

- **39 references**
- **3 figures**

Supplementary info

Associated dataExpand

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PLoS One

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. 2026 Aug 17;21(8):e0356533.

doi: 10.1371/journal.pone.0356533. eCollection 2026.

Serum periostin levels in myocardial infarction: Findings from forensic autopsy cases

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Affiliations Expand

- **PMID: 42607054**
- **PMCID: PMC13480611**
- **DOI: 10.1371/journal.pone.0356533**

Abstract

Acute myocardial infarction (AMI) remains one of the leading causes of sudden death with significant implications in both clinical and forensic practice. In forensic settings, AMI diagnosis traditionally relies on gross and histopathological findings. However, when ischemic changes are subtle or insufficiently developed, various cardiac biomarkers have been investigated to support postmortem diagnosis. Periostin, a matricellular protein involved in tissue remodeling and repair, has recently garnered attention for its role in cardiac pathology. Emerging evidence suggests that serum periostin may be a valuable biomarker for assessing cardiac injury and predicting outcomes after AMI. This study aimed to evaluate serum periostin levels in forensic autopsy cases of AMI. The subjects were 80 autopsy cases, categorized into AMI (n = 46), fatal asthma (n = 16), and traumatic deaths (n = 18). Serum periostin levels were significantly elevated in AMI compared with asthma and trauma cases, with median values of 728.50 ng/mL (IQR 465.25-1139.75) in AMI, 410.50 ng/mL (IQR 253.00-756.00) in asthma, and 386.50 ng/mL (IQR 229.75-532.50) in trauma. Serum periostin showed no significant correlation with postmortem interval and was minimally influenced by patients' characteristics or comorbidities. These findings provide baseline data on serum periostin levels in forensic autopsy cases and suggest that periostin measurement may assist in the postmortem evaluation of AMI.

Conflict of interest statement

The authors have declared that no competing interests exist.

- 47 references
- 5 figures

Supplementary info

MeSH terms, SubstancesExpand

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J Paediatr Child Health

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-
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. 2026 Aug 16.

doi: 10.1111/jpc.70530. Online ahead of print.

A Pilot Placebo-Controlled Randomized Trial of Repeated High-Dose Intravenous Magnesium Sulphate and High-Dose Nebulized Budesonide for Severe Asthma in the Paediatric Emergency Department

Khalid Alansari [1 2 3], Fatin Abou Moussa [4], Hadi Abu Rasheed [3], Bruce L Davidson [5], Khalid Yousif Ibrahim [4], Mahmoud Alrifaai [4]

Affiliations Expand

- PMID: 42605209

- DOI: 10.1111/jpc.70530

Abstract

Objective: Determine if high-dose intravenous magnesium with/without nebulized budesonide for children with acute severe asthma is safe and reduces time to medical readiness for discharge compared to standard intravenous magnesium.

Methods: Either 2 doses of intravenous magnesium or 1 dose and placebo, each with/without high-dose nebulized budesonide, were given in a double-blind randomized trial to study patients in addition to standard-of-care asthma treatment. Time to medical readiness for discharge was the primary outcome. The proportion of patients discharged at 12, 18, and 24 h, asthma severity scores at 4, 8, 12, and 24 h, and safety of high-dose magnesium were secondary outcomes. Follow-up was 1 week.

Results: Covid-19 intervened to stop recuitment at 70% of the estimated 218 children planned. Primary and secondary results were similar for the 4 groups. High-dose magnesium was safe on clinical and laboratory assessment. Exploratory analysis combining IV high-dose magnesium groups compared to standard magnesium showed improvement of discharge ratio at 12 h for the former. 40/78 patients (51.2%) in high-dose magnesium versus 26/75 patients (34.6%) in the standard magnesium arms ready for discharge, p = 0.038, absolute risk reduction 16.6%,95% CI, 0.93% to 31.1%. There was a trend toward improvement of PRAM score at 4 and 8 h in the nebulized budesonide groups compared to placebo and no significant difference in seeking post-discharge outpatient or need for inpatient care.

Conclusions: High-dose magnesium appeared safe with only a modest possible benefit of medical readiness for discharge at 12 h. There was a reduction in asthma severity score at 4 and 8 h from nebulized budesonide.

Trial registration: clinicaltrials.gov, ID #NCT02455687.

Keywords: asthma; asthma severity score; length of stay; magnesium intravenous therapy; serum magnesium level; steroid nebulized therapy.

- 26 references

Supplementary info

Associated data, Grants and fundingExpand

Full text links

Proceed to details

Cite

21

Review

Expert Opin Biol Ther

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. 2026 Aug 18:1-13.

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Exploring the potential benefits of allergen immunotherapy beyond respiratory allergy

Simone Foti Randazzese [1 2], Salvatore Barberi [3], Riccardo Castagnoli [1 2], Francesco Catamerò [4 5], Lorenzo Cosmi [6], Sara Guiducci [6], Lorenzo Lodi [5 7], Francesca Mori [4], Ivan Taietti [1 2], Sara Manti [8], Mattia Giovannini [4 5]

Affiliations Expand

- PMID: 42603085

- DOI: 10.1080/14712598.2026.2718367

Abstract

Introduction: Allergen immunotherapy (AIT) is the only disease-modifying treatment for IgE-mediated allergic disorders, including allergic rhinitis and asthma, with established long-term clinical efficacy and immunological tolerance induction.

Areas covered: This review synthesizes current evidence on the potential extra-allergic effects of AIT, focusing on respiratory tract infections (RTIs), SARS-CoV-2 outcomes, and selected immune-mediated conditions. AIT modulates key immunopathological pathways by promoting regulatory T and B cell responses, increasing allergen-specific IgG4, and rebalancing Th1/Th2 immunity. Emerging data suggest that these effects may extend beyond allergy control, with observational and limited clinical studies indicating reduced RTIs burden, decreased medication use, and enhanced antiviral responses, including improved interferon-mediated epithelial immunity. Preliminary findings also suggest an association between AIT and milder COVID-19 outcomes. Evidence regarding autoimmune conditions, such as alopecia areata, remains limited and largely anecdotal.

Expert opinion: Although AIT demonstrates promising immunomodulatory properties beyond allergic disease, current evidence is heterogeneous and primarily observational, precluding causal inference. The broader clinical relevance of these effects remains to be established. Well-designed prospective studies integrating clinical and mechanistic endpoints are required to clarify the extent and clinical significance of AIT-induced systemic immune modulation.

Keywords: Adults; SARS-CoV-2; allergen immunotherapy; autoimmunity; extra-allergic effects; immune modulation; pediatrics; respiratory tract infections.

22

Review

Chin Med J (Engl)

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. 2026 Aug 20;139(16):2392-2408.

doi: 10.1097/CM9.0000000000004208. Epub 2026 Jul 13.

Extracellular vesicles in senescence-associated chronic lung diseases

Ruiying Wang [1], Yahong Chen [2], Xiansheng Liu [1 3], Peter J Barnes [4]

Affiliations Expand

- PMID: 42438973

- PMCID: PMC13485837

- DOI: 10.1097/CM9.0000000000004208

Abstract

Chronic lung diseases, such as chronic obstructive pulmonary disease, idiopathic pulmonary fibrosis, obstructive sleep apnea, asthma, bronchiectasis, and lung cancer, are intricately linked to the aging process. These diseases are characterized by a high prevalence rate and a paucity of effective treatment options. Emerging evidence highlights the critical role of extracellular vesicles (EVs) in the pathogenesis and progression of these diseases. EVs, released by senescent cells, mediate intercellular communication and modulate immune responses through their cargo of microRNAs, proteins, and other molecules. These vesicles contribute to disease progression by promoting inflammation, fibrosis, tissue remodeling, and cellular senescence. Specifically, certain microRNAs, such as miR-21, miR-34a, and miR-570-3p, along with several proteins in EVs, have been identified as key factors influencing these processes. Additionally, EVs play significant roles in immune regulation and have potential anti-inflammatory effects, making them promising candidates for therapeutic applications. Recent advances in the use of EVs as therapeutic agents, including their application in nanotechnology for targeted drug delivery, have demonstrated potential in reducing inflammation, modulating immune responses, and enhancing tissue repair. Understanding the role of EVs in these diseases offers insights into potential therapeutic targets to mitigate disease progression and improve patient outcomes. Future research should focus on standardizing EV isolation and characterization methods, verifying the safety and efficacy of EV-based therapies in clinical trials, and elucidating the complex biological mechanisms of EVs in aging and disease.

Keywords: Asthma; Bronchiectasis; Chronic obstructive pulmonary disease (COPD); Extracellular vesicles; Idiopathic pulmonary fibrosis (IPF); Lung cancer; Obstructive sleep apnea; Senescence.

Conflict of interest statement

None.

- 168 references
- 4 figures

Supplementary info

Publication types, MeSH terms, SubstancesExpand

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Cite

23

Randomized Controlled Trial

N Engl J Med

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. 2026 Aug 20;395(8):753-764.

doi: 10.1056/NEJMoa2516505. Epub 2026 May 18.

Azithromycin for Preschoolers with Wheezing in the Emergency Department

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Collaborators, 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

Publication types, MeSH terms, Substances, Associated data, Grants and fundingExpand

Full text links

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Cite

24

Br J Dermatol

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. 2026 Aug 18;195(3):496-505.

doi: 10.1093/bjd/ljag167.

Preterm birth is associated with reduced risk of atopic dermatitis and a distinct allergic comorbidity profile in early childhood

Iben Frier Ruge [1 2], Mia-Louise Nielsen [1], Anne Sofie Halling [1 2], Trine Gerner [2], Maria Rasmussen Rinnov [2 3], Simon Trautner [3], Simon Francis Thomsen [1], Lone Skov [2 4], Alexander Egeberg [1 4], Ivone Jakasa [5], Sanja Kezic [6], Alan D Irvine [7], Emma Guttman-Yassky [8], Klaus Bønnelykke [9], Jacob P Thyssen [1]

Affiliations Expand

- PMID: 42049246

- DOI: 10.1093/bjd/ljag167

Abstract

Background: Paediatric atopic dermatitis (AD) is the most common inflammatory disease of childhood and is closely linked to the subsequent development of food allergy, asthma and rhinitis. There is currently limited insight into the occurrence of AD and allergic comorbidity in early childhood according to gestational maturity.

Objectives: To investigate the occurrence of AD, food allergy, asthma and rhinitis in term and preterm children from birth to age 4-5 years.

Methods: A prospective birth cohort of 389 children (261 term, 128 preterm) was followed from birth to age 4-5 years. Clinical visits were conducted at birth, 2 months, and 12 months, with additional visits for skin signs of AD during the first 2 years. At age 4-5 years, parents completed a structured telephone interview. We compared the prevalence, age at onset, and persistence of AD and allergic comorbidities between preterm and term children using Mann-Whitney U-test and Fisher's exact tests.

Results: The overall prevalence of AD was 29.6% at age 2 years and 33.0% at 4-5 years. Preterm children had a lower prevalence of AD (19.2% vs. 39.8%, P < 0.001), later AD onset (median 12.0 vs. 7.5 months, P < 0.01), milder disease severity (median Eczema Area and Severity Index score 1.4 vs. 4.8, P < 0.01) and less persistent AD (11.5% vs. 19.9%, P < 0.001) than term children. Among preterm-born and term-born children, the prevalence of food allergy, asthma and rhinitis at age 4-5 years was 1.6% vs. 3.1%, 20.0% vs. 13.0% and 6.2% vs. 4.6%, respectively. No preterm children with AD (n = 25) developed food allergies within 4-5 years compared with 6.7% among term-born children, whereas asthma prevalence was higher among preterm children with AD (36.0%) compared with term children with AD (17.3%) (P = 0.05).

Conclusions: In this cohort, preterm birth was associated with a lower observed incidence of AD, with later onset and a milder, less persistent disease course. Among children with AD, those born preterm had no food allergy and a higher prevalence of asthma compared with term-born children.

Plain language summary

Atopic dermatitis (AD), commonly known as eczema, is a chronic skin condition characterized by itchy, red and inflamed skin. Eczema often starts during childhood and can have an impact on a child's quality of life. Children with eczema are also more likely to develop other allergic conditions such as food allergies, asthma and hay fever. Our research team was based in Denmark. We aimed to find out whether being born prematurely affects the risk of developing eczema and related allergic conditions. The study included 389 children (128 born preterm and 261 born at term). Our research team followed their health from birth until they were aged 4–5 years. We found that children born prematurely had a much lower chance of developing eczema compared with children born at term. Children born prematurely also experienced milder symptoms and later onset of eczema. Furthermore, their condition was less likely to persist. Additionally, premature children with eczema were less likely to develop food allergies. However, they were more likely to have asthma compared with children born at term. Our findings suggest that birth maturity could influence the development of eczema. It may also affect the development of related allergic diseases. Understanding the different effects of birth maturity will enable doctors to tailor care and preventive strategies for premature children. This could potentially improve their long-term health outcomes. Future research should explore why premature birth protects against some allergic diseases but increases the risk for others. This would help to develop specific treatments for these children. Guidelines for managing allergic diseases in these children could also be produced.

Supplementary info

MeSH terms, Grants and fundingExpand

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

1

Review

Curr Allergy Asthma Rep

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. 2026 Aug 20;26(1):45.

doi: 10.1007/s11882-026-01287-0.

Central Compartment Atopic Disease Within the Chronic Upper Airway Inflammatory Continuum: A Scoping Review of Sinonasal Compartmentalization and Type-2 Airway Disease

Ramon Moreno-Luna [#1,2], Daniel Martin-Jimenez [#3,4,5], Isam Alobid [6,5], Alfonso Del Cuvillo [7,5], Serafin Sanchez-Gomez [3,5]

Affiliations Expand

- PMID: 42622895

- DOI: 10.1007/s11882-026-01287-0

Abstract

Purpose of review: To map evidence supporting a chronic upper airway inflammatory continuum (CUAIC) linking localized allergic inflammation, central compartment atopic disease (CCAD), diffuse type 2 chronic rhinosinusitis (CRS), and broader T2-airway disease.

Recent findings: A scoping review of five databases identified 58 studies from January 2014 to April 2026. Evidence described a non-linear spectrum extending from local allergic rhinitis and localized sinonasal responses to CCAD, diffuse CRSwNP, and lower-airway comorbidity. Endoscopy provided the clearest anatomical anchor, with CCAD representing a recognizable central-compartment phenotype. Radiological findings ranged from limited central changes to multi-sinus opacification, while biomarkers suggested enrichment from local allergic markers to tissue eosinophilia, type 2 cytokine activity, and lower-airway traits. The CUAIC conceptualizes CCAD as an intermediate or overlapping phenotype between localized sinonasal allergy and broader type 2 airway disease. It reflects persistence, overlap, or expansion rather than an obligatory sequence. Prospective longitudinal studies are needed to validate its clinical utility.

Keywords: Biomarkers; CCAD; CRSwNP; Chronic Rhinosinusitis; Immunoglobulin E; Respiratory Hypersensitivity; Rhinitis, Allergic.

Conflict of interest statement

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

- 73 references

Supplementary info

Publication types, MeSH terms, SubstancesExpand

Full text links

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Cite

2

J Asthma

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. 2026 Aug 21:1-9.

doi: 10.1080/02770903.2026.2721175. Online ahead of print.

The effect of biologics on pulmonary function tests and small airways in patients with severe asthma: a real-life study

Mehmet Erdem Cakmak [1], Nida Öztop [1]

Affiliations Expand

- PMID: 42619440

- DOI: 10.1080/02770903.2026.2721175

Abstract

Introduction: Significant advances have been made in the treatment and management of severe asthma with the development of biological treatments.

Objective: The aim of this study was to investigate changes in lung function tests potentially reflecting distal airflow limitation in patients with T2-high severe asthma treated with biological agents.

Methods: The study included a total of 80 patients diagnosed with T2-high severe asthma who were treated with biologics (omalizumab (*n* = 36 (45%)), mepolizumab (*n* = 35 (43.8%)), or benralizumab (*n* = 9 (11.2%)) for at least 1 year. The demographic data, comorbid diseases, asthma control test (ACT) scores, exacerbation rates, and pulmonary function test results of the patients were evaluated retrospectively.

Results: The rate of male patients was higher in the benralizumab group ($p = 0.017$), allergic rhinitis and atopy were significantly higher in the omalizumab group ($p < 0.001$), and CRSwNP was higher in the mepolizumab and benralizumab groups compared to the omalizumab group ($p < 0.001$). At 12 months after treatment with omalizumab and mepolizumab, all pulmonary function tests (FEV1, FVC, FEV1/FVC,

FEF25, FEF50, FEF75, FEF25-75, PEF) showed a statistically significant increase, ACT score increased, blood eosinophil count decreased, and the number of annual asthma exacerbations decreased ($p < 0.05$). At 12 months after treatment with benralizumab, the increase in FEF50 and FEV1/FVC and the decrease in the number of annual asthma exacerbations were statistically significant ($p < 0.05$).

Conclusion: In conclusion, the findings of this study support that biologics were associated with improvements in spirometric parameters potentially reflecting distal airflow limitation.

Keywords: Asthma; allergy; biologics; severe asthma; small airways dysfunction.

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J Asthma

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. 2026 Aug 21:1-7.

doi: 10.1080/02770903.2026.2721166. Online ahead of print.

World Asthma Day: results of a hospital-based awareness and case-finding campaign

Eusebi Chiner [1 2], Ignacio Boira [1], Paula Fernández-Martínez [1], Mónica Antón [3], Beatriz Varela [1], Yusleimy Chacin [1], Anays Martínez-Gómez [1]

Affiliations Expand

- PMID: 42619434

- DOI: 10.1080/02770903.2026.2721166

Abstract

Objective: To assess whether a World Asthma Day campaign could provide epidemiological information, identify possible undiagnosed asthma, and increase public awareness of the disease.

Methods: On World Asthma Day 2024, an information desk staffed by pulmonology, allergy, and nursing professionals was installed in the hospital lobby, and volunteers were invited to participate. Recorded variables included age, sex, body

mass index, smoking status, previous asthma diagnosis, rhinitis, asthma severity, medical follow-up, previous spirometry, asthma treatment, and comorbidities. Respiratory symptoms compatible with asthma were assessed using a brief structured mini-questionnaire enquiring about recurrent wheezing, persistent or recurrent cough, exertional dyspnea, nocturnal symptoms, and chest tightness. Spirometry and fractional exhaled nitric oxide were measured in all participants. Asthma control was assessed using the Asthma Control Test.

Results: A total of 112 volunteers were evaluated (mean age 57 ± 18 years; 84 women, 75%). Known asthma was present in 45 participants (40%), rhinitis in 46 (41%), and comorbidities in 51 (46%). Among participants with known asthma, 42.2% reported no active follow-up, and 46.7% were not on maintenance therapy. Fourteen participants (12.5%) fulfilled criteria for probable undiagnosed asthma (compatible symptoms plus fractional exhaled nitric oxide ≥25 ppb). The campaign reached 12,500 social media users with an engagement rate of 18.4%.

Conclusions: This campaign was useful not only for identifying potential new asthma cases, but also for increasing disease awareness through substantial media and social-media impact.

Keywords: Asthma; case-finding; exhaled nitric oxide; public health; spirometry.

4

Ann Allergy Asthma Immunol

. 2026 Aug 19:S1081-1206(26)00397-2.

doi: 10.1016/j.anai.2026.08.010. Online ahead of print.

As-Needed Versus Regular Intranasal Corticosteroid Therapy in Pediatric Perennial Allergic Rhinitis: A Randomized Double-Dummy Trial

Supaluk Chatmaitri [1], Ongon Boonnijasin [1], Apiradee Wisitsartkul [2], Kantima Kanchanapoomi [1], Witchaya Srisuwatchari [1], Punchama Pacharn [1], Torpong Thongngarm [3], Orathai Jirapongsananuruk [4]

Affiliations Expand

- PMID: 42617693

- DOI: 10.1016/j.anai.2026.08.010

Abstract

Background: Intranasal corticosteroids (INCS) are the most effective monotherapy for allergic rhinitis (AR), but daily adherence remains challenging. Evidence comparing regular versus as-needed INCS use in pediatric perennial allergic rhinitis (PAR) is limited.

Objective: To evaluate the efficacy, safety, and anti-inflammatory effects of regular versus as-needed INCS in pediatric PAR.

Methods: In this 8-week, randomized, double-blind, double-dummy trial, 70 children aged 6-18 years with PAR were assigned (1:1) to regular or as-needed intranasal fluticasone furoate. Key outcomes included total, nasal, and ocular symptom scores (TSS, TNSS, TOSS), visual analog scale (VAS), parent-assessed scores, Rhinoconjunctivitis Quality of Life-36 (RCQ-36), peak nasal inspiratory flow (PNIF), nasal cytology, INCS exposure, and adverse events.

Results: Sixty-eight patients completed the trial (as-needed, n=33; regular, n=35). Regular treatment demonstrated greater improvements in TSS, TNSS, TOSS, VAS, PVAS, and PNIF than as-needed treatment at selected early time points (all $P<0.05$). However, these differences were not sustained through week 8. No significant between-group differences were observed in PTSS, PTNSS, PTOSS, or RCQ-36 scores. At week 8, regular treatment yielded greater reductions in mucosal eosinophils and basophilic metachromatic cells ($P<0.05$). Cumulative INCS exposure was lower with as-needed treatment ($P<0.05$). Adverse events were comparable, although epistaxis occurred only in the as-needed group ($P=0.02$).

Conclusion: Regular INCS use was associated with greater early clinical and antiinflammatory benefits than as-needed use in pediatric PAR, without increased adverse events. However, between-group clinical differences were not sustained through week 8. As-needed treatment also improved outcomes from baseline and may be an alternative for symptom control in selected patients.

Keywords: Fluticasone furoate; Rhinoconjunctivitis Quality of Life-36 questionnaire; allergic rhinitis; intranasal corticosteroid; peak nasal inspiratory flow; pediatrics; perennial allergic rhinitis; total nasal symptom score; total ocular symptom score; visual analog scale.

Conflict of interest statement

Declaration of competing interest Disclosure of potential conflict of interest: S. Chatmaitri has received honoraria for scientific lectures from A. Menarini. K. Kanchanapoomi has received honoraria for scientific lectures from Stada. W. Srisuwatchari has received honoraria for scientific lectures from A. Menarini, AstraZeneca, GSK, and Orion. P. Pacharn has received honoraria for scientific lectures from Stada, Mead Johnson, and Danone. T. Thongngarm has received honoraria for scientific lectures from A. Menarini, Astra-Zeneca, GSK, Novartis, P&G, Sanofi, Takeda, and Viatris; and has served on the advisory board for Sanofi and Viatris. O. Jirapongsananuruk has received honoraria for scientific lectures from GSK, A. Menarini, DKSH, Viatris, Mead Johnson, and Abbot. The rest of the

authors declare that they have no relevant conflicts of interest. The placebo bottles were supported by GSK.

Full text links

Proceed to details

Cite

5

Otolaryngol Head Neck Surg

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. 2026 Aug 17.

doi: 10.1002/ohn.70390. Online ahead of print.

Incidence of Chronic Rhinosinusitis in Patients Who Receive Rituximab

Kendra Walker [1], Bastien A Valencia-Sanchez [1], Prishae Wilson [1], Natasha Najmi [1], Angela M Donaldson [1]

Affiliations Expand

- **PMID: 42605935**

- **DOI: 10.1002/ohn.70390**

Abstract

Objective: Rituximab causes B-cell depletion and hypogammaglobulinemia, increasing risk for infections. This study aims to determine the incidence of chronic rhinosinusitis (CRS) in patients following rituximab therapy.

Study design: Retrospective cohort study using chart review of patients prescribed rituximab between January 2019 and January 2025.

Setting: Multisite study across Mayo Clinic Enterprise locations in Arizona, Florida, Minnesota, and Wisconsin.

Methods: Patients with documented rituximab use were included; those with pre-existing CRS were excluded. Demographic and clinical data-including timing and duration of rituximab therapy, CRS diagnosis, comorbidities (asthma, allergic rhinitis, GERD), and need for sinus surgery-were collected. Descriptive statistics summarized patient characteristics. Group comparisons were performed using t-tests, Mann-Whitney U, and chi-square tests. Analyses were conducted using SPSS v28.

Results: Among 17,851 patients prescribed rituximab (median age 64.0 years, M:F ratio 1.1:1), 1105 (6.2%) developed CRS, with an annual incidence of 1.03% (1032 cases per 100,000 person-years). The median duration of rituximab therapy for those diagnosed with CRS was 5.9 months (IQR, 0.5-42.6). Most CRS cases occurred after rituximab discontinuation (62.7%, n = 693) compared to during active treatment (37.3%, n = 412). The median delay between rituximab discontinuation and CRS diagnosis was 17.0 months (IQR, 4.3-41.7).

Conclusions: This study demonstrates an annual incidence of 1.03% for CRS diagnoses following rituximab. While prior studies report varying CRS incidences in the general population (0.25%-0.73%), our findings suggest increased risk among rituximab users. Most CRS diagnoses occurred after rituximab discontinuation, emphasizing the need for a comprehensive medication history review during CRS evaluation.

Keywords: chronic rhinosinusitis; immunosuppression; incidence; rituximab.

- **16 references**

Full text links

WILEY Full Text Article UNIMORE

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Cite

6

Review

Expert Opin Biol Ther

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. 2026 Aug 18:1-13.

doi: 10.1080/14712598.2026.2718367. Online ahead of print.

Exploring the potential benefits of allergen immunotherapy beyond respiratory allergy

Simone Foti Randazzese [1 2], Salvatore Barberi [3], Riccardo Castagnoli [1 2], Francesco Catamerò [4 5], Lorenzo Cosmi [6], Sara Guiducci [6], Lorenzo Lodi [5 7], Francesca Mori [4], Ivan Taietti [1 2], Sara Manti [8], Mattia Giovannini [4 5]

Affiliations Expand

- PMID: 42603085

- DOI: 10.1080/14712598.2026.2718367

Abstract

Introduction: Allergen immunotherapy (AIT) is the only disease-modifying treatment for IgE-mediated allergic disorders, including allergic rhinitis and asthma, with established long-term clinical efficacy and immunological tolerance induction.

Areas covered: This review synthesizes current evidence on the potential extra-allergic effects of AIT, focusing on respiratory tract infections (RTIs), SARS-CoV-2 outcomes, and selected immune-mediated conditions. AIT modulates key immunopathological pathways by promoting regulatory T and B cell responses, increasing allergen-specific IgG4, and rebalancing Th1/Th2 immunity. Emerging data suggest that these effects may extend beyond allergy control, with observational and limited clinical studies indicating reduced RTIs burden, decreased medication use, and enhanced antiviral responses, including improved interferon-mediated epithelial immunity. Preliminary findings also suggest an association between AIT and milder COVID-19 outcomes. Evidence regarding autoimmune conditions, such as alopecia areata, remains limited and largely anecdotal.

Expert opinion: Although AIT demonstrates promising immunomodulatory properties beyond allergic disease, current evidence is heterogeneous and primarily observational, precluding causal inference. The broader clinical relevance of these effects remains to be established. Well-designed prospective studies integrating clinical and mechanistic endpoints are required to clarify the extent and clinical significance of AIT-induced systemic immune modulation.

Keywords: Adults; SARS-CoV-2; allergen immunotherapy; autoimmunity; extra-allergic effects; immune modulation; pediatrics; respiratory tract infections.

. 2026 Aug 18;195(3):496-505.

doi: 10.1093/bjd/ljag167.

Preterm birth is associated with reduced risk of atopic dermatitis and a distinct allergic comorbidity profile in early childhood

Iben Frier Ruge [1 2], Mia-Louise Nielsen [1], Anne Sofie Halling [1 2], Trine Gerner [2], Maria Rasmussen Rinnov [2 3], Simon Trautner [3], Simon Francis Thomsen [1], Lone Skov [2 4], Alexander Egeberg [1 4], Ivone Jakasa [5], Sanja Kezic [6], Alan D Irvine [7], Emma Guttman-Yassky [8], Klaus Bønnelykke [9], Jacob P Thyssen [1]

Affiliations Expand

- PMID: 42049246

- DOI: 10.1093/bjd/ljag167

Abstract

Background: Paediatric atopic dermatitis (AD) is the most common inflammatory disease of childhood and is closely linked to the subsequent development of food allergy, asthma and rhinitis. There is currently limited insight into the occurrence of AD and allergic comorbidity in early childhood according to gestational maturity.

Objectives: To investigate the occurrence of AD, food allergy, asthma and rhinitis in term and preterm children from birth to age 4-5 years.

Methods: A prospective birth cohort of 389 children (261 term, 128 preterm) was followed from birth to age 4-5 years. Clinical visits were conducted at birth, 2 months, and 12 months, with additional visits for skin signs of AD during the first 2 years. At age 4-5 years, parents completed a structured telephone interview. We compared the prevalence, age at onset, and persistence of AD and allergic comorbidities between preterm and term children using Mann-Whitney U-test and Fisher's exact tests.

Results: The overall prevalence of AD was 29.6% at age 2 years and 33.0% at 4-5 years. Preterm children had a lower prevalence of AD (19.2% vs. 39.8%, P < 0.001), later AD onset (median 12.0 vs. 7.5 months, P < 0.01), milder disease severity (median Eczema Area and Severity Index score 1.4 vs. 4.8, P < 0.01) and less persistent AD (11.5% vs. 19.9%, P < 0.001) than term children. Among preterm-born and term-born children, the prevalence of food allergy, asthma and rhinitis at age 4-5 years was 1.6% vs. 3.1%, 20.0% vs. 13.0% and 6.2% vs. 4.6%, respectively. No preterm children with AD (n = 25) developed food allergies within 4-5 years compared with 6.7% among term-born children, whereas asthma prevalence was higher among preterm children with AD (36.0%) compared with term children with AD (17.3%) (P = 0.05).

Conclusions: In this cohort, preterm birth was associated with a lower observed incidence of AD, with later onset and a milder, less persistent disease course. Among children with AD, those born preterm had no food allergy and a higher prevalence of asthma compared with term-born children.

Plain language summary

Atopic dermatitis (AD), commonly known as eczema, is a chronic skin condition characterized by itchy, red and inflamed skin. Eczema often starts during childhood and can have an impact on a child's quality of life. Children with eczema are also more likely to develop other allergic conditions such as food allergies, asthma and hay fever. Our research team was based in Denmark. We aimed to find out whether being born prematurely affects the risk of developing eczema and related allergic conditions. The study included 389 children (128 born preterm and 261 born at term). Our research team followed their health from birth until they were aged 4–5 years. We found that children born prematurely had a much lower chance of developing eczema compared with children born at term. Children born prematurely also experienced milder symptoms and later onset of eczema. Furthermore, their condition was less likely to persist. Additionally, premature children with eczema were less likely to develop food allergies. However, they were more likely to have asthma compared with children born at term. Our findings suggest that birth maturity could influence the development of eczema. It may also affect the development of related allergic diseases. Understanding the different effects of birth maturity will enable doctors to tailor care and preventive strategies for premature children. This could potentially improve their long-term health outcomes. Future research should explore why premature birth protects against some allergic diseases but increases the risk for others. This would help to develop specific treatments for these children. Guidelines for managing allergic diseases in these children could also be produced.

Supplementary info

MeSH terms, Grants and fundingExpand

chronic cough

1

Review

Pulm Ther

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. 2026 Aug 23.

doi: 10.1007/s41030-026-00382-x. Online ahead of print.

The Genetic Architecture of Chronic Cough: From Sensory Hypersensitivity to Treatable Trait

Ran Dong [1], Mengru Zhang [2], Alyn H Morice [3]

Affiliations Expand

- PMID: 42633611

- DOI: 10.1007/s41030-026-00382-x

Abstract

Chronic cough is a prevalent global clinical disorder with substantial quality-of-life impairment, and refractory cases remain a major unmet medical need. Cough hypersensitivity syndrome is the core pathological mechanism of chronic cough, and growing genetic evidence has confirmed that inherited susceptibility shapes cough hypersensitivity, clinical heterogeneity and therapeutic responsiveness, redefining chronic cough as a biologically mediated sensory-neural disorder rather than a non-specific secondary symptom of airway diseases. This review summarises genetic evidence for chronic cough from family-based studies, pharmacogenomics and genome-wide association studies (GWAS), revealing distinct genetic architectures of chronic dry cough and sputum production, with enrichment of sensory-neural pathway variants and key genetic loci such as replication factor C subunit 1 (RFC1) functional genomic analyses link genetic variation to vagal afferent excitability, and rare genetic neurological disorders further illuminate the neurogenic basis of cough hypersensitivity. Moreover, genetic insights identify tractable treatable traits and rationalise antitussive drug development, supporting genotype-guided patient stratification. We conclude that integrating genetic architecture into clinical phenotyping and translational research provides a critical framework for precision management of chronic cough, and future progress relies on harmonised deep phenotyping and multi-ancestry genetic studies.

Keywords: RFC1 gene; Chronic cough; Cough hypersensitivity; Genetic architecture; P2X3 receptor; Refractory chronic cough; Sensory-neural disorder.

Conflict of interest statement

Declarations. Conflict of Interest: Ran Dong has nothing to disclose. Mengru Zhang has nothing to disclose. Alyn H. Morice is an Editorial Board member of Pulmonary Therapy. Alyn H. Morice was not involved in the selection of peer reviewers for the manuscript nor in any of the subsequent editorial decisions regarding this article. Ethical Approval: This

article is based on previously conducted studies and does not contain any new studies with human participants or animals performed by any of the authors.

- 133 references

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Review

Cochrane Database Syst Rev

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. 2026 Aug 21;8(8):CD015930.

doi: 10.1002/14651858.CD015930.pub2.

Alpha 1 antitrypsin augmentation therapy for alpha 1 antitrypsin deficiency-associated lung disease

Patrick Glaister [1], Nichola Hindle Robinson [1], Amy Woods [1], Chloe Bentham [2], Juiliana Hamzah [2], Iain Crossingham [2]

Affiliations Expand

- PMID: 42626936

- PMCID: PMC13495051 (available on 2027-08-21)

- DOI: 10.1002/14651858.CD015930.pub2

Abstract

Rationale: Alpha-1 antitrypsin (AAT) is a protein produced by the liver that stops certain enzymes from harming body tissues, especially in the lungs. AAT deficiency (AATD) is a genetic condition that can manifest clinically as chronic obstructive pulmonary disease (COPD), causing cough and breathlessness. AAT augmentation therapy could help prevent or slow the progression of COPD in people with AATD. Whilst correcting the protein deficit seems a logical approach to treating a condition caused by a protein deficiency, this intervention is only worthwhile if it leads to improvements in clinically important outcomes. The evidence synthesised in a previous Cochrane review (last updated in 2016) was insufficient to conclude whether AAT augmentation therapy influenced any clinical outcomes. However, no inhaled AAT augmentation therapy studies were available for inclusion in that review, only studies on intravenous AAT augmentation therapy.

Objectives: To assess the effects of alpha 1 antitrypsin (AAT) augmentation therapy on respiratory disease in people with alpha 1 antitrypsin deficiency (AATD).

Search methods: We searched CENTRAL, MEDLINE, Embase, and two trials registries to August 2025. We checked the reference lists of included articles and other related papers for any additional studies.

Eligibility criteria: We included randomised controlled trials (RCTs). Cluster-RCTs were also eligible if the data had been, or could be, adjusted for clustering. We included studies comparing AAT augmentation by any route (inhaled, intravenous, or subcutaneous) with AAT augmentation by a different route, placebo, or no treatment. We excluded studies that compared different doses of AAT via the same route, without a placebo or no treatment group.

Outcomes: Our critical outcomes were annual airway disease exacerbation rate, all-cause mortality, and participants experiencing one or more serious adverse events.

Risk of bias: We used the Cochrane risk of bias tool (RoB 2).

Synthesis methods: Two review authors independently extracted data and assessed the risk of bias. We conducted meta-analyses to calculate odds ratios (ORs) for dichotomous outcomes, and mean differences (MDs) or standardised mean differences (SMDs) for continuous outcomes, all with corresponding 95% confidence intervals (CIs). We used GRADE to assess the certainty of evidence for our critical outcomes.

Included studies: Six multicentre studies randomised a total of 526 people with AATD and analysed the results for 524 participants. The studies were conducted in Europe, North America, and Australia and were published between 1997 and 2025. The route of AAT administration was intravenous in four studies and inhaled in two studies. This review has three new studies compared to the 2016 Cochrane review.

Synthesis of results: Intravenous AAT augmentation therapy versus placebo Intravenous AAT augmentation therapy may increase the annual airway disease exacerbation rate slightly compared with placebo (MD 0.29 exacerbations, 95% CI 0.04 to 0.54; P = 0.02, I^2 =

0%; 2 studies, 257 participants; low-certainty evidence, downgraded for serious imprecision and indirectness). It may make little or no difference to all-cause mortality (OR 0.30, 95% CI 0.03 to 2.98; P = 0.31; 2 studies, 187 participants; low-certainty evidence, downgraded for very serious imprecision). We are uncertain whether intravenous AAT augmentation therapy has an impact on the risk of experiencing one or more serious adverse events (OR 0.67, 95% CI 0.32 to 1.41; P = 0.29, I^2 = 43%; 2 studies, 257 participants; very low-certainty evidence, downgraded for serious inconsistency and indirectness and very serious imprecision). Inhaled AAT augmentation therapy versus placebo We are uncertain if inhaled AAT augmentation therapy has an impact on the annual airway disease exacerbation rate compared with placebo (MD 0.45 exacerbations, 95% CI -0.42 to 1.32; P = 0.31; 1 study, 168 participants; very low-certainty evidence, downgraded for serious indirectness and very serious imprecision). It may make little or no difference to the risk of experiencing one or more serious adverse events (OR 5.33, 95% CI 0.61 to 46.54; P = 0.13, I^2 = 0%; 2 studies, 204 participants; low-certainty evidence, downgraded for very serious imprecision). No studies reported all-cause mortality.

Authors' conclusions: Compared with placebo, intravenous AAT augmentation therapy may have little or no effect on all-cause mortality but may increase the annual airway disease exacerbation rate slightly. We are uncertain if intravenous AAT augmentation therapy has any effect on the risk of serious adverse events. Inhaled AAT augmentation therapy may have little or no effect on the annual airway disease exacerbation rate or the risk of serious adverse events.

Funding: This Cochrane review had no dedicated funding.

Registration: Protocol (2024) DOI: 10.1002/14651858.CD015930.

Conflict of interest statement

CB declared that she has no conflicts of interest. She is a health professional working in a clinically relevant speciality (respiratory medicine). IRC declared that he has no conflicts of interest. He is a health professional working in a clinically relevant speciality (respiratory medicine). He also acts as a Sign-off Editor for Cochrane, but had no involvement in the editorial process for this review. JH declared that she has no conflicts of interest. She is a health professional working in a clinically relevant speciality (respiratory medicine). PG declared that he has no conflicts of interest. He works as an Evidence librarian within an NHS trust. NHR declared that she has no conflicts of interest. She works as an Evidence librarian within an NHS trust. AW declared that she has no conflicts of interest. She works as an Evidence librarian within an NHS trust.

Update of

- doi: 10.1002/14651858.CD015930
- 65 references

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Pediatrics

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. 2026 Aug 18:e2025074436.

doi: 10.1542/peds.2025-074436. Online ahead of print.

Two-Year-Old Girl With Chronic Cough and Lymphadenopathy

Lisa N Akhtar [1,2], Elizabeth D Lowenthal [3], Richard Rutstein [3]

Affiliations Expand

- PMID: 42608028

- DOI: 10.1542/peds.2025-074436

Abstract

A 27-month-old previously healthy girl presented with 3 months of cough and 1 day of fever and rhinorrhea. Her parents had immigrated from Africa, but our patient had been born in the United States and had no notable environmental exposures. An alarming chest radiograph suggested a broad differential diagnosis, and lung biopsy with pathology was ultimately required to confirm her rare diagnosis. Both her diagnosis and its significant implications are discussed.

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Int J Pharm

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. 2026 Aug 16:127316.

doi: 10.1016/j.ijpharm.2026.127316. Online ahead of print.

A lidocaine dry powder inhaler to modulate cough: particle engineering and human proof-of-concept

Giada Varacca [1], Diletta Mandrioli [1], Fabio Sonvico [2], Federico Lavorini [3], Giovanni Fontana [3], Alessandra Sorano [3], Giulia Fabietti [3], Ruggero Bettini [2], Francesca Buttini [4]

Affiliations Expand

- PMID: 42604718

- DOI: 10.1016/j.ijpharm.2026.127316

Abstract

Chronic cough remains a major unmet clinical need, particularly in patients with refractory or unexplained disease. This study aimed to develop a spray-dried dry powder inhaler formulation of lidocaine hydrochloride capable of targeting deposition to the upper and central airways, where cough receptors are mainly located, while minimizing deep lung delivery and systemic exposure. Lidocaine was incorporated into sodium hyaluronate, selected as a mucoadhesive and release-modifying excipient. The effects of polymer molecular weight, drug-to-polymer ratio, and spray-drying parameters on the key quality attributes of the formulation were investigated. Low-molecular-weight sodium hyaluronate at a 20:80 lidocaine-to-polymer ratio produced amorphous microparticles with appropriate solid-state characteristics and controlled dissolution behaviour. Optimization identified a lead formulation with a median particle size of 8.9 μm and a non-respirable fraction of about 85%, supporting preferential deposition in the tracheobronchial region. Aerodynamic performance assessed using a Next Generation Impactor and an anatomically realistic mouth-throat model confirmed efficient delivery with limited fine particle deposition. Compared with raw lidocaine, the optimized formulation showed slower in vitro release, consistent with drug incorporation within the polymer matrix. In a

randomized, single-blind, crossover proof-of-concept study in healthy volunteers, inhalation of 8 mg lidocaine powder significantly increased cough threshold at 15 and 30 min versus placebo, without clinically relevant safety concerns, bronchoconstriction, or impairment of the gag reflex. These findings show that particle engineering can enable regional airway targeting of lidocaine by dry powder inhalation and support the potential of this approach as a rapid, on-demand antitussive strategy.

Keywords: Chronic cough; Dry powder; Inhaler; Lidocaine; Particle engineering.

Conflict of interest statement

Declaration of competing interest The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Francesca Buttini, Ruggero Bettini, Federico Lavorini, Giovanni Fontana has patent #WO 2023/111930 licensed to Anemos Therapeutics. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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

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Review

J Inflamm Res

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. 2026 Aug 18:19:605211.

doi: 10.2147/JIR.S605211. eCollection 2026.

Gut Microbiota-Immune Interactions in Chronic Lung Diseases: An Emerging Cross-Disease Perspective Gut-Lung Axis in Chronic Lung Disease

Qi Zhu [1], Chunyang Zhang [1], Yulong Niu [2], Mingjin Lv [2], Biao Wang [1], Yao Pan [1], Bin Zhu [3], Yudong Ma [2]

Affiliations Expand

- **PMID: 42633442**

- PMCID: PMC13499551

- DOI: 10.2147/JIR.S605211

Abstract

Chronic lung diseases, including asthma, chronic obstructive pulmonary disease (COPD), bronchiectasis and pulmonary fibrosis, remain major causes of morbidity and mortality despite advances in pharmacological treatment. Emerging evidence suggests that these conditions are influenced by a bidirectional gut-lung axis, through which intestinal microbiota, microbial metabolites, epithelial barrier integrity and mucosal immune programming shape pulmonary inflammation, tissue remodelling and host defence. In this narrative review, we synthesise current clinical and experimental evidence linking gut microbiota-immune interactions to these four chronic lung diseases. Rather than treating dysbiosis as a uniform process, we distinguish shared and disease-specific microbial signatures, including depletion of short-chain fatty acid (SCFA)-producing taxa, delayed microbial maturation, reduced faecal microbial diversity, expansion of pathobionts and altered bile-acid or tryptophan metabolism. We further summarise how SCFAs, tauroursodeoxycholic acid, tryptophan-derived indole metabolites and microbial fragments may regulate Th2 and Th17 inflammation, Th17/Treg balance, neutrophil function, epithelial barrier integrity and fibrotic remodelling. Microbiota-targeted strategies, including dietary fibre and prebiotic approaches, probiotics, synbiotic formulations, faecal microbiota transplantation and selected microbiota-modulating compounds, have shown protective effects in multiple preclinical models, whereas clinical evidence remains limited by small sample sizes, short follow-up, heterogeneous interventions and incomplete mechanistic endpoints. We also discuss unresolved issues, including animal-to-human translation and the difficulty of distinguishing gut-derived from airway-derived microbial signals. A more precise understanding of shared and disease-specific gut-lung circuits may support the rational development of mechanism-informed microbiota-targeted adjunctive strategies for chronic lung disease.

Keywords: chronic lung disease; gut–lung axis; microbiota-targeted therapy; probiotics; short-chain fatty acids.

Conflict of interest statement

The authors declare that they have no competing interests.

- 60 references

- 1 figure

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Respir Care

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. 2026 Aug 22:19433654261473338.

doi: 10.1177/19433654261473338. Online ahead of print.

Primary Ciliary Dyskinesia: Recent Updates in Its Prevalence and Diagnosis

Connor P Parker [1], Michael D Davis [2 3]

Affiliations Expand

- PMID: 42631484

- DOI: 10.1177/19433654261473338

Abstract

Primary ciliary dyskinesia (PCD) is a genetic disorder characterized by dysfunction of motile cilia throughout the body. Within the upper and lower airways, this ciliary dysfunction results in impaired mucociliary clearance. Leading to chronic, progressive respiratory disease culminating in bronchiectasis. PCD remains underdiagnosed, in part due to clinical heterogeneity and challenges in diagnostic testing. Advances in molecular genetics and ciliary function assessment have substantially reshaped understanding of PCD prevalence, phenotype, and diagnostic strategy. Recent evidence suggests PCD is far more prevalent than previously thought. New findings in have resulted in a joint American Thoracic Society/European Respiratory Society international guideline for diagnosis of PCD. This review aims to synthesize emerging data to provide a primer on PCD, as well as summarize newer diagnostic approaches. This work was presented in part at the 41st Phil Kittredge Memorial Lecture at the 2025 AARC International Congress entitled "Advancement in Personalized Respiratory Care."

Keywords: Primary ciliary dyskinesia, PCD, high speed video microscopy, nasal nitric oxide, ciliopathy, bronchiectasis.

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Medicine (Baltimore)

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. 2026 Aug 21;105(34):e50263.

doi: 10.1097/MD.0000000000050263.

Evaluating the efficacy and safety of macrolide therapy in primary ciliary dyskinesia: A systematic review

Masoumeh Ghasempour Alamdari [1], Paniz Pourpashang [2], Simin Khayatzadeh Kakhki [3], Malihe Sadat Rahimi Azghadi [4], Niloufar Ghanbari [5], Parisa Ashournia [6], Arezoo Akhlaghi [7], Ghazal Shariatpanahi [7]

Affiliations Expand

- PMID: 42629686

- DOI: 10.1097/MD.0000000000050263

Free article

Abstract

Background: Primary ciliary dyskinesia (PCD) is a rare genetic disorder characterized by impaired ciliary function, defective mucociliary clearance, recurrent respiratory infections, and progressive respiratory morbidity. Macrolides, particularly azithromycin, have antibacterial, anti-inflammatory, and immunomodulatory properties and may therefore provide therapeutic benefit in PCD. This systematic review evaluated the efficacy and safety of macrolide therapy in patients with PCD.

Methods: This systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses 2020 guidelines and was prospectively registered in International Prospective Register of Systematic Reviews (CRD42024553793). PubMed, Scopus, Web of Science, Embase, Cochrane, and Google Scholar were searched for studies published from January 1, 1990, to June 18, 2024. Eligibility criteria were defined using the population, intervention, comparator, outcomes, and study design framework. Study selection, data extraction, and risk of bias assessment were performed independently by 3 reviewers. A meta-analysis was not performed because of substantial methodological heterogeneity across the included studies.

Results: Of 765 records identified, 9 studies met the inclusion criteria. These included 2 in vitro studies and 7 clinical studies, comprising case reports, case series, retrospective observational studies, and 1 randomized, placebo-controlled phase 3 trial. Across the clinical studies, sample sizes ranged from 1 to 90 participants. Overall, the available evidence suggested that macrolide therapy, particularly azithromycin, may reduce respiratory exacerbations and improve selected clinical symptoms in patients with PCD. Mechanistic in vitro evidence further indicated that azithromycin may reduce pro-inflammatory cytokine production and promote epithelial barrier repair. However, the included studies varied considerably in design, population characteristics, treatment protocols, and outcome definitions.

Conclusion: Macrolides, especially azithromycin, may have a beneficial role in the management of PCD by reducing respiratory exacerbations, improving selected symptoms, and modulating airway inflammation. Nevertheless, the certainty of evidence remains limited by methodological heterogeneity, small sample sizes, and the scarcity of randomized controlled trials. Further large-scale, well-designed, PCD-specific clinical studies are required to confirm these preliminary findings and establish standardized treatment protocols.

Keywords: anti-inflammatory therapy; azithromycin; macrolides; primary ciliary dyskinesia; respiratory exacerbations; systematic review.

Conflict of interest statement

The authors have no funding and conflicts of interest to declare.

- **41 references**

Supplementary info

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Genet Med

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. 2026 Aug 20:102690.

doi: 10.1016/j.gim.2026.102690. Online ahead of print.

Development of a simple clinical score to prioritize detection of severe alpha-1 antitrypsin deficiency with PiZZ genotype

Yanzhen Cheng [1], Guillaume Butler-Laporte [2], Tomoko Nakanishi [3], Tianyuan Lu [4]

Affiliations Expand

- PMID: 42626852

- DOI: 10.1016/j.gim.2026.102690

Abstract

Purpose: Alpha-1 antitrypsin deficiency (AATD) is caused primarily by the PiZZ genotype in SERPINA1 and remains underdiagnosed despite its association with severe lung and liver diseases. We aimed to develop and validate a clinical score using electronic health record (EHR) data to identify individuals more likely to carry the PiZZ genotype.

Materials and methods: In the UK Biobank (UKB; N = 277,082), we developed the clinical score using logistic regression with variable selection based on medical conditions and anthropometric measurements. We evaluated its performance against random screening and targeted screening based on individual medical conditions in an independent UKB test dataset (N = 69,272) and the NIH All of Us Research Program (AoU; N = 162,198).

Results: The optimized clinical score included chronic obstructive pulmonary disease, bronchiectasis, cirrhosis, and height. In the UKB test dataset and AoU, the score outperformed any single phenotype in identifying PiZZ genotype. Targeting individuals in the top 0.5% of the score increased screening efficiency by >95% compared with random screening and outperformed all medical condition-based screening strategies.

Conclusion: Using readily available EHR data, the clinical score represents a starting point that may improve targeted case-finding and optimize allocation of diagnostic resources for AATD.

Keywords: Alpha-1 antitrypsin deficiency; Bronchiectasis; Chronic obstructive pulmonary disease; Cirrhosis; Clinical score.

J Asthma

. 2026 Aug 20:1-18.

doi: 10.1080/02770903.2026.2721176. Online ahead of print.

T2-Low Asthma: Mechanistic Pathways, Biomarkers, and Emerging Therapeutic Strategies

Georgios I Barkas [1 2], Ourania S Kotsiou [1 2], Evdoxia Gouta [2], Zoe Daniil [2], Garyfallia-Eirini Perlepe [2]

Affiliations Expand

- PMID: 42619443

- DOI: 10.1080/02770903.2026.2721176

Abstract

Objective: To synthesize current definitions, mechanistic pathways, biomarker limitations, and evidence-graded therapeutic strategies for T2-low asthma as a heterogeneous clinical and translational construct.

Data sources: This narrative review searched PubMed/MEDLINE, Embase, the Cochrane Library, and reference lists of key articles from database inception to June 2026.

Study selections: Peer-reviewed human studies, randomized trials, post hoc analyses, systematic reviews, meta-analyses, guidelines, severe-asthma registries, biomarker cohorts, and mechanistic asthma studies were prioritized. Preclinical studies were used only when human evidence was limited and were interpreted as hypothesis-generating.

Results: T2-low asthma is usually defined by low eosinophils, low fractional exhaled nitric oxide, and limited evidence of canonical type 2 inflammation, but this remains an exclusionary definition. The construct includes neutrophilic, paucigranulocytic, obesity-associated, exposure-related, infection-linked, bronchiectasis-overlap, and remodeling-dominant presentations. Candidate pathways include Th1/Th17 signaling, CXCL8/CXCR2-mediated neutrophil recruitment, inflammasome activation, IL-6-associated immunometabolic inflammation, epithelial alarmins, dysbiosis, and small-airway dysfunction. No positive biomarker currently identifies treatment-responsive T2-low asthma in routine practice. Management relies on diagnostic confirmation, optimized inhaled therapy, repeated phenotyping, treatable-traits care, and selected add-on options including tezepelumab,

azithromycin, or bronchial thermoplasty in appropriate patients. A total of 63 references were synthesized in this review.

Conclusion: T2-low asthma is clinically important but mechanistically diverse. Progress requires validated positive biomarkers, harmonized phenotyping, and biomarker-enriched trials that test therapies in coherent subgroups without overstating readiness for routine care.

Keywords: IL-6; T2-low asthma; airway remodeling; alarmins; azithromycin; biomarkers; inflammasome; neutrophilic inflammation; non-eosinophilic inflammation; paucigranulocytic asthma; severe asthma; tezepelumab; treatable traits.

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Published Erratum

Breathe (Sheff)

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. 2026 Aug 18;22(3):265001.

doi: 10.1183/20734735.5001-2026. eCollection 2026 Jul.

Erratum: "The European Respiratory Society guideline for management of adult bronchiectasis: clinical summary." J.D. Chalmers, O. Sibila, B. Herrero-Cortina, *et al. Breathe* 2026; 22: 260001

No authors listed

- **PMID: 42614765**
- **PMCID: PMC13482718**

- DOI: 10.1183/20734735.5001-2026

Abstract

[This corrects the article DOI: 10.1183/20734735.0001-2026.].

Erratum for

- The European Respiratory Society guideline for management of adult bronchiectasis: clinical summary.

Chalmers JD, Sibila O, Cortina BH, Long MB, Chotirmall SH, Aliberti S.Breathe (Sheff). 2026 Apr 14;22(2):260001. doi: 10.1183/20734735.0001-2026. eCollection 2026 Apr.PMID: 41988091 Free PMC article. Review.

Supplementary info

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Review

Breathe (Sheff)

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. 2026 Aug 18;22(3):250370.

doi: 10.1183/20734735.0370-2025. eCollection 2026 Jul.

Surgical intervention in bronchiectasis and pulmonary tuberculosis

Rania Z Fallatah [1], Asser Mohamed [2 3], Amina Mariam Syed [3], Waleed Saleh [2 3], Khaled AlKattan [2 3], Marcello Migliore [2 3 4]

Affiliations Expand

- **PMID: 42614759**

- PMCID: PMC13482733

- DOI: 10.1183/20734735.0370-2025

Abstract

Bronchiectasis and pulmonary tuberculosis (TB) remain common causes of chronic respiratory morbidity worldwide, despite major advances in antimicrobial therapy and structured airway clearance strategies. In a subset of patients, medical treatment alone is insufficient, and surgical intervention may be required when disease is anatomically localised or when serious complications develop. From a surgical perspective, resection of non-functional, chronically infected lung segments in bronchiectasis can lead to sustained symptom improvement, fewer exacerbations, and effective control of haemoptysis when patients are appropriately selected. In pulmonary TB, surgery continues to serve both diagnostic and therapeutic purposes. Operative intervention may be necessary when noninvasive investigations fail to establish a diagnosis, or when persistent cavitary disease, drug-resistant infection, or structural complications such as destroyed lung, chronic empyema, or bronchopleural fistula are present. Current respiratory guidelines emphasise careful medical optimisation and multidisciplinary assessment before surgical referral, highlighting the importance of appropriate patient selection. This narrative educational review focuses on practical principles that guide surgical decision-making in bronchiectasis and pulmonary TB. Indications for surgery, contraindications to operative intervention, and criteria for referral for lung transplantation are discussed, with the aim of supporting clinicians involved in the care of patients with complex structural lung disease.

Conflict of interest statement

Conflict of interest: The authors declare no conflicts of interest relevant to this manuscript. All authors have completed ICMJE conflict of interest disclosure forms.

- 31 references
- 1 figure

Supplementary info

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Eur Respir Rev

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. 2026 Aug 18;35(181):245085.

doi: 10.1183/16000617.5085-2024. Print 2026 Jul.

"Exacerbations of bronchiectasis." A. De Angelis, E.D. Johnson, S. Sutharsan, *et al. Eur Respir Rev* 2024; 33: 240085

No authors listed

- **PMID: 42613081**
- **PMCID: PMC13482739**
- **DOI: 10.1183/16000617.5085-2024**

No abstract available

Erratum for

- **Exacerbations of bronchiectasis.**

De Angelis A, Johnson ED, Sutharsan S, Aliberti S.Eur Respir Rev. 2024 Jul 24;33(173):240085. doi: 10.1183/16000617.0085-2024. Print 2024 Jul.PMID: 39048130 Free PMC article. Review.

- **1 figure**

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Review

Lancet Infect Dis

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. 2026 Aug 18:S1473-3099(26)00360-9.

doi: 10.1016/S1473-3099(26)00360-9. Online ahead of print.

COPD and Aspergillus-a complex interaction of global health importance

David W Denning [1], Margherita Bertuzzi [2], Sanjay H Chotirmall [3], Thomas M Wilkinson [4], Alexander G Mathioudakis [5], Sara Gago [2], Takahiro Takazono [6], Thomas R Rogers [7], Paul Bowyer [2], Chris Kosmidis [8], Jesus Guinea [9], Katrien Lagrou [10], Wim Janssens [11], Animesh Ray [12], Darius Armstrong James [13], Claus F Vogelmeier [14], Xin Su [15], Mona Bafadhel [16], Yongchang Sun [17], Nicolas Roche [18], Jørgen Vestbo [19]

Affiliations Expand

- **PMID: 42612667**

- **DOI: 10.1016/S1473-3099(26)00360-9**

Abstract

Aspergillus spp are common airborne fungi, and the commonest fungal pathogen of human lungs. In patients with chronic obstructive pulmonary disease (COPD), the usual defences against disease are impaired to various degrees, leading to persistent airway infection, especially with bronchiectasis; allergy (or sensitisation) and probable additional airways resistance; and chronic pulmonary aspergillosis or invasive aspergillosis. Recurrent COPD exacerbations are more common in those with Aspergillus found in the airways, opening up an unassessed therapeutic opportunity to reduce hospital admissions and deaths. External factors worsening the effect of this negative interaction include damp and/or mould in homes, higher air pollution indices. and respiratory viral infections that abrogate key immune defences. Corticosteroid therapy, both systemic and oral, further impairs airway and lung defences. Both local and general immune responses are affected. Aspergillus infection in patients with COPD is markedly under-recognised, primarily because the sensitivity of culture of Aspergillus from sputum is poor, bronchoscopy can be harmful in patients with chronic respiratory impariment, induced sputum is only used in research studies, and the role of serum Aspergillus IgG and antigen testing is not appreciated. In hospitalised patients and those at higher risk, high-volume fungal culture and PCR for Aspergillus on sputum would enable many more diagnoses. With approximately 60 million patients with COPD hospitalised with exacerbations globally, and high mortality rates in both invasive and chronic pulmonary aspergillosis in those with COPD, many opportunities for prevention, earlier diagnosis, and therapeutic interventions are untested. Reducing corticosteroid exposure in patients with COPD could greatly reduce the impact of Aspergillus in patients with COPD.

Conflict of interest statement

Declaration of interests DWD (and family) holds Founder shares in F2G, a University of Manchester spin-out antifungal discovery company; acts or has recently acted as a consultant to Pulmocide, Biosergen, Rostra Therapeutics, Mundipharma, and Cipla; chairs a Data Review Committee for Mundipharma and Biosergen; in the last 2 years, was paid for talks on behalf of Hikma, Gilead, Avni, and Pfizer; and has contributed to multiple guidelines related to aspergillosis and fungal diagnostics. SHC has served on advisory boards for CSL Behring, Pneumagen, Zaccha Pte, Boehringer Ingelheim, GlaxoSmithKline (GSK), Chiesi Farmaceutici, and Sanofi; has served on data and safety monitoring boards for Inovio Pharmaceuticals and Imam Abdulrahman Bin Faisal University; and has received personal fees from AstraZeneca, CSL Behring, Boehringer Ingelheim, and Chiesi Farmaceutici, all unrelated to this work. TMW has received grants and fees from AstraZeneca, Biomerieux Enanta, GSK, Janssen, my mhealth, Pfizer, and Sanofi in the area of COPD and infection; and reports personal fees from GSK and Sanofi and stock options from ChestPal, not related to this work. SG has received speaker fees from Gilead Sciences and research grant support from Pfizer outside of the submitted work. TT has received speaker fees from Merck Sharp & Dohme (MSD), Pfizer, Insmed, Asahikasei Pharma, Kyorin Pharma, Shionogi, GSK, and Gilead; and has received research funds from Asahikasei Pharma, Kyorin Pharma, Shionogi, and GSK. TRR has received research funding from Pfizer; consultancy fees from Mundipharma; speaker fees from Gilead; a travel grant from Menarini Pharma; and chairs the Aspergillus Guidelines Group for the Hospital Infection Society. AR has received a research grant from Jolly Pharmaceuticals, India. CK has received speaker fees from Pfizer; and consultancy fees from Mundipharma and Shionogi Europe. KL has received consultancy fees from Mundipharma; speaker fees from Gilead, Mundipharma, Abbott, and FUJIFILM Wako Chemicals Europe; a fee for Advisory Board participation from Pfizer; and travel support from Pfizer, Gilead, and AstraZeneca. WJ has received grant support and payments for educational and advisory work from AstraZeneca, GSK, Chiesi, Sanofi, Roche, and PulmonX. CFV reports research grants from the German government and AstraZeneca, Boehringer Ingelheim, Chiesi, CSL Behring, GSK, and Grifols; reports consulting fees from Aerogen, AstraZeneca, Boehringer Ingelheim, CSL Behring, Chiesi, GSK, Insmed, Menarini, Roche, and Sanofi; and honoraria for lectures from Aerogen, AstraZeneca, Boehringer Ingelheim, CSL Behring, Chiesi, GSK, Insmed, Menarini, Roche, and Sanofi. MBa is funded by the UK National Institute for Health and Care Research (NIHR304263); receives to her institution consultancy and speaker honoraria from AstraZeneca and Roche; grant funding to her institution from AstraZeneca, NIHR, EU Horizon, and Asthma+Lung UK; is scientific advisor for Albus Health; and is science and research committee Chair of British Thoracic Society. YS has contributed to several guidelines or expert consensus on aspergillosis in COPD and asthma. NR reports research funds and fees from Chiesi, Pfizer, and GSK; and fees (advisory boards, consultancy, education, and presentations) from Austral, Biosency, MSD, AstraZeneca, Chiesi, Menarini, Nuvaira, Roche, Sanofi, and Zambon. JV reports personal fees from AstraZeneca, GSK, and Sanofi, not related to this work. All other authors declare no competing interests.

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Rapid molecular detection of respiratory pathogens in patients with bronchiectasis

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- **PMID: 42609712**
- **PMCID: PMC13478891**
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Abstract

Bacterial quantification assays targeting rRNA for the detection of *H. influenzae, S. aureus, S. pneumoniae* and *M. catarrhalis* in bronchiectasis samples showed >90% sensitivity and consistently detected additional positives missed by the other methods https://bit.ly/3PF437y.

Conflict of interest statement

Conflict of interest: M.B. Long is an Associate Editor of ERJ Open Research. O. Sibila has received payment or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from Insmed and Boehringer Ingelheim. S. Aliberti reports grants or contracts from GSK, and consulting fees from Insmed Ireland Limited, Fondazione Internazionale Menarini, Insmed Italy S.R.L., Brahms Gmbh, Modernatx, Inc, Moderna Italy Srl, An2 Therapeutics, Inc, Physioassist Sas, Vertex Pharmaceuticals (Europe) Limited, Zambon Italia S.R.L., Zambon S.P.A., Chiesi Farmaceutici Spa, Insmed Germany Gmbh, Insmed Netherlands B.V, Boehringer Ingelheim Italia Spa, Insmed Incorporated, Boehringer Ingelheim International Gmbh, Sanofi S.R.L. and GSK Spa. J.D. Chalmers reports grants awarded from AstraZeneca, Boehringer Ingelheim, Chiesi, Genentech, Gilead, Grifols, Insmed and Trudell; consulting fees received from Antabio, AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, Grifols, Insmed, Janssen, Novartis, Pfizer and Zambon; and is an Associate Editor of ERJ Open Research. All other authors report no conflicts of interest.

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Review

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Extracellular vesicles in senescence-associated chronic lung diseases

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Abstract

Chronic lung diseases, such as chronic obstructive pulmonary disease, idiopathic pulmonary fibrosis, obstructive sleep apnea, asthma, bronchiectasis, and lung cancer, are intricately linked to the aging process. These diseases are characterized by a high prevalence rate and a paucity of effective treatment options. Emerging evidence highlights the critical role of extracellular vesicles (EVs) in the pathogenesis and progression of these diseases. EVs, released by senescent cells, mediate intercellular communication and modulate immune responses through their cargo of microRNAs, proteins, and other molecules. These vesicles contribute to disease progression by promoting inflammation, fibrosis, tissue remodeling, and cellular senescence. Specifically, certain microRNAs, such as miR-21, miR-34a, and miR-570-3p, along with several proteins in EVs, have been identified as key factors influencing these processes. Additionally, EVs play significant roles in immune regulation and have potential anti-inflammatory effects, making them promising candidates for therapeutic applications. Recent advances in the use of EVs as therapeutic agents, including their application in nanotechnology for targeted drug delivery, have demonstrated potential in reducing inflammation, modulating immune responses, and enhancing tissue repair. Understanding the role of EVs in these diseases offers insights into potential therapeutic targets to mitigate disease progression and improve patient outcomes. Future research should focus on standardizing EV isolation and characterization methods, verifying the safety and efficacy of EV-based therapies in clinical trials, and elucidating the complex biological mechanisms of EVs in aging and disease.

Keywords: Asthma; Bronchiectasis; Chronic obstructive pulmonary disease (COPD); Extracellular vesicles; Idiopathic pulmonary fibrosis (IPF); Lung cancer; Obstructive sleep apnea; Senescence.

Conflict of interest statement

None.

- 168 references
- 4 figures