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

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BMC Public Health

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. 2026 Jun 19.

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Patient journeys mapping in health management for older patients with chronic obstructive pulmonary disease: a qualitative descriptive study

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Affiliations Expand

- **PMID: 42321723**

- **DOI: 10.1186/s12889-026-28180-9**

Abstract

Background: Management of chronic obstructive pulmonary disease (COPD) in older adults remains suboptimal, often due to a fragmented, acute-care-focused approach that fails to address the comprehensive needs of patients across the care continuum. A thorough understanding of the patient journey is essential to identify systemic gaps and potential intervention points.

Aim: This study aims to systematically map the complete cycle of the COPD patient journey in older adults, elucidating their multidimensional needs, challenges, and

critical touchpoints throughout the stages of screening, diagnosis, inpatient care, and home-based rehabilitation.

Design: A qualitative descriptive study employing patient journey mapping.

Methods: A qualitative approach was used, involving in-depth, semi-structured interviews with a purposive sample of older COPD patients. Data collection continued until thematic saturation was achieved. Data were analysed using Braun and Clarke's thematic analysis technique. Patient journey mapping synthesized individual narratives into a consolidated visual representation, identifying key stages, touchpoints, and barriers within the patient experience.

Results: Analysis revealed themes organized across three dimensions: health management tasks, emotional experiences, and pain points. Key findings included challenges in early symptom recognition and diagnosis, ongoing burdens associated with symptom management, barriers to engaging in pulmonary rehabilitation, inadequate social and professional support, nutritional knowledge gaps, and pervasive concerns regarding physical activity. These themes contributed to a comprehensive patient journey map that highlighted the dynamic and interdependent needs throughout the various phases of COPD management.

Conclusion: Patient journey mapping illustrates that the COPD care pathway constitutes a prolonged process, marked by critical vulnerabilities during diagnosis and care transitions. These findings highlight the necessity of transitioning from episodic care to continuous support frameworks that integrate digital health solutions, self-management education, and community-based services.

Impact: This study offers empirical evidence to inform the development of targeted interventions and optimize resource allocation, ultimately aiming to improve self-management outcomes, reduce complications, and enhance the quality of life for older adults with COPD.

Reporting method: This study adhered to the COREQ (Consolidated Criteria for Reporting Qualitative Research) guidelines to ensure methodological transparency and reproducibility.

Keywords: COPD; Chronic obstructive pulmonary disease; Health management; Patient journey map; Qualitative research.

Conflict of interest statement

Declarations. Ethics approval and consent of participation: This qualitative study was approved by the Medical Ethics Committee of Puyang General Hospital (Approval No.: 2024-05-0052-E01). All procedures adhered to the ethical standards of the 1964 Declaration of Helsinki and its subsequent amendments. Informed consent was obtained from all participants after providing a detailed explanation of the study's objectives, procedures, potential risks, and the right to withdraw at any time without penalty. No minors participated in this study. Consent for publication: Not applicable. Competing interests: The authors declare no competing interests.

Supplementary info

Grants and fundingExpand

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BMC Pulm Med

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Coexistence of COPD or asthma in patients with bronchiectasis: a systematic review and meta-analysis

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Affiliations Expand

- PMID: 42321713

- DOI: 10.1186/s12890-026-04414-9

Abstract

Background: Bronchiectasis frequently coexists with other chronic airway diseases, particularly chronic obstructive pulmonary disease (COPD) and asthma, forming clinically significant bronchiectasis-COPD overlap and bronchiectasis-asthma overlap phenotypes. However, the global proportion of COPD and asthma among patients with bronchiectasis has not been comprehensively quantified. This study aimed to estimate the pooled proportion of COPD and asthma in bronchiectasis and to explore potential sources of heterogeneity.

Methods: PubMed, Embase, and Web of Science were systematically searched up to January 8, 2026. Studies reporting the proportion of COPD or asthma in adults with bronchiectasis confirmed by high-resolution computed tomography were eligible. Random-effects models were used to calculate pooled proportions. Subgroup analyses and meta-regression were performed to explore heterogeneity. Publication bias was assessed using funnel plots and Egger's test.

Results: Fifty-two studies (81,779 patients) were included for COPD and 47 studies (71,605 patients) for asthma. The pooled proportion of COPD among bronchiectasis patients was 18% (95% CI: 14-22%; I^2 = 99.4%), and the pooled proportion of asthma was 16% (95% CI: 11-20%; I^2 = 99.3%). Subgroup analyses revealed variations by

geographic region, study design, and age. Meta-regression identified female proportion as a statistically significant but weak predictor of asthma prevalence (β = 3.97, 95% CI: 0.91-7.03; P = 0.011), explaining only 10.6% of the between-study heterogeneity. No covariates significantly explained heterogeneity in COPD prevalence. Egger's test showed no significant publication bias (COPD: P = 0.506; asthma: P = 0.153), and sensitivity analyses confirmed the stability of the findings.

Conclusions: COPD and asthma coexist in approximately one-fifth of patients with bronchiectasis, highlighting the importance of systematic assessment for these overlap syndromes. A weak association between female sex and asthma prevalence was observed, but this factor explained only a small fraction of the heterogeneity, indicating that other unmeasured variables are more important determinants. These findings support a more integrated, phenotype-driven approach to the management of chronic airway diseases.

Trial registration: PROSPERO registration: CRD42023400445.

Keywords: Airway disease overlap; Asthma; Bronchiectasis; Chronic obstructive pulmonary disease; Comorbidity; Meta-analysis.

Conflict of interest statement

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

Supplementary info

Publication typesExpand

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3

Review

Respir Med

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. 2026 Jun 19:108965.

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Should triple inhaled therapy be initiated earlier in the disease course of COPD to modify long-term outcomes, including mortality, exacerbations, and cardiovascular risk?

Vitaliano Nicola Quaranta [1], Silvano Dragonieri [1], Giulia Cosentino [2], Valeria Motta [2], Juan Camilo Signorello [3], Guido Di Stefano [4], Emanuele Ciasullo [5], Dejan Radovanovic [3], Giovanna Elisiana Carpagnano [1], Pierachille Santus [6]

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- PMID: 42320603

- DOI: 10.1016/j.rmed.2026.108965

Abstract

Background: Chronic obstructive pulmonary disease (COPD) is a progressive and heterogeneous disorder in which exacerbations accelerate lung-function decline, increase cardiovascular morbidity, and worsen mortality. Although single-inhaler triple therapy (SITT; ICS/LABA/LAMA) is currently recommended for patients with persistent symptoms or frequent exacerbations despite dual bronchodilation, emerging evidence suggests that earlier initiation may improve long-term outcomes.

Objective: To evaluate whether earlier initiation of triple inhaled therapy in COPD could improve long-term outcomes, including lung-function preservation, exacerbation burden, mortality, cardiovascular risk, and healthcare resource utilization.

Evidence synthesis: Pivotal randomized trials such as IMPACT and ETHOS showed that SITT reduces exacerbations and improves lung function, with significant reductions in all-cause mortality and cardiopulmonary events in high-risk populations. Post hoc analyses and real-world studies suggest that symptomatic patients without frequent exacerbations may also benefit from earlier escalation. Predictive models, including DEPICT, ACCEPT, and GALAXY, consistently indicate that earlier initiation of SITT, particularly in younger or pre-exacerbator phenotypes, may preserve lung function, delay disease progression, reduce exacerbations, lower mortality risk, and remain cost-effective. These benefits appear to be mediated partly through exacerbation prevention and attenuation of post-exacerbation cardiovascular vulnerability.

Conclusions: Converging evidence from clinical trials, real-world studies, and predictive modelling supports the hypothesis that earlier initiation of SITT may represent a disease-modifying strategy in selected patients with COPD. Prospective pragmatic trials are needed to define optimal timing, target populations, and the balance between benefit and risk.

Keywords: COPD; Cardiovascular risk; Disease modification; Exacerbations; Predictive modelling; Single-inhaler triple therapy; Triple inhaled therapy.

Conflict of interest statement

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

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Review

Nat Rev Rheumatol

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. 2026 Jun 18.

doi: 10.1038/s41584-026-01394-2. Online ahead of print.

Lung disease in rheumatoid arthritis

Elisabeth Bendstrup [1 2], Philippe Dieude [3], Michael Kreuter [4 5], Anna-Maria Hoffmann-Vold [6 7], Vincent Cottin [8], Ellen M Hauge [9 10]

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- **PMID: 42315602**

- **DOI: 10.1038/s41584-026-01394-2**

Abstract

Rheumatoid arthritis (RA) is a prevalent chronic systemic autoimmune inflammatory disease that primarily targets synovial joints and periarticular tissues. In RA, systemic inflammation has been associated with extra-articular manifestations, including pulmonary involvement, which are leading causes of reduced survival. Tobacco smoking is a well-established risk factor for anti-citrullinated protein antibody (ACPA)-positive RA and is also associated with chronic obstructive

pulmonary disease, interstitial lung disease (ILD) and lung cancer, the prevalence of which is elevated in people with RA. Pulmonary manifestations such as airway obstructive disease, ILD and bronchiolitis affect a substantial proportion of people with RA. Screening for pulmonary disease, particularly ILD, is gaining emphasis, with high-resolution CT recommended based on risk factors including age, sex, antibody status and smoking. Despite advances in therapies to effectively manage joint inflammation, evidence-based treatments for RA-associated ILD remain limited. Chronic obstructive pulmonary disease and bronchiectasis in RA warrant more recognition owing to their effect on morbidity and mortality, and should be managed in accordance with current international treatment guidelines for these conditions. This Review summarizes the pathophysiology of lung involvement in RA, diagnostic challenges and evolving management strategies aimed at optimizing patient outcomes.

Conflict of interest statement

Competing interests: The authors declare no competing interests.

- 120 references

Supplementary info

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BMJ Open Respir Res

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. 2026 Jun 18;13(1):e004248.

doi: 10.1136/bmjresp-2026-004248.

Lung function impairment at pulmonary TB and HIV/TB diagnosis: a South African cross-sectional cohort analysis

Michael Marll [1], Tlhago Ngwanto [2], Nomsa Mofokeng [2], Lydia Mngomezulu [2], Sally El Sammak [3], Anisha Rajaratnam [4], Fay Willis [4], Matthew Magee [4], Lungile Gabuza [5], Hardy Kornfeld [6], Yun Li [7 8], Pholo Maenetje [2], Gregory P Bisson [# 9 10], Sara Auld [# 11 4]

Affiliations Expand

- **PMID: 42315259**

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Free article

Abstract

Objectives: To characterise the patterns and severity of impaired lung function at pulmonary tuberculosis (TB) diagnosis and assess the impact of HIV co-infection on TB-associated lung injury.

Setting: A cross-sectional analysis of adults with and without HIV who presented with newly diagnosed drug-susceptible pulmonary TB in Johannesburg, South Africa.

Participants: A total of 258 adults who were newly diagnosed with drug-susceptible pulmonary TB underwent comprehensive pulmonary function tests (PFT).

Primary and secondary outcome measures: Five key PFT manoeuvres were evaluated: forced expiratory volume in one second (FEV1), forced vital capacity (FVC), FEV1/FVC, total lung capacity (TLC) and haemoglobin-corrected diffusion capacity of the lungs for carbon monoxide (DLCO). Three primary outcomes were modelled: (1) normal versus abnormal lung function, defined as any key PFT manoeuvre z-score < lower limit of normal, (2) continuous z-scores for each PFT and (3) clinical patterns of lung function (normal, restriction, obstruction, mixed disorder and isolated low DLCO). Secondary outcomes included respiratory health-related quality-of-life measures assessed using the St. George's Respiratory Questionnaire (SGRQ).

Results: HIV/TB co-infection was associated with lower odds of any abnormal lung function (adjusted OR (aOR) 0.43, 95% CI 0.24 to 0.74) and lower odds of restrictive (aOR 0.46, 95% CI 0.24 to 0.87) and mixed patterns (aOR 0.22, 95% CI 0.07 to 0.66) compared with those with TB alone. HIV co-infection was also associated with better FEV1, FVC, FEV1/FVC and TLC z-scores. While those with HIV had less severe radiographic disease, respiratory symptoms were similar between groups (SGRQ total score: HIV-negative 22 (IQR: 13-38) vs HIV-positive 26 (IQR: 8-44), p>0.9).

Conclusions: Adults with HIV/TB co-infection demonstrated a distinct clinical phenotype of TB-associated lung injury at TB diagnosis characterised by less severe radiographic and lung function impairment compared with those without HIV.

Keywords: Interstitial Fibrosis; Lung Physiology; Pulmonary Disease, Chronic Obstructive; Respiratory Infection; Respiratory Measurement; Tuberculosis.

Conflict of interest statement

Competing interests: None declared.

Supplementary info

MeSH termsExpand

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Meta-Analysis

BMJ Open Respir Res

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. 2026 Jun 18;13(1):e003977.

doi: 10.1136/bmjresp-2025-003977.

Association between mental health and chronic obstructive pulmonary disease (COPD) outcomes: systematic review and meta-analysis

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Affiliations Expand

- **PMID: 42315258**

- **DOI: 10.1136/bmjresp-2025-003977**

Free article

Abstract

Objective: To systematically synthesise evidence on the associations between presence of a mental health condition and chronic obstructive pulmonary disease (COPD) outcomes in people diagnosed with COPD, including lung function, symptom burden, functional status and clinical events.

Methods: A systematic search of MEDLINE, Embase, PubMed, PsycINFO and CINAHL identified studies comparing COPD outcomes in adults (≥18 years) with and without comorbid mental illnesses. Eligible studies reported at least one relevant

outcome comparing these groups. The protocol was pre-registered and followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.

Results: 58 studies including 707 037 participants were included. Comorbid mental illness was associated with worse outcomes: lower forced expiratory volume in 1 s (mean difference (MD)=-2.92%, 95% CI -4.35% to -1.48%), lower diffusing capacity of the lungs for carbon monoxide (MD=-3.79%, 95% CI -5.72% to -1.86%), reduced 6-minute walking test distance (MD=-30.42 m, 95% CI -41.03 to -19.82) and higher modified Medical Research Council scores (MD=0.64, 95% CI 0.45 to 0.84). Quality of life was worse (higher St George's Respiratory Questionnaire (MD=15.23 points, 95% CI 13.25 to 17.22), COPD Assessment Test (MD=7.28, 95% CI 5.81 to 8.74)). Mental illness increased exacerbations (MD=0.87, 95% CI 0.24 to 1.50; adjusted risk ratio=1.58, 95% CI 1.05 to 2.37; incidence rate ratio (IRR)=1.64, 95% CI 1.38 to 1.96), hospitalisations (adjusted OR=1.61, 95% CI 1.43 to 1.81; adjusted IRR=2.22, 95% CI 1.30 to 3.78) and mortality (adjusted HR=1.34, 95% CI 1.07 to 1.69). Depression and anxiety showed the strongest associations; evidence for severe mental illness was limited.

Conclusion: Comorbid mental illness in COPD is linked to worse lung function, greater symptom burden, higher risks of exacerbation, hospitalisation and possibly mortality. Addressing the causes of this and integrating mental healthcare into COPD management may improve outcomes and reduce preventable admissions.

Prospero registration number: CRD42024567680.

Keywords: COPD; Psychology.

Conflict of interest statement

Competing interests: AMT has received grants and/or honoraria from GSK, AstraZeneca, Chiesi, CSL Behring, Vertex, Grifols, Takeda, Beam and AiRNA. AF has received consultancy fees and travel subsistence from the International Primary Care Respiratory Group.

Supplementary info

Publication types, MeSH termsExpand

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Review

Expert Opin Emerg Drugs

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. 2026 Jun 18.

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Emerging treatment options for chronic obstructive pulmonary disease: a look into 2026 and beyond

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Affiliations Expand

- **PMID: 42314183**

- **DOI: 10.1080/14728214.2026.2688171**

Abstract

Introduction: As a leading cause of worldwide mortality, chronic obstructive pulmonary disease (COPD) is progressive and irreversible, leading to significant challenges with disease management and treatment. This is further complicated by the heterogenous nature of COPD, which is represented by the multiple endotypes that have variable responses to available treatments, thereby negating the one-size-fits-all approach. While recent clinical studies describe the effectiveness of existing therapies, further investigation is required to align COPD endotypes with the appropriate treatment options.

Areas covered: In this review, we discuss the known biomarkers pertaining to both direct and indirect measures of the inflammatory milieu and structural abnormalities in COPD. Combined use of conventional anti-inflammatory and bronchodilator treatments provide some symptomatic relief by reducing exacerbation frequency, however, for some patients, long-term corticosteroid use can increase the risk developing pneumonia and subsequent mortality. Biologics are at the forefront of emerging therapies for COPD, which shifts the target from widespread airway inflammation to pinpoint precise inflammatory markers involved in pathophysiological mechanisms of COPD.

Expert opinion: Identifying reliable airway-derived biomarkers in COPD will drive the development of therapies that can facilitate a precision medicine approach for patients with COPD.

Keywords: Biologics; chronic obstructive pulmonary disease; endotypes; inflammation; precision medicine.

Supplementary info

Publication typesExpand

8

ERJ Open Res

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. 2026 Jun 17;12(3):01420-2025.

doi: 10.1183/23120541.01420-2025. eCollection 2026 May.

The role of artificial intelligence in predicting COPD exacerbations using multimodal data: a systematic review

Christelos Kapatais [1], Theofanie Karaoulani [2], Anastasia Papanikolaou [1], Evangelia Koukaki [1], Agamemnon Bakakos [1], Christina Anagnostopoulou [1], Andriana I Papaioannou [1], Petros Bakakos [1], Nikoletta Rovina [1]

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- PMID: 42311877
- PMCID: PMC13266439
- DOI: 10.1183/23120541.01420-2025

Abstract

Background: COPD remains a leading cause of global morbidity and mortality, with acute exacerbations driving disease progression and healthcare utilisation. Artificial intelligence (AI) offers new opportunities to predict exacerbation risk by integrating multimodal data such as electronic health records (EHRs), spirometry and wearable sensor inputs.

Methods: This systematic review, conducted in accordance with PRISMA 2020 guidelines and registered in PROSPERO (CRD420251165476), evaluated AI-based models developed for COPD exacerbation prediction using combined data modalities.

Results: Comprehensive searches of PubMed, Embase and Google Scholar identified 859 records, of which five studies published between 2021 and 2025 met inclusion criteria. Study designs ranged from prospective monitoring cohorts to

EHR-based and hybrid datasets. Models applied diverse approaches including random forests, gradient boosting, convolutional neural networks and ensemble learning frameworks. Reported discriminative performance was moderate to high, with area under the curve values between 0.73 and 0.92 and accuracies up to 0.92. Most of these performance metrics were derived from internal validation, with limited external testing, which restricts assumptions about generalisability. Sensitivity reached 0.94 in wearable-driven models, while only one study reported formal calibration assessment.

Conclusions: Despite encouraging performance, methodological heterogeneity, limited external validation and incomplete reporting of preprocessing and explainability methods restrict clinical translation. Current evidence supports the potential of multimodal AI to enhance early detection of COPD exacerbations, but future research must prioritise transparent reporting, external validation and integration into real-world care pathways.

Conflict of interest statement

Conflicts of interest: The authors declare no conflict of interest.

- **36 references**
- **2 figures**

Full text links

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Editorial

ERJ Open Res

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. 2026 Jun 17;12(3):01717-2025.

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Artificial intelligence and the future of telemonitoring in home mechanical ventilation

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Affiliations Expand

- **PMID: 42311874**

- **PMCID: PMC13266468**

- **DOI: 10.1183/23120541.01717-2025**

Abstract

Artificial intelligence for telemonitoring in home mechanical ventilation https://bit.ly/4q9XxCa.

Conflict of interest statement

Conflict of interest: The European Respiratory Society (ERS) Clinical Research Collaboration (CRC) IMPORTANCE receives institutional support from the ERS and nonpromotional institutional support from industry partners, including Vivisol, BMC, Philips, Fisher & Paykel, Löwenstein Medical, Air Liquide and SOS Oxygène, under ERS governance frameworks. M. Duiverman is Co-Chair of the CRC IMPORTANCE and C. Crimi is a member of the CRC Steering Committee. The industry partners had no role in the conception, writing, or interpretation of this manuscript. The authors report no personal financial conflicts of interest related to the content of this article.

- **19 references**

Supplementary info

Publication typesExpand

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10

Review

Respir Med

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. 2026 Jun 17:108968.

doi: 10.1016/j.rmed.2026.108968. Online ahead of print.

Association of asthma and COPD with pertussis risk: A systematic review and meta-analysis

Xinyuan Liu [1], Xiaoli Yu [1], Qingming Yang [1], Zhu Tian [2], Cheng Guo [1], Kai Liu [3]

Affiliations Expand

- PMID: 42309234

- DOI: 10.1016/j.rmed.2026.108968

Abstract

Background: Pertussis, caused by Bordetella pertussis, has resurged globally despite widespread childhood vaccination. With waning immunity, adolescent and adult cases have increased. Patients with asthma and chronic obstructive pulmonary disease (COPD) may be more susceptible due to chronic airway inflammation and impaired immune function, but prior findings are inconsistent. This study aims to systematically evaluate the association between asthma and COPD with the risk of pertussis infection through a meta-analysis.

Methods: PubMed, Cochrane Library, Embase, Web of Science, CBM, CNKI, VIP, and Wanfang were searched from inception to August 7, 2025. Observational studies reporting adjusted effect measures (OR, RR, HR, IRR) were included. Study quality was assessed using the Newcastle-Ottawa Scale. Random-effects meta-analyses (DerSimonian-Laird) were performed when ≥3 studies reported comparable measures; otherwise, results were synthesized descriptively.

Prospero: CRD420251109793.

Results: Ten studies (7 cohort, 3 case-control) including >18.6 million participants were analyzed. Asthma was associated with increased pertussis risk (pooled OR=2.29, 95% CI 1.94-2.69; I^2=89%), and COPD showed a similar association (pooled OR=2.00, 95% CI 1.53-2.62; I^2=94%). A supplementary RR-based analysis supported the asthma association (pooled RR=3.36, 95% CI 2.77-4.08). Leave-one-out sensitivity analyses indicated robust results.

Conclusion: Evidence from existing observational studies suggests that asthma and chronic obstructive pulmonary disease (COPD) are associated with an increased risk of pertussis infection. The findings indicate that clinical identification and vaccination management should be strengthened to reduce preventable infections and the public health burden.

Keywords: asthma; chronic obstructive pulmonary disease; meta-analysis; pertussis; systematic review.

Conflict of interest statement

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

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BMC Health Serv Res

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. 2026 Jun 16.

doi: 10.1186/s12913-026-14802-w. Online ahead of print.

Management of COPD and comorbidities in COPD patients by dispensing pharmaceutical care following Global Initiative for Chronic Obstructive Lung Disease-guidelines (GOLD guidelines 2020): a prospective randomized clinical trial

Hafsa Kanwal [# 1], Gaber E Eldesoky [2], Umm-E- Kalsoom [1], Saima Mushtaq [3 4], A A Haral [5], Yu Fang [4], Amjad Khan [# 6 7 8]

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- **PMID: 42304334**

- **DOI: 10.1186/s12913-026-14802-w**

Free article

Abstract

Background: Chronic Obstructive Pulmonary Disease (COPD) is a major global health burden, driving high rates of morbidity, mortality, and economic strain. Its prevalence is rising, especially among aging populations and in areas with heavy tobacco and pollutant exposure. Frequent comorbidities like cardiovascular disease and diabetes complicate care, necessitating multidisciplinary approaches beyond standard pharmacotherapy.

Methods and findings: This prospective randomized clinical trial investigated the impact of individualized care aligned with Global initiative for chronic obstructive Lungs disease (GOLD guidelines)-on clinical outcomes in COPD patients with comorbidities. 120 patients were randomly allocated to three arms: standard care, pharmacist counselling, and comprehensive pharmaceutical care. Participants were followed for 24 weeks, and outcome measures included assessments of symptom severity (via CAT and mMRC scores), lung function (FEV_1), exacerbation frequency, and quality of life. Arm 2 (Pharmaceutical Care) significantly lowered CAT scores to 18.82 ± 13.69 compared to 29.88 ± 13.69 in the Arm 0 (control group) ($p < 0.001$) and reduced mMRC ratings to 0.91 ± 0.39 versus 1.36 ± 0.39 ($p < 0.001$). Arm 2 experienced the smallest FEV_1 (% predicted) change (-2.76 ± 2.52) versus -9.73 ± 2.52 in the control group, with a post-intervention mean difference of -9.70 ± 2.83 ($p = 0.001$). The duration of moderate exacerbations was significantly shorter in Arm 2 (1.50 ± 1.49 weeks) compared to 3.23 ± 1.49 weeks in controls ($p < 0.001$). Disease progression scores were lower in Arm 2 (1.15 ± 0.36) versus 1.45 ± 0.44 in the Arm 0 ($p = 0.016$). Quality of life significantly improved in the Arm 2 compared to Arm 0 and Arm 1, as reflected by lower SGRQ scores ($p < 0.001$).

Conclusions: In conclusion, implementing pharmaceutical care based on GOLD 2020 guidelines not only enhances symptom management and preserves lung function but also significantly improves quality of life in COPD patients. This study underscores the critical role of pharmacists in multidisciplinary care teams, focusing the patient education and individualized patient care, especially in resource-limited settings.

Clinical trial registration: This clinical trial has been registered in ANZCTR clinical trials registry: ACTRN12622000234718 (https://www.anzctr.org.au/ACTRN12622000234718.aspx).

Trial registration: This clinical trial has been registered in Australian New Zealand Clinical Trials Registry: Trial ID (ACTRN12622000234718), Date of registration 09/02/2022 and updated at 02/03/2023.

Trial protocols: These protocols are the detailed version of the registered clinical trial that has been published in Heliyon 10.1016/j.heliyon.2023.e21539.

Keywords: COPD; COPD management; GOLD guidelines; Pharmaceutical care; QoL (Quality of Life); Role of pharmacist in disease management.

Conflict of interest statement

Declarations. Ethical approval: The study protocol has been reviewed and approved by the bioethics committee of Quaid-I-Azam University, Islamabad reference No. #BEC-FBS-QAU2021-269 and from institutional review boards (IRBs) under Rawalpindi medical university, Rawalpindi Ref. No. 63/IREF/RMU/2021.Written informed consent was obtained from all participants prior to enrolment. Clinical trial protocols: The study protocols are the detailed version of the approved clinical trial that has been published in Heliyon https://doi.org/10.1016/j.heliyon.2023.e21539 [48]. Competing interests: The authors declare no competing interests.

Full text links

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Review

J Physiol

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Born early, age fast: Consequences of premature birth on chronic disease and accelerated ageing

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Affiliations Expand

- PMID: 42303287

- DOI: 10.1113/JP289277

Abstract

Recent advances in prenatal and neonatal care have significantly improved the survival rates of extremely low gestational age new-borns (ELGANs), born at ≤28 weeks of gestation. Exposure to low oxygen levels in the intrauterine environment during the last trimester is crucial for normal organ development. The extrauterine environment is highly toxic to ELGANs. Exposure to ambient and supplemental oxygen, intermittent hypoxia, excessive glucocorticoids, hyperalimentation, infections and mechanical ventilation, elevated ROS levels, coupled with insufficient antioxidant defences, lead to oxidative stress. Oxidative stress leads to damages in cell membranes, mitochondria and DNA, negatively impacting developing cells and tissues in all organs. ELGANs are at increased risk of developing acute prematurity-related diseases such as bronchopulmonary dysplasia, pulmonary hypertension and acute kidney injury. As ELGANs age, they face a higher risk of chronic diseases such as chronic obstructive pulmonary disease, cardiovascular disease, chronic kidney disease, type 2 diabetes. and other metabolic diseases later in life. Collectively, these chronic diseases are associated with accelerated ageing and increased mortality in former ELGANs. This review presents the epidemiology of

clinical disorders affecting the respiratory, cardiovascular, renal and metabolic systems across the lifespan in ELGANs. It explores the roles of early oxidative stress during the last trimester of organ development in activating signalling pathways that promote cellular senescence and epigenetic reprogramming, leading to acute and chronic disease.

Keywords: accelerated ageing; chronic disease; oxidative stress; premature birth.

- 335 references

Supplementary info

Publication types, Grants and fundingExpand

Full text links

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Cite

13

Ann Am Thorac Soc

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. 2026 Jun 16:aaoag165.

doi: 10.1093/annalsats/aaoag165. Online ahead of print.

Paraseptal Emphysema and Interstitial Lung Abnormalities in AGES-Reykjavik Study

Yuki Ko [1], Gunnar Gudmundsson [2 3], Taiki Fukuda [1 4], Yusei Nakamura [1 5], Takuya Hino [5], Akinori Hata [6], Rachel K Putman [7], Heida Bjarnadottir [2], Valborg Gudmundsdottir [2 8], Mizuki Nishino [1], David C Christiani [9 10], Vilmundur Gudnason [2 8], Gary M Hunninghake [7], Hiroto Hatabu [1]

Affiliations Expand

- PMID: 42302089

- DOI: 10.1093/annalsats/aaoag165

Abstract

Background: Paraseptal emphysema (PSE) is often underrecognized because it has minimal impact on pulmonary function. Recent studies suggest its frequent coexistence with interstitial lung abnormalities (ILA) and potential clinical significance, yet population-based data on its prevalence and prognostic impact remain unclear.

Purpose: To examine the associations between visual emphysema subtypes and ILA, and to evaluate the prognostic impact of ILA in individuals with emphysema subtypes.

Materials and methods: We analyzed 5,059 participants from Age Gene/Environment Susceptibility Reykjavik Study. Emphysema was classified as no emphysema, pure PSE, mixed emphysema, or pure centrilobular emphysema (CLE), and ILA as no ILA, indeterminate ILA, or ILA. Associations were assessed using multivariable logistic regression, and all-cause mortality was evaluated with Kaplan-Meier and Cox proportional hazards analyses.

Results: Pure PSE prevalence is 5.0%. Pure PSE (adjusted odds ratio [OR], 4.99; 95% confidence interval [CI], 3.30-7.42) and mixed emphysema (adjusted OR, 5.07; 95% CI, 3.71-6.92) were associated with ILA, whereas pure CLE was not. Over a mean follow-up time of 8.3 ± 2.6 years, mixed emphysema was linked to increased mortality compared with no emphysema (adjusted hazard ratio [HR], 1.47; 95% CI, 1.29-1.67). PSE severity was not significantly associated with ILA prevalence or with prognosis. Among PSE and CLE participants, ILA prevalence increased mortality risk (adjusted HR, 1.48 and 1.44, respectively).

Conclusion: In our large, longitudinal cohort, pure PSE or mixed emphysema is strongly associated with ILA. ILA was consistently associated with increased mortality regardless of emphysema subtype. These findings support the importance of assessing ILA in patients with emphysema as a key marker for risk stratification.

Keywords: chronic obstructive pulmonary disease; diagnostic imaging; interstitial; lung diseases; mortality; pulmonary emphysema.

. 2026 Dec;23(1):2681969.

doi: 10.1080/15412555.2026.2681969. Epub 2026 Jun 16.

Airway Mucus Occlusions in Ex-Smokers with and Without COPD

Sam Tcherner [1 2], Eveline Durom [1 3], Joshua Peters [1], Olivia Gater [1], Grace Parraga [1 2 3]

Affiliations Expand

- PMID: 42301257

- DOI: 10.1080/15412555.2026.2681969

Free article

Abstract

In patients with moderate-to-severe COPD, airway mucus-occlusions correlate with airflow limitation, exacerbation and mortality-risk. However, the clinical relevance of mucus-plugs in milder COPD is not well-understood. We evaluated pulmonary function, six-minute-walk-distance (6MWD), emphysema and airway mucus-plugs at baseline and 31 ± 7 months later (follow-up), in ex-smokers with COPD, and those at risk of COPD, but with normal spirometry. Ninety-three ex-smokers with (*n* = 54) and without COPD (*n* = 39) underwent spirometry, plethysmography, the six-minute-walk-test (6MWT), ^{129}Xe MRI, and CT at a baseline visit and 31 ± 7 months later. Baseline and follow-up FEV_1, FVC, RV/TLC, DL_{CO}, mucus-score, -count, -volume, -length, airway wall-thickness%, total-airway-count (TAC), relative-area-of-lung-with-attenuation ≤-950 Hounsfield Units (RA_{950}), and ^{129}Xe MRI ventilation-defect-percent (VDP) were measured. A Sankey plot was generated to follow mucus-plug dynamics at follow-up. At follow-up, there was significantly worse 6MWD, RV/TLC (COPD, $p \leq 0.04$), VDP, CT RA_{950}, airway WT% and TAC in participants with ($p \leq 0.002$) and without COPD ($p \leq 0.03$), but there was no change in FEV_1, mucus-score, count, volume or length (all $p > 0.07$). At baseline, there were 289 plugs in 58 participants; at FU, 94/289 (33%) mucus-plugs persisted and there were 193 new plugs for a total of 287 mucus-plugs (Δmucus-score = 0, $p = 0.7$; Δmucus-count = -2, $p = 0.5$). In COPD and participants at-risk for COPD, there was significantly worse airway remodelling, emphysema, gas-trapping, exercise capacity, and ventilation defects. While two thirds of plugs resolved, new plugs, in new locations were observed at follow-up; mucus-count and score did not change. The temporal dynamics of mucus-plugs should be considered when evaluating their clinical relevance in COPD patients.Clinical Trial Registration: www.clinicaltrials.gov NCT02279329.

Keywords: COPD; computed tomography; ex-smokers; hyperpolarised MRI; mucus-plugs.

Supplementary info

Publication types, MeSH terms, Associated dataExpand

Full text links

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15

Editorial

Thorax

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. 2026 Jun 15;81(7):631-632.

doi: 10.1136/thorax-2026-225166.

Functional decline in COPD: looking beyond FEV_1

Amy Attaway[#1], Jessica Bon[#2]

Affiliations Expand

- PMID: 42242763

- DOI: 10.1136/thorax-2026-225166

No abstract available

Keywords: COPD epidemiology; Physical Conditioning, Human.

Conflict of interest statement

Competing interests: None declared.

Supplementary info

Publication typesExpand

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16

Editorial

Thorax

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. 2026 Jun 15;81(7):629-630.

doi: 10.1136/thorax-2026-225101.

Beyond bronchopulmonary dysplasia: early-life determinants and divergent lung function trajectories of prematurity-associated lung disease

Sailesh Kotecha [1], W John Watkins [2]

Affiliations Expand

- PMID: 42082355

- DOI: 10.1136/thorax-2026-225101

No abstract available

Keywords: Bronchopulmonary Dysplasia; COPD epidemiology; Paediatric Lung Disease.

Conflict of interest statement

Competing interests: None declared.

Supplementary info

Publication typesExpand

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17

Editorial

Eur Respir J

. 2026 Jun 18;67(6):2600417.

doi: 10.1183/13993003.00417-2026. Print 2026 Jun.

Pharmacotherapy is indicated and beneficial in patients with symptomatic GOLD stage 1 COPD

Ophir Freund [1 2], Amir Bar-Shai [1 2], Shawn D Aaron [3]

Affiliations Expand

- PMID: 42025307

- DOI: 10.1183/13993003.00417-2026

No abstract available

Conflict of interest statement

Conflict of interest: O. Freund reports grants from AstraZeneca, consultancy fees from GSK, and support for attending meetings from Sanofi-Regeneron.Conflict of interest: A. Bar-Shai reports grants from AstraZeneca, consultancy fees from GSK, AstraZeneca, Kamada, Sanofi-Regeneron, Boehringer Ingelheim and Roche, and payment or honoraria for lectures, presentations, manuscript writing or educational events from Sanofi-Regeneron, Kamada, GSK and AstraZeneca.Conflict of interest: S.D. Aaron reports honoraria for serving on advisory boards with GSK, AstraZeneca, Sanofi and Methapharm.

Supplementary info

Publication typesExpand

Full text links

Review

Eur Respir J

. 2026 Jun 18;67(6):2501948.

doi: 10.1183/13993003.01948-2025. Print 2026 Jun.

GOLD stage 1 COPD pharmacotherapy: big questions, few answers

Helen O'Brien [1 2], Cormac McCarthy [1 2], Alessandro N Franciosi [3 2]

Affiliations Expand

- PMID: 42025305

- DOI: 10.1183/13993003.01948-2025

No abstract available

Conflict of interest statement

Conflict of interest: H. O'Brien reports no conflict of interest. C. McCarthy reports grants from Health Research Board (Ireland), Enterprise Ireland, The LAM Foundation, UCD Foundation and ILFA, consultancy fees from Savara, AI Therapeutics and Theravance, and participation on a data safety monitoring board or advisory board with Savara and Kinevant. A.N. Franciosi reports payment or honoraria for lectures, presentations, manuscript writing or educational events from Consilient Health, GSK and AstraZeneca, support for attending meetings from AstraZeneca, participation on a data safety monitoring board or advisory board with Roche Pharmaceuticals, and a leadership role with COPD Support Ireland.

Supplementary info

Publication typesExpand

Full text links

. 2026 Jun 15;81(7):664-671.

doi: 10.1136/thorax-2025-224183.

Correlates of 5-year decline in 6-min walk distance in the COPDGene cohort

Aladin M Boriek [1], Joseph Gordon [2 3], Yeongjin Gwon [4], Alessandra Adami [2 5], Janos Porszasz [2 3], Harry B Rossiter [2 3], Mehdi Rambod [6], Divay Chandra [7], Alejandro A Diaz [8], Greg L Kinney [9], Barry J Make [10], Merry-Lynn N McDonald [11], Elizabeth A Regan [10], Stephen Rennard [12], Edwin J R van Beek [13], Richard Casaburi [2 3]

Affiliations Expand

- PMID: 41980814

- DOI: 10.1136/thorax-2025-224183

Abstract

Background: Change in 6-min walk distance (6MWD) over time serves as a measure of change in functional exercise performance. We analysed a large cohort of current or former tobacco smokers over a 5-year period to identify correlates of 6MWD decline.

Methods: A total of 4734 participants with normal spirometry or spirometric evidence of chronic obstructive pulmonary disease (COPD) who completed a 5-year follow-up in the COPDGene study were included. Baseline and 5-year assessments included 6MWD, spirometry, St. George's Respiratory Questionnaire (SGRQ), gender, race and CT measures of emphysema, gas trapping and airway wall thickness. 6MWD decline correlates relative to baseline and 5-year changes were examined using univariate and multivariate linear regression.

Results: At baseline, 2573 had normal spirometry; 487 were classified as GOLD1, 1044 as GOLD2, 514 as GOLD3 and 116 as GOLD4. Average 5-year decline in 6MWD was 35.6±101.7 (SD) metres ($p<0.001$). COPD participants experienced greater 6MWD decline (44.1±101.9 m, $p<0.001$) compared with those with normal spirometry (28.5±101.0 m, $p<0.001$). Only baseline 6MWD and study site accounted for appreciable fractions of 6MWD decline variance (R^2=12.1% and 9.1%, respectively). 5 year change in variables assessed (including FEV_1 and SGRQ) explained only small fractions of 6MWD decline variance (each $R^2 \leq 5\%$).

Conclusion: 6MWD declined significantly, but with high variability; spirometry, CT, health status, demographic and anthropometric measures accounted for only small portions of this variance. Our findings suggest that a meaningful decline in 6MWD observed over 5 years in COPD patients is in large part related to factors other than decline in pulmonary structure or function.

Keywords: Respiratory Function Tests.

Conflict of interest statement

Competing interests: None declared.

Supplementary info

MeSH terms, Grants and fundingExpand

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Cite

20

Thorax

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. 2026 Jun 15;81(7):654-663.

doi: 10.1136/thorax-2025-223755.

Elastic parametric response mapping: quantitative CT scoring for local COPD severity

[Wassim W Labaki] [1], [Sundaresh Ram] [2], [Ali Namvar] [3], [Alexander J Bell] [3], [Benjamin A Hoff] [3], [Ella A Kazerooni] [3], [Stefanie Galban] [3], [Fernando J Martinez] [4], [Charles R Hatt] [5], [Susan Murray] [6], [Evgeny M Mirkes] [7], [Alexander N Gorban] [7], [Andrei Zinovyev] [8], [MeiLan K Han] [1], [Craig J Galban] [9]

Affiliations Expand

- **PMID: 41526163**

- **PMCID: PMC12990826**

- **DOI: 10.1136/thorax-2025-223755**

Abstract

Background: Current quantitative chest CT techniques improve chronic obstructive pulmonary disease (COPD) phenotyping but do not capture spatial variability and potentially reversible disease in local lung parenchyma.

Methods: Applying elastic principal graphing to CT scans from Genetic Epidemiology of COPD study participants (age 45-80 years; ≥10 pack-years), we

developed elastic parametric response mapping (ePRM), a tiered scoring system (tiers 0-3 and tier Op, ie, lung opacities) that classifies lung subvolumes based on their relative composition of normal lung, emphysema, small airways disease and parenchymal disease. For 3631 participants with longitudinal data, we evaluated how relative tier assignment and mean tier position of subvolumes changed over 5 years and how they associated with forced expiratory volume in 1 s (FEV_1) change. We stratified analyses by baseline spirometry: no airflow obstruction, Global Initiative for Chronic Obstructive Lung Disease (GOLD) 1-2 and GOLD 3-4.

Results: The proportion of tier 0 subvolumes decreased with worsening airflow obstruction, while tier 2 and 3 proportions increased. Tier 1 proportions were similar in GOLD 1-2 (25.7%) and GOLD 3-4 (28.1%), with over half of subvolumes remaining in tier 1 or reverting to tier 0 at year 5. In contrast to tiers 0 and 2, baseline mean tier 1 position was strongly predictive of reassignment to more advanced tiers at year 5 in participants without airflow obstruction, GOLD 1-2 and GOLD 3-4 (area under the curves (95% CIs) 0.86 (0.85 to 0.87), 0.90 (0.89 to 0.91) and 0.92 (0.90 to 0.93), respectively). A higher per cent volume of lung retained in tier 1 was associated with less FEV_1 decline in all groups.

Conclusion: CT ePRM categorises local lung tissue into distinct and potentially reversible tiers of disease severity.

Keywords: Emphysema; Imaging/CT MRI etc; Pulmonary Disease, Chronic Obstructive.

Conflict of interest statement

Competing interests: WWL reports grants from the National Institutes of Health (NIH), consulting fees from Inogen and Verona, and conference attendance/travel support from Inogen. He has served as Executive Secretary on a Data Safety Monitoring Board for a pilot trial of aspirin in COPD conducted at Johns Hopkins University. FJM reports support for the parent study analysed in this manuscript from the National Heart, Lung and Blood Institute (NHLBI) of NIH; grant support from AstraZeneca and GSK, which are partners in the SPIROMICS programme and NHLBI CAPTURE validation study; in-kind grant support from Chiesi and Sanofi/Regeneron, which are partners of the SPIROMICS programme; payments made to the COPD Foundation for partnership in SPIROMICS and/or CAPTURE from NHLBI, AstraZeneca, Chiesi, Boehringer Ingelheim, GlaxoSmithKline, Novartis and Sanofi/Regeneron; consulting fees and travel support from AstraZeneca and GSK, which are partners of the SPIROMICS programme and in the NHLBI CAPTURE validation study; travel support from Chiesi for service on the COPD Steering Committee and Global Advisory Board; consulting fees for service on the COPD Steering Committee and Advisory Board from Sanofi/Regeneron, which are partners of the SPIROMICS programme; payment or honouraria for COPD CME from UpToDate; and consulting fees for service on the COPD Steering Committee and medical writing support from Novartis, which is a partner of the SPIROMICS programme. He has served on the COPD Steering Committee without fees for DevPro and provided unpaid consultation on COPD to Roche. He has received payment or honouraria for disease state presentations from Roche and from AstraZeneca and GSK, which are partners of the SPIROMICS programme and the

NHLBI CAPTURE validation study. He has participated in an event adjudication committee for MedTronic. CRH reports stock options with and employment by 4D Medical USA. SM reports grant support from NIH. MKH reports grants or contracts from NIH, Sanofi, Novartis, Nuvaira, Sunovion, Gala Therapeutics, the COPD Foundation, AstraZeneca, the American Lung Association (ALA), Boehringer Ingelheim, Biodesix and Regeneron; royalties or licences from UpToDate, Norton Publishing and Penguin Random House; consulting fees from AstraZeneca, Boehringer Ingelheim, GlaxoSmithKline, Novartis, Pulmonx, Teva, Verona, Merck, Mylan, Sanofi, DevPro, Aerogen, Polarian, Regeneron, Altesa Biosciences, Amgen, Roche, RS Biotherapeutics, Apreo Health, Genentech, Owkin, Bristol Myers Squibb and Zymeworks; and payments or honouraria from Cipla, Chiesi, AstraZeneca, Boehringer Ingelheim, GlaxoSmithKline, Medscape, Integrity, NACE and Medwiz. She has participated in Data Safety Monitoring Boards for Novartis and Medtronic with funds paid to the institution, and served in leadership or fiduciary roles for the COPD Foundation Board, the COPD Foundation Scientific Advisory Committee, the ALA Advisory Committee, the GOLD Scientific Committee, and the Emerson School Board (Ann Arbor, MI). She is a journal editor for the American Thoracic Society and a volunteer spokesperson for ALA. She has received stock options from Meissa Vaccines and Altesa Biosciences. She has received writing support from GSK, Boehringer Ingelheim, AstraZeneca and Novartis. CJG reports grants from NHLBI/NIH. He is co-inventor and patent holder of PRM, which is licensed to 4D Medical by the University of Michigan. SR, AN, AJB, BAH, EAK, SG, EMM, ANG and AZ report no conflicts of interest.

Update of

- **Quantitative CT Scoring for Local COPD Severity.**

Labaki WW, Ram S, Namvar A, Bell AJ, Hoff BA, Kazerooni EA, Galban S, Martinez FJ, Hatt CR, Murray S, Mirkes EM, Gorban AN, Zinovyev A, Han MK, Galban CJ.medRxiv [Preprint]. 2025 Jun 9:2025.04.09.25324951. doi: 10.1101/2025.04.09.25324951.Update in: Thorax. 2026 Jun 15;81(7):654-663. doi: 10.1136/thorax-2025-223755.PMID: 40297437 Free PMC article. Preprint.

- **43 references**
- **5 figures**

Supplementary info

MeSH terms, Grants and fundingExpand

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

1

Review

Lancet Healthy Longev

. 2026 Jun 19:100856.

doi: 10.1016/j.lanhl.2026.100856. Online ahead of print.

What is meant when we say we are clustering multimorbidity?

Sohan Seth [1], Nazir Lone [2], Niels Peek [3], Bruce Guthrie [4]

Affiliations Expand

- PMID: 42320509

- DOI: 10.1016/j.lanhl.2026.100856

Abstract

Clustering multimorbidity has been a global research priority of late. Existing studies usually identify these clusters using one of several popular clustering methods such as latent class analysis or hierarchical clustering and then explore various characteristics of these clusters (eg, their genetic underpinning or their sociodemographic drivers) as downstream analysis. These studies make several choices during clustering that are often not explicitly acknowledged in the literature, for example, whether they are clustering conditions or clustering individuals, and thus, lead to different clustering solutions. We observe that, in general, clustering multimorbidity might mean different things in different studies, and argue that making these choices more explicit and, more importantly, letting the downstream analysis or the purpose of identifying multimorbidity clusters guide these choices, might lead to more transparent and operationalisable multimorbidity clusters. In this Personal View, we discuss various purposes of identifying multimorbidity clusters and build a case for how different purposes can justify the different choices in data and methods.

Conflict of interest statement

Declaration of interests We declare no competing interests.

Supplementary info

Publication typesExpand

Full text links

Cite

2

BMC Geriatr

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. 2026 Jun 18.

doi: 10.1186/s12877-026-07798-9. Online ahead of print.

Artificial intelligence in geriatric healthcare: a scoping review

Yue Zhang [1], Liuqing Yang [1], Miao Li [1], Haocheng Zhao [1], Ying Zhou [2], Jie Li [3]

Affiliations Expand

- PMID: 42316361

- DOI: 10.1186/s12877-026-07798-9

Abstract

Background: Deep demographic ageing is triggering a twin crisis in healthcare: a rising prevalence of multimorbidity among older adults and a severe global shortage of healthcare professionals, particularly nursing staff, which together create life-threatening gaps in long-term care. Although artificial intelligence shows significant potential to alleviate these pressures by improving the efficiency and accessibility of geriatric healthcare, its integration faces critical challenges spanning systemic, user-level, and societal dimensions.

Objective: This review aims to systematically analyze the current applications of artificial intelligence in geriatric healthcare, identify key barriers hindering its effective integration, and propose stakeholder-specific roadmaps.

Methods: This scoping review follows the PRISMA-ScR guidelines. This review was conducted using a two-step search strategy from five databases: PubMed, MEDLINE, the Cochrane Library, EMBASE, and Web of Science. First, a comprehensive search was performed across five electronic databases for literature published between January 1, 2015, and September 30, 2025. Second, the reference lists of identified studies and relevant reviews were manually screened. The study selection followed the PCC framework, focusing on evidence of artificial intelligence applications, implementation challenges, and proposed solutions in geriatric healthcare.

Results: Artificial intelligence is extensively applied across five key domains in geriatrics: health monitoring and disease management, safety supervision and risk prevention, cognitive and mental health support, social interaction and emotional companionship, and daily living assistance. Despite this potential, three major

barrier categories were identified: (1) Systemic fractures; (2) User-level resistance, and (3) A widening social divide. In response, the study proposes concrete roadmaps, such as mandating Fast Healthcare Interoperability Resources standards for data interoperability, establishing ethical artificial intelligence certification, deploying culturally adaptive designs, and initiating workforce upskilling programs.

Conclusions: Artificial intelligence holds significant promise for mitigating the global geriatric healthcare crisis exacerbated by demographic aging and nursing shortages. However, realizing its full potential requires a coordinated, multi-stakeholder approach to overcome the entrenched systemic, human, and social obstacles. The proposed roadmaps provide an actionable framework that may facilitate the development of artificial intelligence systems that are more efficient, equitable, and human-centered, pending empirical validation in real-world settings.

Registration: The protocol has been registered on OSF.

Keywords: Algorithmic Bias; Artificial Intelligence; Data Interoperability; Geriatric Healthcare; Human-Centered Design; Older Adults.

Conflict of interest statement

Declarations. Ethics approval and consent to participate: This scoping review did not involve human participants or primary data collection; therefore, ethics approval and consent to participate were not required. Consent for publication: No person's data are presented in this manuscript; therefore, consent for publication is not applicable. Competing interests: The authors declare no competing interests.

Supplementary info

Grants and fundingExpand

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Cite

3

Review

Circulation

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. 2026 Jun 18.

doi: 10.1161/CIR.0000000000001437. Online ahead of print.

Strategies for Optimizing Heart Failure Care in the Older Adult: A Scientific Statement From the American Heart Association

Sabra C Lewsey, Trejeeve Martyn, Vanessa Blumer, Nicholas K Brownell, Quin E Denfeld, Shannon M Dunlay, Parag Goyal, Shannon Halloway, Daniel Matlock, Orly Vardeny, Harriette G C Van Spall; American Heart Association Cardiovascular Disease in Older Populations Committee of the Council on Clinical Cardiology and Council on Cardiovascular and Stroke Nursing; Council on Basic Cardiovascular Sciences; Council on Lifelong Congenital Heart Disease and Heart Health in the Young; and Heart Failure and Transplantation Committee of the Council on Clinical Cardiology

- PMID: 42312386

- DOI: 10.1161/CIR.0000000000001437

Abstract

Heart failure prevalence is increasing and has a disproportionate burden on older adults. Older adults, however, may encounter unique challenges in accessing and navigating comprehensive disease-modifying, guideline-directed therapies, thus limiting use among those at highest risk of cardiovascular death or worsening heart failure. Care of the older adult with heart failure requires tailored treatment plans to overcome barriers to effective therapies in this population. This scientific statement reviews the literature on care optimization for older adults (≥65 years of age) living with heart failure and highlights strategies for clinicians who aim to deliver patient-centered, evidenced-based heart failure care in the context of common comorbidities seen in older adults. We discuss the consistent treatment effect and safety profiles of guideline-directed therapies for heart failure in older adults and how to manage multimorbidity, polypharmacy, frailty, and social needs using a shared decision-making framework. In consideration of the complexity of heart failure care of the older adult, we highlight a structured framework for therapeutic considerations in the context of benefit-to-risk ratio, multimorbidity, and social needs. We offer practical guidance on the care of older adults with advanced comorbidities who may not have been adequately represented in landmark trials. We also consider implementation strategies, health services interventions, and supportive tools that may foster optimal care in older adults with heart failure. This work is aimed at informing the practice of clinicians and health systems alike to improve outcomes and to reduce the morbidity of heart failure in older adults.

Keywords: AHA Scientific Statements; health services; heart failure; multimorbidity; patient-centered care.

Supplementary info

Publication typesExpand

Full text links

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4

Am J Phys Med Rehabil

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. 2026 Jun 17.

doi: 10.1097/PHM.0000000000003021. Online ahead of print.

Rehabilitation and Quality of Life for Aging People Living With HIV: Addressing Multimorbidity and Stigma

Kaile Eison [1], Parker Nguyen [2], Sara D Pullen [3]

Affiliations Expand

- PMID: 42299897

- DOI: 10.1097/PHM.0000000000003021

Abstract

With the advent and regular use of Highly Active Antiretroviral Therapy (HAART), Human Immunodeficiency Virus (HIV) has transitioned from a terminal illness to a chronic disease, leading to an aging population of people with HIV (PWH). By 2030, it is estimated that 70% of PWH will be over the age of 50, presenting new challenges related to frailty, neurocognitive impairment, musculoskeletal conditions, and functional decline.[1] Despite medical advancements, HIV-related stigma remains a major barrier to healthcare, particularly in rehabilitation services. This article explores the historical evolution of HIV rehabilitation, the impact of chronic HIV on physical and cognitive function, the role of stigma, and the latest evidence-based rehabilitation interventions. Additionally, it highlights HIV-related pathologies relevant to physiatry, including neuromuscular complications, musculoskeletal disorders, HAND (HIV-associated neurocognitive disorder), stroke, and neurorehabilitation strategies. As the clinical trajectory of HIV increasingly mirrors that of other chronic, disabling conditions, the integration of HIV-specific rehabilitation into physiatric practice, education, and research is not only appropriate, but essential to advancing equitable, comprehensive care.

Keywords: Frailty; HIV; Physiatry; Quality of Life; Rehabilitation Medicine; aging; musculoskeletal complications; neurocognitive disorders; pain management; stigma.

Conflict of interest statement

Competing Interests: There are no conflicts of interest to declare.

Full text links

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Cite

5

JAMA

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. 2026 Jun 15:e268492.

doi: 10.1001/jama.2026.8492. Online ahead of print.

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

Marcel E Salive [1], Ashley H Tjaden [2], Jesse R Ames [2], Jill P Crandall [3 4], Dana Dabelea [5], Helen P Hazuda [6], Brandy M Heckman-Stoddard [7], Peter J Huckfeldt [8], Shihchen Kuo [9], Elsa S Strotmeyer [10], Marinella Temprosa [11], Elizabeth M Venditti [12]; DPP Research Group

Collaborators, Affiliations Expand

- **PMID: 42295772**

- **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

- **doi: 10.1001/jama.2026.10080**
- **35 references**

Supplementary info

Associated dataExpand

Full text links

Proceed to details

Cite

6

JAMA

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. 2026 Jun 15.

doi: 10.1001/jama.2026.10080. Online ahead of print.

Addressing Multimorbidity Challenges in Diabetes-Lifestyle and Beyond

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

Affiliations Expand

- PMID: 42295750

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No abstract available

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

1

BMC Pulm Med

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. 2026 Jun 19.

doi: 10.1186/s12890-026-04414-9. Online ahead of print.

Coexistence of COPD or asthma in patients with bronchiectasis: a systematic review and meta-analysis

Yuhua Wen [1], Yuwei Zhang [2], Yan Chen [3], Rui Fan [4]

Affiliations Expand

- PMID: 42321713

- DOI: 10.1186/s12890-026-04414-9

Abstract

Background: Bronchiectasis frequently coexists with other chronic airway diseases, particularly chronic obstructive pulmonary disease (COPD) and asthma, forming clinically significant bronchiectasis-COPD overlap and bronchiectasis-asthma overlap phenotypes. However, the global proportion of COPD and asthma among patients with bronchiectasis has not been comprehensively quantified. This study aimed to estimate the pooled proportion of COPD and asthma in bronchiectasis and to explore potential sources of heterogeneity.

Methods: PubMed, Embase, and Web of Science were systematically searched up to January 8, 2026. Studies reporting the proportion of COPD or asthma in adults with bronchiectasis confirmed by high-resolution computed tomography were eligible. Random-effects models were used to calculate pooled proportions. Subgroup analyses and meta-regression were performed to explore heterogeneity. Publication bias was assessed using funnel plots and Egger's test.

Results: Fifty-two studies (81,779 patients) were included for COPD and 47 studies (71,605 patients) for asthma. The pooled proportion of COPD among bronchiectasis patients was 18% (95% CI: 14-22%; I^2 = 99.4%), and the pooled proportion of asthma was 16% (95% CI: 11-20%; I^2 = 99.3%). Subgroup analyses revealed variations by geographic region, study design, and age. Meta-regression identified female proportion as a statistically significant but weak predictor of asthma prevalence (β = 3.97, 95% CI: 0.91-7.03; P = 0.011), explaining only 10.6% of the between-study heterogeneity. No covariates significantly explained heterogeneity in COPD prevalence. Egger's test showed no significant publication bias (COPD: P = 0.506; asthma: P = 0.153), and sensitivity analyses confirmed the stability of the findings.

Conclusions: COPD and asthma coexist in approximately one-fifth of patients with bronchiectasis, highlighting the importance of systematic assessment for these overlap syndromes. A weak association between female sex and asthma prevalence was observed, but this factor explained only a small fraction of the heterogeneity, indicating that other unmeasured variables are more important determinants. These findings support a more integrated, phenotype-driven approach to the management of chronic airway diseases.

Trial registration: PROSPERO registration: CRD42023400445.

Keywords: Airway disease overlap; Asthma; Bronchiectasis; Chronic obstructive pulmonary disease; Comorbidity; Meta-analysis.

Conflict of interest statement

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

Supplementary info

Publication typesExpand

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2

J Allergy Clin Immunol Pract

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. 2026 Jun 19:S2213-2198(26)00506-4.

doi: 10.1016/j.jaip.2026.06.014. Online ahead of print.

Timing of High-Risk Asthma Specialist Enrollment and Severe Asthma Exacerbations in Children

Arthur H Owora [1], Samuel Strunk [2], Bowen Jiang [3], Yash Shah [4], Nadia L Krupp [5]

Affiliations Expand

- **PMID: 42320839**

- **DOI: 10.1016/j.jaip.2026.06.014**

Abstract

Background: Although specialist care reduces acute healthcare utilization among children with uncontrolled asthma, the timeliness of enrollment and consequences of delayed specialty care remain poorly characterized.

Objective: To characterize correlates of delayed enrollment in specialty asthma care and evaluate whether pre-post changes in childhood severe asthma exacerbation (SAE) incidence differed by patient characteristics.

Methods: We conducted a pre-post, quasi-experimental longitudinal cohort study of 229 children (<11 years) with moderate-to-severe asthma enrolled in a high-risk asthma (HRA) clinic between January 2010 and December 2021, with follow-up through 2024. Early childhood asthma risk burden was quantified using predefined risk factors. Cox proportional hazards models examined correlates of delayed enrollment. Piecewise generalized linear mixed-effects models estimated changes in SAE odds before and after HRA enrollment, adjusting for demographic characteristics and time-varying treatments.

Results: The cohort was 66% male and 61% African American, with a mean (SD) age of 4 (3) years at HRA enrollment. Despite earlier asthma diagnosis, children with a high (vs low) burden of early childhood risk factors experienced delayed HRA enrollment and 2-3 years of increasing annual SAE odds before enrollment (adjusted OR per year 1.54; 95% CI, 1.31-1.80). HRA enrollment was associated with a 36% reduction in SAE odds (adjusted OR 0.64; 95% CI, 0.51-0.80). Reductions were greater among children who initiated inhaled corticosteroids within 12 months of diagnosis (adjusted OR 0.61; 95% CI, 0.48-0.78).

Conclusions: Enrollment in specialty asthma care was associated with reduced SAE risk; however, high-risk children experienced substantial delays in HRA enrollment despite escalating exacerbations. Early risk stratification may facilitate timely enrollment into specialty care and improve outcomes.

Keywords: difficult-to-treat asthma; early detection; passive digital marker; pediatric asthma; severe asthma exacerbations; specialist care.

3

Review

Cardiovasc Diabetol Endocrinol Rep

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. 2026 Jun 19;12(1):43.

doi: 10.1186/s40842-026-00311-6.

Pulmonary adverse events associated with GLP-1 receptor agonists: a systematic review of respiratory safety signals

Aarushi Ahuja [1], Sai Prasad [2], Sahana Manoharan [3], Arya Sen [4], Richa Rana [5], Mansi Mody [6], Fnu Paras [7], Archita Archita [8], Sana Shaik [9], Kartik Mehta [1], Rachel Manoj [10], Prakashini Mishra [11], Subhi Mehta [12], Pulkit Kapoor [13]

Affiliations Expand

- PMID: 42316363

- PMCID: PMC13281493

- DOI: 10.1186/s40842-026-00311-6

Abstract

Background: Glucagon-like peptide-1 receptor agonists (GLP-1 RAs) are among the most rapidly growing drug classes in contemporary medicine, approved for type 2 diabetes mellitus (T2DM) and obesity management. Although gastrointestinal adverse effects are well characterised, the pulmonary safety profile of GLP-1 RAs remains incompletely defined, representing an important evidence gap given the scale of global prescribing.

Objective: This systematic review aims to synthesise published evidence on respiratory adverse events temporally associated with GLP-1 RA therapy in adults, characterise their patterns and severity, appraise the risk of bias using validated design-appropriate tools, describe proposed pathophysiological mechanisms, and grade the certainty of evidence using the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) framework. Given the heterogeneity of the included evidence-spanning case reports, pharmacovigilance analyses, and observational cohorts-this review is framed primarily as a signal-detection and evidence-mapping exercise rather than a causal-inference analysis.

Eligibility criteria: Adults (≥ 18 years) receiving any approved GLP-1 RA for any indication. Eligible study designs included randomised controlled trials (RCTs), retrospective and prospective observational cohorts, pharmacovigilance disproportionality analyses, and case reports or series. Studies were excluded if they enrolled paediatric populations, involved animal or in vitro experiments, reported only metabolic or cardiovascular outcomes without respiratory adverse-event data, or were narrative reviews, editorials, or commentaries without primary data.

Methods: A systematic review was conducted following PRISMA 2020 guidelines (PROSPERO: CRD420261305875). PubMed, Embase, and Scopus were searched from inception to January 2026. Risk of bias was assessed using the Cochrane Risk of Bias 2 (RoB2) tool for RCTs, the Newcastle-Ottawa Scale (NOS) for cohort studies, and Joanna Briggs Institute (JBI) checklists for case reports, case series, and pharmacovigilance studies. GRADE was applied at the outcome-domain level;

evidence from uncontrolled designs (case reports, case series, pharmacovigilance analyses) was initially rated very low certainty, as these designs are inherently uncontrolled and start below the lowest GRADE tier. Given substantial heterogeneity, meta-analytic pooling was not performed; a pre-specified narrative synthesis following the Synthesis Without Meta-Analysis (SWiM) reporting guideline was conducted.

Results: Nineteen studies met inclusion criteria: four RCTs (n = 1,884 participants), five retrospective cohort studies (n = 1,122,653 participants), three pharmacovigilance analyses (n = 498,892 spontaneous adverse-event reports), and seven case reports or case series (n = 13 patients). Spontaneous reports do not represent unique exposed individuals and were not pooled with participant counts. Risk of bias: all four RCTs were rated low risk by RoB2 (with some concerns for open-label outcome ascertainment in three trials, a domain-specific issue that does not alter the overall RoB2 category from low); three of five cohort studies were rated moderate and one high risk by NOS (one cohort study rating not reported, classified as not reported/unable to rate); all three pharmacovigilance studies were rated high risk by JBI; and case reports were rated as methodologically adequate by JBI, though these instruments cannot overcome the inherent anecdotal nature and very limited generalisability of single-case designs. Upper respiratory tract infections (URTIs) were the most frequently reported adverse event (8 of 12 reporting studies, 66.7%), occurring at rates comparable to controls across RCTs (GRADE: MODERATE certainty). Pharmacovigilance analyses identified disproportionate reporting signals for dyspnoea and asthma-like events, particularly with exenatide, using the reporting odds ratio (ROR 2.14, 95% CI 1.88-2.43; Cazzola 2024); these signals are hypothesis-generating only and do not establish causality or incidence. Serious adverse events reported in temporal association with GLP-1 RA exposure included anaphylaxis with bronchospasm (n = 4 cases), acute eosinophilic pneumonia (n = 1), perioperative aspiration pneumonitis or pneumonia (multiple perioperative cases across two cohort studies and one case series), acute respiratory distress syndrome (ARDS; n = 2, one fatal requiring extracorporeal membrane oxygenation [ECMO]), and spontaneous pneumomediastinum (n = 1). A large global retrospective cohort study (n = 331,863 matched patients; Henney 2024) demonstrated a potentially meaningful reduction in incident pneumonia with GLP-1 RAs compared with dipeptidyl peptidase-4 (DPP-4) inhibitors (hazard ratio [HR] 0.60, 95% confidence interval [CI] 0.58-0.62; GRADE: LOW certainty); this finding should be interpreted cautiously given the retrospective design, active and non-inert comparator, and likelihood of residual confounding. Evidence certainty for serious respiratory events was very low, driven by sparse case reports and high-risk pharmacovigilance data.

Conclusion: GLP-1 RA therapy has a respiratory safety profile that is neither uniformly benign nor hazardous, stratified by mechanism, agent subclass, and clinical context. Common upper airway symptoms are mild and comparable to controls. Rare but clinically consequential events-including anaphylaxis, eosinophilic pneumonia, perioperative aspiration, and ARDS-have been reported in temporal association with GLP-1 RA exposure, predominantly in case reports and pharmacovigilance data of very low certainty; these signals are hypothesis-generating and should not be interpreted as confirmed causal risks. Exendin-4-based agents (exenatide and lixisenatide) appear to carry the highest reported risk of hypersensitivity reactions, attributable to their non-human structural origin. Clinicians should maintain heightened awareness for aspiration risk in perioperative

settings; individualised, extended pre-procedural fasting intervals calibrated to the specific agent's pharmacokinetic profile should be considered. Prospective, standardised, and adequately powered studies with pre-specified respiratory endpoints are required to move from signal detection to causal inference.

Keywords: Aspiration pneumonia; Exenatide; GLP-1 receptor agonists; GRADE; Liraglutide; Pharmacovigilance; Pulmonary adverse events; Respiratory safety; Semaglutide; Systematic review.

Conflict of interest statement

Declarations. Ethics approval and consent to participate: Not applicable. This study is a systematic review of previously published data and does not involve human participants or patient-level identifiable data. Consent for publication: Not applicable. Competing interests: The authors declare no competing interests.

- 22 references
- 2 figures

Supplementary info

Publication typesExpand

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4

Allergy

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. 2026 Jun 18.

doi: 10.1111/all.70416. Online ahead of print.

Clinical Features of Cellular Senescence Pathways in Severe Asthma

Woo-Jung Song [1 2], Nazanin Zounemat Kermani [3], Ali Versi [2 3], Stephany Sánchez-Ovando [4], Jodie Louise Simpson [4], Peter A Wark [4 5], Katherine Joanne Baines [4], Sven-Erik Dahlén [6], Ratko Djukanovic [7 8], Yike Guo [3], Ian M Adcock [2 3], Kian Fan Chung [2 3]; U-BIOPRED Study Group

Collaborators, Affiliations Expand

- PMID: 42315480

- DOI: 10.1111/all.70416

Abstract

Background: Asthma severity increases with age, suggesting a role for accelerated biological ageing. We hypothesised that cellular senescence pathways such as the senescence-associated secretory pathway (SASP) and the p53-cellular senescence pathway are enriched in the airways of patients with severe asthma.

Methods: We utilised transcriptomic data from the U-BIOPRED cohort to analyse enrichment scores (ES) of p53 and SASP pathways in different airway compartments using gene set variation analysis. Findings in bronchial biopsies were validated in the independent NOVA cohort. We examined associations between senescence ES, clinical parameters and other asthma-related gene signatures. Functional clusters of the SASP gene set were also explored.

Results: In the U-BIOPRED cohort, p53 and SASP ES were significantly elevated in bronchial biopsies of severe asthmatics compared to mild-to-moderate asthmatics and healthy volunteers, with SASP enrichment validated in the NOVA cohort. In bronchial biopsies, higher senescence ES correlated with frequent exacerbations, oral corticosteroid use, comorbid nasal polyps and lower FEV1%. No significant enrichment was found in other airway samples according to asthma severity. In nasal brushings, SASP ES was significantly higher in participants with comorbid nasal polyps. A distinct SASP functional cluster related to lung injury and repair (Cluster 2) was strongly associated with clinical severity and nasal polyps. Senescence signatures correlated positively with oxidative phosphorylation and macrophage activation signatures, but not with eosinophil signatures.

Conclusions: Cellular senescence pathways are enriched in severe asthmatic bronchial tissues and correlate with disease severity, remodelling and nasal polyps. These findings warrant further investigation into their therapeutic implications.

Trial registration: NCT01982162.

Keywords: cellular senescence; nasal polyps; p53; senescence-associated secreted phenotype; severe asthma.

- 44 references

Supplementary info

Associated data, Grants and fundingExpand

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5

J Allergy Clin Immunol Pract

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. 2026 Jun 18:S2213-2198(26)00504-0.

doi: 10.1016/j.jaip.2026.06.012. Online ahead of print.

Dupilumab Efficacy in Children With Uncontrolled, Moderate-to-Severe, Type 2 Asthma by Allergen Sensitization Level

Wanda Phipatanakul [1], Nikolaos G Papadopoulos [2], Vivian Hernandez-Trujillo [3], Eckard Hamelmann [4], Robert S Zeiger [5], Francine M Ducharme [6], Changming Xia [7], Rebecca Gall [8], Olivier Ledanois [9], Amr Radwan [10], Juby A Jacob-Nara [11], Paul J Rowe [12], Yamo Deniz [13]

Affiliations Expand

- PMID: 42314928

- DOI: 10.1016/j.jaip.2026.06.012

Abstract

Background: Children with uncontrolled, moderate-to-severe asthma often have type 2 disease with allergic sensitization and/or elevated serum IgE.

Objective: To examine dupilumab efficacy in children aged 6-11 years with/without allergen sensitization.

Methods: In VOYAGE (NCT02948959), 408 children were randomized to dupilumab 100/200 mg every 2 weeks (by weight) or placebo for 52 weeks. This post hoc analysis included the 336 children from VOYAGE with type 2 inflammation (eosinophils ≥150 cells/μL or FeNO ≥20 ppb) and known baseline allergen sensitization status (based on total serum IgE and perennial allergen-specific IgE levels). The primary outcome assessed is annualized severe exacerbation rate; we also assessed change from baseline in: pre- and post-bronchodilator percent predicted forced expiratory volume in 1 second (ppFEV$_1$), Interviewer-Administered 7-Item Asthma Control Questionnaire (ACQ-7-IA) score, and total and allergen-specific IgE levels.

Results: Of 336 children with type 2 inflammation and known baseline allergen sensitization status, 75 (22%) were non-sensitized, 58 (17%) monoallergen sensitized, and 203 (60%) multiallergen sensitized. Dupilumab vs placebo reduced asthma exacerbations by 45%, 75% and 60% in the non-, mono-, and multi-sensitized subgroups (P = .1286, .0376, and .0004), respectively by Week 52, with no

apparent interaction between treatment group and sensitization status (P_{int} = .48). Similar improvements were observed across sensitization subgroups for pre- and post-bronchodilator ppFEV$_1$, ACQ-7-IA, and total IgE levels.

Conclusion: In children with type 2 asthma, dupilumab showed significant efficacy, reducing exacerbations and improving other outcomes in monoallergen- and multiallergen-sensitized patients, and numerical but non-significant effects in non-sensitized patients.

Keywords: Allergen sensitization; IgE; allergic asthma; children; dupilumab; exacerbation; lung function; pediatric; type 2 inflammation; uncontrolled asthma.

Cite

6

Indian J Pediatr

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. 2026 Jun 18.

doi: 10.1007/s12098-026-06258-x. Online ahead of print.

Inhaled Corticosteroids Plus Tiotropium Compared to Inhaled Corticosteroids Plus Montelukast in Children with Partly Controlled/Uncontrolled Asthma: A Non-Inferiority Trial - Authors' Reply-2

Soma Sengupta [1], Krishna Mohan Gulla [1], Rashmi Ranjan Das [2]

Affiliations Expand

- PMID: 42313259

- DOI: 10.1007/s12098-026-06258-x

No abstract available

Conflict of interest statement

Declarations. Conflict of Interest: None.

- 3 references

Supplementary info

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ERJ Open Res

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. 2026 Jun 17;12(3):01429-2025.

doi: 10.1183/23120541.01429-2025. eCollection 2026 May.

Do biologics improve health outcomes in children with severe asthma? A cohort study

Shirley Quach [1 2 3 4], Mika Nonoyama [1 2 4], Theo J Moraes [5 6 7], Yaron Finkelstein [5 8], Susan Balkovec [6], Padmaja Subbarao [5 7 9], Teresa To [2 9]

Affiliations Expand

- PMID: 42311872
- PMCID: PMC13266459
- DOI: 10.1183/23120541.01429-2025

Abstract

Biologics may improve children's severe asthma, decreasing corticosteroid use, healthcare utilisation and serum eosinophils. Future research needs to explore the best timing for initiating and terminating biologics in children. https://bit.ly/3MtXdQM.

Conflict of interest statement

Conflict of interest: S. Quach has common stocks in Regeneron and Vertex; no payments were made from these companies for any part of this research. S. Quach held past research grants and support from the Canadian Lung Association,

Canadian Society of Respiratory Therapists and Lung Health Foundation, unrelated to this research. S. Quach was a paid staff member (July 2025–April 2026) of the Lung Health Foundation, a non-profit organisation in Canada. Currently, S. Quach is an independent research consultant (since May 2026) for the Lung Health Foundation. Lung Health Foundation had no role in the study design, interpretation, manuscript preparation or finalisation for this study. Funding support from the Lung Health Foundation for this project was acquired prior to S. Quach's employment and all research activities were conducted independently. M. Nonoyama has research grants from the Canadian Lung Association, the Canadian Allergy, Asthma and Immunology Foundation, the Lung Health Foundation, and Asthma Canada, unrelated to this research. T.J. Moraes has research grants from the Canadian Institutes for Health Research, PSI and Cystic Fibrosis Canada, unrelated to this research. P. Subbarao is on the data safety monitoring board for the NIH OSMB Primero Study. The remaining authors have no conflicts of interest to disclose.

- 19 references

Supplementary info

Publication typesExpand

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8

Review

Respir Med

. 2026 Jun 17:108968.

doi: 10.1016/j.rmed.2026.108968. Online ahead of print.

Association of asthma and COPD with pertussis risk: A systematic review and meta-analysis

Xinyuan Liu [1], Xiaoli Yu [1], Qingming Yang [1], Zhu Tian [2], Cheng Guo [1], Kai Liu [3]

Affiliations Expand

- PMID: 42309234

- DOI: 10.1016/j.rmed.2026.108968

Abstract

Background: Pertussis, caused by Bordetella pertussis, has resurged globally despite widespread childhood vaccination. With waning immunity, adolescent and adult cases have increased. Patients with asthma and chronic obstructive pulmonary disease (COPD) may be more susceptible due to chronic airway inflammation and impaired immune function, but prior findings are inconsistent. This study aims to systematically evaluate the association between asthma and COPD with the risk of pertussis infection through a meta-analysis.

Methods: PubMed, Cochrane Library, Embase, Web of Science, CBM, CNKI, VIP, and Wanfang were searched from inception to August 7, 2025. Observational studies reporting adjusted effect measures (OR, RR, HR, IRR) were included. Study quality was assessed using the Newcastle-Ottawa Scale. Random-effects meta-analyses (DerSimonian-Laird) were performed when ≥3 studies reported comparable measures; otherwise, results were synthesized descriptively.

Prospero: CRD420251109793.

Results: Ten studies (7 cohort, 3 case-control) including >18.6 million participants were analyzed. Asthma was associated with increased pertussis risk (pooled OR=2.29, 95% CI 1.94-2.69; I^2=89%), and COPD showed a similar association (pooled OR=2.00, 95% CI 1.53-2.62; I^2=94%). A supplementary RR-based analysis supported the asthma association (pooled RR=3.36, 95% CI 2.77-4.08). Leave-one-out sensitivity analyses indicated robust results.

Conclusion: Evidence from existing observational studies suggests that asthma and chronic obstructive pulmonary disease (COPD) are associated with an increased risk of pertussis infection. The findings indicate that clinical identification and vaccination management should be strengthened to reduce preventable infections and the public health burden.

Keywords: asthma; chronic obstructive pulmonary disease; meta-analysis; pertussis; systematic review.

Conflict of interest statement

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

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Review

Rheumatol Int

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. 2026 Jun 17;46(7):156.

doi: 10.1007/s00296-026-06168-3.

Benralizumab as a steroid-sparing rescue therapy in ANCA-negative eosinophilic granulomatosis with polyangiitis: real-world experience from three cases and review of the literature

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Affiliations Expand

- PMID: 42307829

- PMCID: PMC13275739

- DOI: 10.1007/s00296-026-06168-3

Abstract

Eosinophilic granulomatosis with polyangiitis (EGPA) is a rare small-vessel vasculitis driven by type 2 inflammation, frequently associated with severe asthma, eosinophilia, and multiorgan involvement. Despite conventional immunosuppressive therapy, many patients remain steroid-dependent or refractory. Benralizumab, an anti-IL-5 receptor monoclonal antibody inducing rapid eosinophil depletion, has emerged as a promising therapeutic option. We present a real-world case series of three patients with severe, antineutrophil cytoplasmic antibodies (ANCA)-negative EGPA treated with benralizumab. Clinical manifestations, laboratory parameters, organ involvement, eosinophil kinetics, glucocorticoid use, and treatment outcomes were retrospectively analyzed. All patients exhibited marked peripheral eosinophilia, severe asthma or respiratory involvement, and multisystem disease. Prior glucocorticoid and immunosuppressive therapy failed to achieve sustained disease control or steroid sparing. Benralizumab administration resulted in rapid, profound, and sustained eosinophil depletion in all cases.

Significant clinical improvement was observed, including improved asthma control, resolution of sinonasal and cutaneous manifestations, and better quality of life. In one patient with predominant skin involvement, clinical response was evident within hours after the first dose. In another patient, complete resolution of cardiac lesions documented on cardiac MRI was observed after six months of benralizumab therapy. Glucocorticoids were discontinued in two patients and reduced to a low maintenance dose in one. No serious adverse events occurred during follow-up. This exploratory real-world case series suggests that benralizumab may represent a promising steroid-sparing therapeutic option in selected patients with severe, steroid-dependent, ANCA-negative eosinophilic EGPA. The observed rapid eosinophil depletion and early clinical improvement should be interpreted as preliminary findings requiring confirmation in larger prospective studies.

Keywords: Antibodies; Antineutrophil cytoplasmic; Churg-Strauss syndrome; Eosinophilia; Interleukin-5; Vasculitis.

Conflict of interest statement

Declarations. Conflict of interest: The authors declare no conflicts of interest for this study. Ethical approval: The study was conducted in accordance with the Declaration of Helsinki (December 2024 version) and was approved by the Ethics Committee of the Jagiellonian University Medical College (No. 1072.6120.2.17.2026; date of approval 12.01.2026). Informed consent: Each participant involved in the study provided an informed consent.

- 19 references
- 4 figures

Supplementary info

Publication types, MeSH terms, SubstancesExpand

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Review

Allergy

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. 2026 Jun 16.

doi: 10.1111/all.70415. Online ahead of print.

Remission in Global Airway Diseases: EUFOREA Consensus Paper

J Christian Virchow [1], Xander Bertels [2 3], Vibeke Backer [4], Benjamin S Bleier [5], Marco Caminati [6], Diego M Conti [7 8], Eugenio De Corso [9], Mina Gaga [10], Valerie J Lund [11 12], Corrado Pelaia [13], Anju T Peters [14], Glenis K Scadding [15 16], Martin Wagenmann [17], Riyad O Al-Lehebi [18 19], Guy G Brusselle [20 21 22], Philippe Gevaert [3], Liam G Heaney [23], Stella E Lee [24], Florence Schleich [25 26 27], Frederik Trinkmann [28 29], Peter W Hellings [8 30], Wytske J Fokkens [31], Paola Rogliani [32]

Affiliations Expand

- PMID: 42304188

- DOI: 10.1111/all.70415

Abstract

The therapeutic goal in chronic airway diseases is shifting from symptom control to disease remission. Disease-modifying therapies, including biologics and allergen immunotherapy, have made remission achievable in patients with severe asthma, chronic rhinosinusitis with nasal polyps (CRSwNP), or allergic rhinitis (AR). This EUFOREA consensus aims to establish practical guidance for inducing and maintaining remission in global airway diseases. An international panel of experts in pneumology, rhinology, and allergology convened in Rome (October 2025) to review current evidence and develop consensus statements. The panel achieved consensus on key principles: (i) remission is a therapeutic target independent of disease severity prior to treatment initiation and should not be reserved for severe cases; (ii) CRSwNP with nonallergic eosinophilic asthma, and AR with allergic asthma should be considered features of a single disease rather than comorbidities; (iii) remission should be assessed by each subspecialty separately while warranting combined approaches; (iv) pragmatic definitions prioritizing achievability and clinical utility are recommended; and (v) a 4-week recall window is preferred to assess symptom control within the evaluation of remission and a 12-month period is suggested as the minimal period to define remission. Remission represents an ambitious yet achievable goal, with practical guidance for optimizing patient outcomes.

Keywords: allergic rhinitis; asthma; chronic rhinosinusitis; global airway diseases; remission.

- 56 references

Supplementary info

Publication types, Grants and fundingExpand

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Cite

11

Review

Lung

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. 2026 Jun 16;204(1):37.

doi: 10.1007/s00408-026-00903-0.

The Clinical and Economic Impact of Biologic Agents in Asthma Management: a Systematic Review

Cataldo Procacci [1 2], Maria Rosaria Gualano [3], Leonarda Maurmo [4 5], Ilaria Valentini [6], Sofia Mao [7], Walter Ricciardi [7]

Affiliations Expand

- PMID: 42301331
- PMCID: PMC13272213
- DOI: 10.1007/s00408-026-00903-0

Abstract

Objectives: Biologic therapies represent transformative interventions for severe asthma; however, comprehensive integration of clinical effectiveness with economic evidence across real-world populations remains incomplete. This systematic review synthesizes both domains to support clinical and policy decisions.

Methods: Systematic literature search (PubMed, Scopus; 2014-2024) following PRISMA 2020 guidelines with prospective PROSPERO registration (CRD420251153385). Eligible studies evaluated biologic therapies in real-world asthma populations, reporting clinical outcomes (exacerbations, lung function, asthma control, quality of life) and economic measures (costs, ICER, healthcare

resource utilization). GRADE methodology assessed evidence certainty; risk of bias evaluated using RoB 2 (RCTs) and ROBINS-I (observational studies).

Results: Twenty-seven studies (25 observational, 2 RCTs; 59,958 patients) evaluated omalizumab (n = 11), mepolizumab (n = 5), benralizumab (n = 4), dupilumab (n = 1), tezepelumab (n = 1), reslizumab (n = 1) and multiple biologic drugs comparatively (n = 4). All agents showed exacerbation reductions (46-86%), with 48-81% of previously exacerbating patients achieving exacerbation-free status. Hospitalizations decreased 57-85% and emergency department visits reduced 52-72%. Oral corticosteroid-dependent patients decreased 53-67%, representing substantial safety and quality-of-life benefits. Healthcare resource utilization reductions generated cost offsets of €1,181-2469 per patient annually, achieving favorable cost-effectiveness (€602-2244 per exacerbation avoided). High treatment persistence (51-54 months) and adherence (70-94.6%) exceeded conventional therapies. Significant methodological limitations were evident: 80.8% observational studies had serious bias risk.

Conclusions: Biologic therapies achieve substantial clinical benefits and favorable economic value through healthcare cost offsets. Precision medicine approaches and early response assessment optimize patient selection and clinical outcomes in severe asthma management.

Conflict of interest statement

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

- 58 references
- 1 figure

Supplementary info

Publication types, MeSH terms, SubstancesExpand

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12

JAMA

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. 2026 Jun 16;335(23):2019.

doi: 10.1001/jama.2026.8185.

Advancing Pharmacoequity in Asthma

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

Affiliations Expand

- PMID: 42149713

- DOI: 10.1001/jama.2026.8185

No abstract available

Comment in

- Disparities in Inhaler Utilization Among US Adults With Asthma.

Ren J, Ara AF, Essien UR, Scannell C.JAMA. 2026 Jun 16;335(23):2065-2068. doi: 10.1001/jama.2026.7613.PMID: 42149706

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13

Comment

JAMA

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. 2026 Jun 16;335(23):2065-2068.

doi: 10.1001/jama.2026.7613.

Disparities in Inhaler Utilization Among US Adults With Asthma

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

Affiliations Expand

- PMID: 42149706

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

- DOI: 10.1001/jama.2026.7613

No abstract available

Plain language summary

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

Conflict of interest statement

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

Comment on

- Advancing Pharmacoequity in Asthma.

Agarwal S, Malani PN.JAMA. 2026 Jun 16;335(23):2019. doi: 10.1001/jama.2026.8185.PMID: 42149713 No abstract available.

- 10 references

Supplementary info

Publication typesExpand

Full text links

Cite

14

Thorax

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. 2026 Jun 15;81(7):702-704.

doi: 10.1136/thorax-2025-224686.

Trends in asthma-related paediatric mortality

Isabel J Hardee [1], Michael C Monuteaux [2], Robert M Hoffmann [2], Alexander W Hirsch [2], Susan Lipsett [2], Kyle A Nelson [2], Mark Neuman [2]

Affiliations Expand

- PMID: 42055910

- DOI: 10.1136/thorax-2025-224686

Abstract

Asthma is a leading cause of paediatric mortality. This study aims to elucidate trends in paediatric mortality over time. Using US Centers for Disease Control (CDC) WONDER data, we conducted a cross-sectional analysis of paediatric asthma-related mortality between 1999 and 2023, overall and stratified by year, age, sex, race and region. Negative binomial regression was used to test the linear temporal trend and conduct group comparisons in asthma-related mortality rates. Over the study period, there were 5357 asthma deaths. The mortality rate was 3 per 1 000 000 children and rates remained stable over this period. Asthma mortality was higher in males, children 10-19 years (compared to children 5-9 years) and black (relative to white) children. Advances in the treatment of paediatric asthma should be aimed at reducing mortality and addressing differential health outcomes among black children.

Keywords: Asthma; Asthma Epidemiology; Child; Mortality; Paediatric Physician; Paediatric asthma.

Conflict of interest statement

Competing interests: None declared.

Supplementary info

MeSH termsExpand

Full text links

. 2026 Jun 18;67(6):2502687.

doi: 10.1183/13993003.02687-2025. Print 2026 Jun.

Obesity and asthma: obesity causes and aggravates asthma across the entire type-2 inflammation spectrum

Sebastian Riemann [1 2 3], Imke Matthys [4], Tania Maes [1 3], Bruno Lapauw [3 4], Guy Brusselle [5 2 3 6]

Affiliations Expand

- PMID: 41713950
- PMCID: PMC13276120
- DOI: 10.1183/13993003.02687-2025

Abstract

Obesity affects more than 650 million adults worldwide, with prevalence continuing to rise across all age groups and continents. This trend has important implications for asthma: individuals with obesity have a 30-50% higher risk of developing asthma, and obesity is highly prevalent among people with established disease. Mean body mass index in clinical trials and registries of adults with asthma consistently ranges from 28 kg·m^{-2} to 30 kg·m^{-2}, with up to 70% of patients being overweight or obese. These numbers highlight obesity as one of the most common comorbidities in asthma, consistently associated with poorer asthma control and a higher risk of exacerbations. Although obesity-associated asthma is often described as type-2 (T2)-low phenotype, it is increasingly recognised as a heterogeneous condition not restricted to a single phenotype. Excess adiposity influences asthma through multiple mechanisms, including dysregulated adipokine signalling, impaired innate lymphoid cells type 2 (ILC2)-eosinophil-macrophage cross-talk in adipose tissue, systemic low-grade inflammation, metabolic dysfunction, and mechanical effects on lung volumes. This diversity complicates diagnosis, endotyping, and treatment stratification. Obesity should therefore be considered a treatable trait in asthma. Weight reduction (through lifestyle interventions, pharmacotherapy or bariatric surgery) improves symptoms, lung function, and exacerbation risk across both T2-high and T2-low asthma. Importantly, patients with obesity experience similar reductions in exacerbations with anti-T2 biologics as their lean counterparts, though improvements in symptoms and lung function are variable. Future research should prioritise randomised, placebo-controlled trials evaluating glucagon-like peptide (GLP)-1 and dual GLP-1/glucose-dependent insulinotropic polypeptide (GIP)-agonist therapies

specifically in patients with asthma and obesity, and elucidate how obesity modifies inflammatory endotypes and treatment responses.

Conflict of interest statement

Conflict of interest: S. Riemann reports payment or honoraria for lectures, presentations, manuscript writing or educational events from GlaxoSmithKline, and support for attending meetings from AstraZeneca, GlaxoSmithKline and Sanofi. I. Matthys reports payment or honoraria for lectures, presentations, manuscript writing or educational events from Eli Lilly, support for attending meetings from NovoNordisk and Sanofi, participation on a data safety monitoring board or advisory board with NovoNordisk, Eli Lilly and Grunenthal, and a leadership role with BASO (EASO). T. Maes reports grants from Chiesi and GlaxoSmithKline, and stock (or stock options) with Oryzon Genomics and Mendelion Lifesciences SL. B. Lapauw reports consultancy fees from Amgen and Recordati NV, payment or honoraria for lectures, presentations, manuscript writing or educational events from UCB and Menarini, support for attending meetings from Sandoz NV and Recordati NV, and board membership with the Belgian Bone Club, Belgian Thyroid Club, Belgian Society for Endocrinologists and Diabetologists, and the ESE Clinical Committee. G. Brusselle reports payment or honoraria for lectures, presentations, manuscript writing or educational events from AstraZeneca, Chiesi, GlaxoSmithKline, Novartis and Sanofi Regeneron, and a leadership role with the Global Initiative for Asthma (GINA).

- **155 references**
- **3 figures**

Supplementary info

Publication types, MeSH terms, SubstancesExpand

Full text links

Cite

16

Observational Study

J Investig Allergol Clin Immunol

. 2026 Jun 15;36(3):215-225.

doi: 10.18176/jiaci.1088. Epub 2025 Jul 30.

Dynamic Hyperinflation in Patients With Moderate-Severe Asthma: Relationship With Clinical Control and Small Airway Dysfunction

Leonardo E Saldaña-Pérez [1 2], José Serrano Pariente [1 3 4], Carolina Cisneros Serrano [1 5 6], Vicente Plaza [7], Ismael Ali-García [1 8], Francisco Javier Campano Lancharro [1 9], Silvia Sánchez Cuellar [1 10], Ana Isabel García Onieva [1 11], Aizea Mardones [1 12], Elena Curto Sánchez [1 13], Mariana Muñoz Esquerre [1 14], Raúl Galera-Martínez [15], Perla Valenzuela Reyes [1 16], Íñigo Ojanguren Arranz [1 17], María Celeste Marcos [1 5], Cristina Benito Bernáldez [18], Ignacio Lobato Astiárraga [19], Rocío Magdalena Díaz-Campos [1 20], Francisco García-Río [1 21]

Affiliations Expand

- PMID: 40737072

- DOI: 10.18176/jiaci.1088

Free article

Abstract

Background: Dynamic hyperinflation (DH), characterized by an abnormal increase in operative lung volumes during exercise, is associated with breathlessness and exercise intolerance. This study aimed to evaluate the relationship between DH and control of symptoms in patients with moderate-severe asthma.

Methods: A cross-sectional, multicenter, observational study was conducted in patients with moderate-severe asthma. DH was defined as a decrease in inspiratory capacity after a 6-minute walk test (6MWT), and asthma control was measured using the Asthma Control Test (ACT) and Spanish Guidelines for the Management of Asthma (GEMA). Secondary variables included sensitization to aeroallergens (prick test), quality of life (miniAQLQ), anxiety or depression, dyspnea (mMRC), fatigue (Borg scale), and small airway dysfunction (oscillometry).

Results: Among the 154 patients analyzed, 97 (63%) had DH. ACT scores did not differ significantly between patients with and without DH (20.8 [4.4] vs 21.7 [3.6]; P=.411). However, the percentage of patients with partially and poorly controlled asthma according to GEMA was significantly higher in the DH group than in those without DH (40.2% vs 24.6%; P=.048). Compared with patients without DH, patients with DH had higher dyspnea scores (0.9 [0.9] vs 0.5 [0.6]; P=.009), greater fatigue before the 6MWT (1.3 [1.9] vs 0.5 [1.1]; P=.004), higher respiratory reactance (0.7 [1.2] vs 0.4 [1.2] cmH2O/L/s; P=.032), higher depression scores (4.2 [3.7] vs 2.1 [2.1], P=.002), and lower sensitization to aeroallergens (45.4% vs 68.4%; P=.014).

Conclusion: Although no relationship was found between DH and uncontrolled asthma via the ACT, the proportion of patients with uncontrolled asthma according to GEMA was significantly higher in the DH group.

Keywords: Asthma control; Dynamic hyperinflation; Dyspnea; Oscillometry; Prevalence.

Supplementary info

Publication types, MeSH termsExpand

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

1

Int Arch Allergy Immunol

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. 2026 Jun 18:1-17.

doi: 10.1159/000552898. Online ahead of print.

Long-term efficacy beyond 10 years of subcutaneous immunotherapy for house-dust-mite-induced allergic rhinitis: A real-world evidence study

Jichao Sha, Yiting Liu, Ye Yuan, Liwei Sun, Cuida Meng, Dongdong Zhu

- **PMID: 42313697**
- **DOI: 10.1159/000552898**

Abstract

Background: This retrospective study evaluated real-world data on subcutaneous immunotherapy for house dust mites (HDM-SCIT) in children and adults with AR over aperiod exceeding 10 years. Aimed to observe the long-term efficacy of HDM-SCIT lasting more than 10 years in children and adults.

Methods: Sixty-six patients, including 31 children and 35 adults who were allergic to house dust mite and received SCIT, were retrospectively analysed. All patients completed an immunotherapy course lasting 2-3 years. Questionnaire data were collected before and at the end of SCIT, and telephone follow-up was conducted to evaluate the long-term efficacy after 10 years.

Results: Nasal and ocular symptoms in children and adults remained better controlled 10 years after the completion of HDM-SCIT (all $p < 0.05$). The efficacy for nasal and ocular symptoms in children persisted after 10 years (all $p < 0.05$), whereas the efficacy of other related symptoms declined ($p = 0.414$). The efficacy for nasal symptoms in adults remained stable ($p = 0.888$), whereas the efficacy for ocular symptoms and ear-itching symptoms declined (all $p < 0.05$). No statistically

significant difference between children and adults (p = 0.607, p = 0.764). No adverse reactions persisted for 10 years or more.

Conclusions: Up to 10 years after completing HDM-SCIT, both children and adults continued to exhibit significant improvement in their symptoms, while adults exhibited diminished nasal symptom benefit.The safety profile during treatment for both adults and children remained excellent even 10 years later.

Full text links

Proceed to details

Cite

2

Immunotherapy

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. 2026 Jun 18:1-12.

doi: 10.1080/1750743X.2026.2689847. Online ahead of print.

Exploring global research trends in sublingual immunotherapy of allergic rhinitis: a comprehensive bibliometric analysis

Wenzhe Gu [1], Zhengjie Shen [2], Jun Shi [3], Hao Xu [1], Hongjun Dong [1], Daonan Yan [3], Yunfeng Chu [1]

Affiliations Expand

- **PMID: 42312457**

- **DOI: 10.1080/1750743X.2026.2689847**

Abstract

Aims: Sublingual immunotherapy (SLIT) is a well-established, safe, and patient-friendly treatment for allergic rhinitis. This study aims to provide a comprehensive bibliometric analysis of global research trends and emerging hotspots in SLIT for allergic rhinitis.

Methods: Relevant publications were sourced from the Web of Science Core Collection (1993-2024). VOSviewer, CiteSpace, and the R "bibliometrix" package were used to visualize research collaborations, leading contributors, and thematic developments.

Results: This analysis of 696 publications on SLIT for allergic rhinitis reveals a dynamic, collaborative field. The USA, China, and Italy led production, with the University of Genoa as the top institution. Research is organized into six clusters: immunological mechanisms, clinical efficacy, epidemiology/guidelines, pediatric research, disease classification, and real-world evidence.The focus has evolved over two decades from initial clinical efficacy studies toward understanding underlying immune mechanisms (highlighted by recent keyword bursts like "dendritic cells"), biomarker discovery, and specialized pediatric applications. There is also a strengthened emphasis on long-term management and real-world effectiveness.

Conclusion: SLIT research is diversifying, marked by a growing emphasis on immunology, personalized and pediatric approaches, and practical outcomes, providing a robust foundation for optimizing future therapy.

Keywords: Bibliometric analysis; allergic rhinitis; exploring global research trends; sublingual immunotherapy; visual analysis.

Plain language summary

Allergic rhinitis, often called hay fever, causes sneezing, a runny or blocked nose, and itchy symptoms. Medicines can help control symptoms, but they do not change the underlying allergy. Sublingual immunotherapy is a longer-term treatment that places small amounts of an allergen under the tongue to help the immune system become less sensitive over time. Because many studies on this treatment have been published, it can be difficult to understand how the research field has developed and what topics are now receiving the most attention.In this study, we reviewed and analyzed published research on sublingual immunotherapy for allergic rhinitis using a method called bibliometric analysis. Instead of re-testing the treatment in patients, bibliometric analysis looks at patterns across the scientific literature, such as how many papers are published each year, which countries and institutions publish the most, which journals publish the research, and which topics are becoming more important.We analyzed 696 publications indexed in the Web of Science Core Collection from 1993 to 2024. We found that research output increased over time, with strong contributions from the United States, China, and Italy, and major involvement from both universities and companies. Research topics clustered into areas including treatment effectiveness and safety, immune mechanisms, guidelines and health policy, pediatric studies, and real-world outcomes such as adherence. Overall, the field is expanding and increasingly focused on long-term management, immune pathways, and practical use in everyday care.

Full text links

3

J Allergy Clin Immunol Pract

. 2026 Jun 17:S2213-2198(26)00501-5.

doi: 10.1016/j.jaip.2026.06.009. Online ahead of print.

Allergic rhinitis in the elderly. In collaboration with ARIA guidelines

Jean Bousquet [1], Maria Teresa Ventura [2], Luis Taborda-Barata [3], Bernardo Sousa-Pinto [4], Marine Savouré [5], Maria José Torres [6], Mohamed H Shamji [7], Gilles Berrut [8], Ludger Klimek [9], Nicola Scichilone [10], Antonio F M Giuliano [11], Rafael José Vieira [4], Hubert Blain [12], Luisa Brussino [13], Alvaro A Cruz [14], Mark S Dykewicz [15], G Walter Canonica [16], Bilun Gemicioglu [17], Boleslaw Samolinski [18], Sian Williams [19], Anna Bedbrook [20], Wienczyslawa Czarlewski [20], Torsten Zuberbier [21], Joao A Fonseca [22]

Affiliations Expand

- PMID: 42309322

- DOI: 10.1016/j.jaip.2026.06.009

Abstract

Rhinitis in the elderly represents a unique challenge, due to specific clinical profiles, needs and expectations. Allergic rhinitis (AR) in the elderly is often intertwined with non-allergic rhinitis (NAR). Multimorbidity, frailty, disability and polypharmacy leading to drug-drug interactions are important in the elderly. Epidemiological data remain limited. AR in the elderly often follows earlier onset but some patients may start AR symptoms in the elderly. Rhinitis in the elderly is often underrecognized because symptoms are those of AR possibly combined with NAR influenced by age-related structural and functional changes in the nose. These include nasal dryness, congestion without clear trigger, and rhinorrhoea alone. Several characteristics of AR in the elderly render AR diagnosis more challenging in that age group. An assessment of control and severity is needed to optimize person-centered treatment. There is no specific guideline for the management of AR in the elderly. However, Although AR in the elderly may differ from rhinitis in younger adults, and medication efficacy may be reduced, the main management trend is the same as that in younger patients. The main problem is safety, as some drugs may cause specific severe side effects. First generation oral anti-histamines should be avoided. Intranasal corticosteroids (INCS), second-generation oral antihistamines and intranasal H_1-antihistamine (INAH) and INAH-INCS fixed combination are the first-line therapeutic options. Digital health associated with artificial intelligence has a promising future for AR management.

Keywords: artificial intelligence; diagnosis; digital health; elderly; management; rhinitis; symptoms.

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Review

Allergy

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. 2026 Jun 16.

doi: 10.1111/all.70415. Online ahead of print.

Remission in Global Airway Diseases: EUFOREA Consensus Paper

J Christian Virchow [1], Xander Bertels [2 3], Vibeke Backer [4], Benjamin S Bleier [5], Marco Caminati [6], Diego M Conti [7 8], Eugenio De Corso [9], Mina Gaga [10], Valerie J Lund [11 12], Corrado Pelaia [13], Anju T Peters [14], Glenis K Scadding [15 16], Martin Wagenmann [17], Riyad O Al-Lehebi [18 19], Guy G Brusselle [20 21 22], Philippe Gevaert [3], Liam G Heaney [23], Stella E Lee [24], Florence Schleich [25 26 27], Frederik Trinkmann [28 29], Peter W Hellings [8 30], Wytske J Fokkens [31], Paola Rogliani [32]

Affiliations Expand

- PMID: 42304188

- DOI: 10.1111/all.70415

Abstract

The therapeutic goal in chronic airway diseases is shifting from symptom control to disease remission. Disease-modifying therapies, including biologics and allergen immunotherapy, have made remission achievable in patients with severe asthma, chronic rhinosinusitis with nasal polyps (CRSwNP), or allergic rhinitis (AR). This EUFOREA consensus aims to establish practical guidance for inducing and maintaining remission in global airway diseases. An international panel of experts in pneumology, rhinology, and allergology convened in Rome (October 2025) to review current evidence and develop consensus statements. The panel achieved consensus on key principles: (i) remission is a therapeutic target independent of disease severity prior to treatment initiation and should not be reserved for severe cases; (ii) CRSwNP with nonallergic eosinophilic asthma, and AR with allergic

asthma should be considered features of a single disease rather than comorbidities; (iii) remission should be assessed by each subspecialty separately while warranting combined approaches; (iv) pragmatic definitions prioritizing achievability and clinical utility are recommended; and (v) a 4-week recall window is preferred to assess symptom control within the evaluation of remission and a 12-month period is suggested as the minimal period to define remission. Remission represents an ambitious yet achievable goal, with practical guidance for optimizing patient outcomes.

Keywords: allergic rhinitis; asthma; chronic rhinosinusitis; global airway diseases; remission.

- **56 references**

Supplementary info

Publication types, Grants and fundingExpand

Full text links

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Cite

5

Review

J Investig Allergol Clin Immunol

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. 2026 Jun 15;36(3):198-206.

doi: 10.18176/jiaci.1176. Epub 2026 Apr 29.

Consensus Review: Predicting Recurrence in Chronic Rhinosinusitis With Nasal Polyps: Multidisciplinary Insights From the RELAPSE Project

Isam Alobid [1], M Sandra Domínguez [2], Christian Calvo-Henriquez [3], Carlos Colás [4 5], Beatriz Fernández-Parra [5 6], Ruperto González-Pérez [5 7]

Affiliations Expand

- **PMID: 42052687**

- **DOI: 10.18176/jiaci.1176**

Free article

Abstract

Chronic rhinosinusitis with nasal polyps (CRSwNP) is a disease with a high incidence of postoperative recurrence despite medical and surgical treatments. However, a universal definition of recurrence and its determinants is lacking. Our objective was to establish a clear definition of recurrence and reach consensus on the contributing factors. A consensus study was conducted using the Delphi method. The literature on recurrence of CRSwNP was reviewed and assessed by a multidisciplinary scientific committee. The committee designed a 2-round online Delphi questionnaire addressing recurrence in CRSwNP. As for consensus, ≥70% of panelists scored 1-3 (disagreement) or 7-9 (agreement). The survey involved 70 physicians (69 completed both rounds) with expertise in the management of CRSwNP (47 ear, nose, and throat [ENT] specialists and 22 allergists). Consensus was reached on the characteristics defining recurrence (87% overall agreement, 95% agreement among allergists, and 83% agreement among ENT specialists). Finally, a list of 10 key prognostic factors was agreed upon. The top 5 were presence of nonsteroidal anti-inflammatory drug-exacerbated respiratory disease, eosinophilic CRSwNP, asthma, extent of surgery, and eosinophils in nasal polyposis (>50/high-power field). This study identified 10 key prognostic factors for recurrence and clarified the definition of recurrence in CRSwNP as the reappearance or worsening of sinonasal symptoms (>3 points on a visual analog scale and/or ≥12 points in the 22-item Sino-Nasal Outcome Test) and/or objective evidence of inflammation (nasal polyposis grade ≥1 or other endoscopic or radiological signs of persistent mucosal inflammation) after initial postoperative improvement (baseline postoperative assessment 1 month after surgery, recurrence evaluated 6 months thereafter), excluding persistence and suboptimal surgical outcome.

Keywords: Chronic rhinosinusitis with nasal polyps (CRSwNP); Delphi study; Multidisciplinary; Postsurgical recurrence; Prognostic factors; RELAPSE consensus.

Supplementary info

Publication types, MeSH termsExpand

Full text links

chronic cough

1

Review

Purinergic Signal

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. 2026 Jun 19;22(4):59.

doi: 10.1007/s11302-026-10172-4.

Selective P2X3 versus dual P2X2/3 receptor antagonists in refractory chronic cough: a systematic review and dose-response meta-analysis of randomized controlled trials

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Affiliations Expand

- **PMID: 42319606**

- **DOI: 10.1007/s11302-026-10172-4**

Abstract

Extracellular adenosine triphosphate (ATP)-mediated purinergic signalling via P2X3 and heteromeric P2X2/3 ion channel receptors underlies hypersensitisation of vagal airway afferents in refractory chronic cough (RCC), making this pathway a key therapeutic target. Two pharmacological strategies have emerged: dual P2X2/3 receptor antagonism and selective P2X3 inhibition. While dual antagonists (gefapixant) demonstrate robust antitussive efficacy, their clinical use is limited by taste disturbance resulting from P2X2/3 inhibition in gustatory pathways. We conducted a systematic review and dose-response meta-analysis of randomised controlled trials evaluating purinergic receptor antagonists in RCC, with nine RCTs (21 active arms; N = 1,934) identified from major databases. The primary outcome was percentage change in 24-h cough frequency (24-h CF) versus placebo. Dual P2X2/3 antagonists produced greater reductions in 24-h CF than selective P2X3 antagonists (- 38.12% vs - 19.93%; p = 0.016), consistent with broader receptor blockade. However, selective P2X3 antagonists demonstrated a markedly improved safety profile, with substantially lower dysgeusia incidence (8% vs 51%; p < 0.0001), reflecting sparing of P2X2/3-mediated gustatory signalling. Dose-response analysis indicated steeper efficacy gains with dual antagonists but disproportionately higher taste-related adverse effects. Among selective agents, camlipixant (≥ 50 mg BID) achieved clinically meaningful cough reduction (- 34%) with minimal dysgeusia (5-7%). These findings demonstrate a mechanistically defined benefit-risk trade-off in purinergic receptor targeting, supporting selective P2X3 antagonism as a more favourable strategy for modulating ATP-driven airway sensory signalling in RCC while preserving tolerability.

Keywords: Camlipixant; Chronic respiratory disease; Eliapixant; Gefapixant; P2X2/3 receptor; P2X3 receptor; Public Health; Purinergic signalling; Refractory chronic cough; Sivopixant.

Conflict of interest statement

Declarations. Ethics approval and consent to participate: This systematic review and meta-analysis was conducted using data from published trial reports and clinical trial registries. No primary data collection involving human participants was performed; therefore, ethical approval and patient consent were not required for this study. Competing interests: The authors declare no competing interests.

- 49 references

Supplementary info

Publication types, MeSH terms, SubstancesExpand

Full text links

Cite

2

Clin Exp Allergy

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. 2026 Jun 18.

doi: 10.1111/cea.70373. Online ahead of print.

Age-Dependent Role of Cough Hypersensitivity in Transition to Refractory Chronic Cough

Sung-Yoon Kang [1], Ha-Kyeong Won [2], Mi-Yeong Kim [3], Ji-Hyang Lee [4], Jin An [5], Ji-Yoon Oh [6], Jiung Jeong [7], Young-Chan Kim [8], So-Young Park [9], Hwa Young Lee [10], Eun-Jung Jo [11], Kyung-Min Ahn [12], Min-Hye Kim [12], So Ri Kim [13], Sae-Hoon Kim [14], Sang-Heon Kim [15], Yoon-Seok Chang [14], Byung-Jae Lee [16], Surinder S Birring [17], Woo-Jung Song [18]; Korean Chronic Cough Registry investigators

Affiliations Expand

- **PMID: 42315315**

- **DOI: 10.1111/cea.70373**

No abstract available

Keywords: age; chronic cough; refractory chronic cough; registry; transition.

Supplementary info

Grants and fundingExpand

Full text links

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Cite

3

Observational Study

Lung

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. 2026 Jun 17;204(1):38.

doi: 10.1007/s00408-026-00898-8.

Clinically Meaningful Differences for Cough-Specific Visual Analogue Scale in Chronic Cough: A Real-World Study

Mami Rikimaru [1], Junpei Saito [2], Surinder S Birring [3 4], Atsuro Fukuhara [1], Yasuhito Suzuki [1], Ryuki Yamada [1], Tetsuya Egawa [1], Takahiro Kumanaka [1], Ryutaro Tanaka [1], Kentaro Kazama [1], Koshi Saito [1], Rina Harigane [1], Riko Sato [1], Hikaru Tomita [1], Natsumi Watanabe [1], Takashi Umeda [1], Ryuichi Togawa [1], Yuki Sato [1], Xintao Wang [1], Takefumi Nikaido [1], Naoko Fukuhara [1], Kenya Kanazawa [1], Yoshinori Tanino [1], Yoko Shibata [1]

Affiliations Expand

- **PMID: 42307715**

- **DOI: 10.1007/s00408-026-00898-8**

Abstract

Background: Cough-specific visual analogue scale (VAS) is widely used to assess cough severity and frequency; however, clinically meaningful thresholds for treatment response in chronic cough (CC) remain uncertain in routine practice.

Objectives: To determine minimum clinically important differences (MCIDs) for cough VAS severity and frequency using real-world data anchored to both objective cough frequency and patient-reported quality of life.

Methods: In this prospective observational study, 103 patients with CC were evaluated before and after standard treatment. Cough severity and frequency were assessed using 100-mm VAS, health-related quality of life using the Leicester Cough Questionnaire (LCQ), and 24-hour cough frequency ($CoFr_{24}$) using the Leicester Cough Monitor. MCIDs for absolute (ΔVAS) and percentage (%ΔVAS) changes were estimated by receiver operating characteristic analyses, anchored to established MCIDs for LCQ (≥ 1.3-points increase) and $CoFr_{24}$ (≥ 30% reduction).

Results: VAS severity and frequency showed moderate, statistically significant correlations with both LCQ and $CoFr_{24}$. Anchor-based analyses consistently identified an absolute MCID of approximately -24 mm for both VAS domains, irrespective of anchor selection. Percentage-based MCIDs converged at a 60-65% reduction. These thresholds demonstrated acceptable discriminative ability (sensitivity of 70-80%, specificity of 65-90%) and remained consistent across objective and patient-reported anchors in a heterogeneous CC population.

Conclusions: In the present study, both ΔVAS of 24 mm and %ΔVAS of 60-65% reduction in cough VAS represented clinically meaningful improvement. Percentage-based MCIDs may complement absolute thresholds across a range of baseline severity, supporting the use of VAS in clinical practice and trials.

Keywords: Chronic cough; Clinically minimum important difference; Leicester cough monitor; Leicester cough questionnaire; Real-world study; Visual analogue scale.

Conflict of interest statement

Declarations. Conflict of interest: No authors received grants related to the submitted work. The all authors declare that they have no relevant conflicts of interests.

- 19 references

Supplementary info

Publication types, MeSH termsExpand

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SpringerLink FULL-TEXT ARTICLE UNIMORE

Proceed to details

Cite

4

Review

J Investig Allergol Clin Immunol

. 2026 Jun 15;36(3):185-197.

doi: 10.18176/jiaci.1170. Epub 2026 Mar 5.

Purinergic Receptors as Emerging Targets in the Management of Chronic Cough: From Pathophysiology to Clinical Application

Manuel Jorge Rial [1 2 3 4], Paula Galván [4 5 6], Darío Antolín Amérigo [4 7 8], Remedios Cárdenas-Contreras [4 9], Ana Montoro Ferrer [4 10], Juan Carlos Miralles López [4 11]

Affiliations Expand

- PMID: 41784133

- DOI: 10.18176/jiaci.1170

Free article

Abstract

Chronic cough is a prevalent and debilitating condition that significantly impairs quality of life and remains a therapeutic challenge owing to the limited efficacy and unfavorable adverse effect profiles of existing treatments. In recent years, a deeper understanding of the neurobiology of the cough reflex has unveiled the pivotal role of purinergic signaling in the pathophysiology of cough hypersensitivity. Extracellular adenosine triphosphate, released in response to airway inflammation and irritation, activates the P2X3 and P2X2/3 receptors on vagal sensory nerves, triggering and sensitizing the cough reflex. This has led to the emergence of P2X3 receptor antagonists as a promising new class of targeted therapies. This comprehensive review of the pathophysiology of chronic cough focuses on the role of purinergic signaling, with an examination of the preclinical and clinical evidence supporting the efficacy of P2X3 antagonists, such as gefapixant, in reducing cough frequency. Furthermore, we discuss the clinical and safety considerations of these novel drugs, including the main challenge of taste-related adverse effects, and explore future perspectives, such as the development of more selective molecules and the identification of biomarkers to guide personalized treatment strategies. The advent of purinergic receptor modulation marks a significant milestone in the management of chronic cough, offering new hope for patients with this refractory condition.

Keywords: Chronic cough; Gefapixant; P2X3 receptor; Purinergic signaling; Refractory or unexplained chronic cough.

Supplementary info

Publication types, MeSH terms, SubstancesExpand

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

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BMC Pulm Med

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. 2026 Jun 19.

doi: 10.1186/s12890-026-04414-9. Online ahead of print.

Coexistence of COPD or asthma in patients with bronchiectasis: a systematic review and meta-analysis

Yuhua Wen [1], Yuwei Zhang [2], Yan Chen [3], Rui Fan [4]

Affiliations Expand

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Abstract

Background: Bronchiectasis frequently coexists with other chronic airway diseases, particularly chronic obstructive pulmonary disease (COPD) and asthma, forming clinically significant bronchiectasis-COPD overlap and bronchiectasis-asthma overlap phenotypes. However, the global proportion of COPD and asthma among patients with bronchiectasis has not been comprehensively quantified. This study aimed to estimate the pooled proportion of COPD and asthma in bronchiectasis and to explore potential sources of heterogeneity.

Methods: PubMed, Embase, and Web of Science were systematically searched up to January 8, 2026. Studies reporting the proportion of COPD or asthma in adults with bronchiectasis confirmed by high-resolution computed tomography were eligible. Random-effects models were used to calculate pooled proportions. Subgroup analyses and meta-regression were performed to explore heterogeneity. Publication bias was assessed using funnel plots and Egger's test.

Results: Fifty-two studies (81,779 patients) were included for COPD and 47 studies (71,605 patients) for asthma. The pooled proportion of COPD among bronchiectasis

patients was 18% (95% CI: 14-22%; I^2 = 99.4%), and the pooled proportion of asthma was 16% (95% CI: 11-20%; I^2 = 99.3%). Subgroup analyses revealed variations by geographic region, study design, and age. Meta-regression identified female proportion as a statistically significant but weak predictor of asthma prevalence (β = 3.97, 95% CI: 0.91-7.03; P = 0.011), explaining only 10.6% of the between-study heterogeneity. No covariates significantly explained heterogeneity in COPD prevalence. Egger's test showed no significant publication bias (COPD: P = 0.506; asthma: P = 0.153), and sensitivity analyses confirmed the stability of the findings.

Conclusions: COPD and asthma coexist in approximately one-fifth of patients with bronchiectasis, highlighting the importance of systematic assessment for these overlap syndromes. A weak association between female sex and asthma prevalence was observed, but this factor explained only a small fraction of the heterogeneity, indicating that other unmeasured variables are more important determinants. These findings support a more integrated, phenotype-driven approach to the management of chronic airway diseases.

Trial registration: PROSPERO registration: CRD42023400445.

Keywords: Airway disease overlap; Asthma; Bronchiectasis; Chronic obstructive pulmonary disease; Comorbidity; Meta-analysis.

Conflict of interest statement

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

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Review

Nat Rev Rheumatol

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Lung disease in rheumatoid arthritis

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Abstract

Rheumatoid arthritis (RA) is a prevalent chronic systemic autoimmune inflammatory disease that primarily targets synovial joints and periarticular tissues. In RA, systemic inflammation has been associated with extra-articular manifestations, including pulmonary involvement, which are leading causes of reduced survival. Tobacco smoking is a well-established risk factor for anti-citrullinated protein antibody (ACPA)-positive RA and is also associated with chronic obstructive pulmonary disease, interstitial lung disease (ILD) and lung cancer, the prevalence of which is elevated in people with RA. Pulmonary manifestations such as airway obstructive disease, ILD and bronchiolitis affect a substantial proportion of people with RA. Screening for pulmonary disease, particularly ILD, is gaining emphasis, with high-resolution CT recommended based on risk factors including age, sex, antibody status and smoking. Despite advances in therapies to effectively manage joint inflammation, evidence-based treatments for RA-associated ILD remain limited. Chronic obstructive pulmonary disease and bronchiectasis in RA warrant more recognition owing to their effect on morbidity and mortality, and should be managed in accordance with current international treatment guidelines for these conditions. This Review summarizes the pathophysiology of lung involvement in RA, diagnostic challenges and evolving management strategies aimed at optimizing patient outcomes.

Conflict of interest statement

Competing interests: The authors declare no competing interests.

- 120 references

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BMC Pulm Med

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The bacteriology of bronchiectasis patients and relation to disease severity

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Abstract

Background: Bronchiectasis is a progressive pulmonary disease with repeated cough, expectoration and frequent respiratory infections. Every patient should have sample collected for routine bacteriological culture. Determining the disease's severity can help with therapy and follow-up choices.

Aim of the study: To detect the bacteriology of bronchiectasis patients and relation to disease severity.

Results: 60 patients with bronchiectasis exacerbation were investigated at chest department of Fayoum University Hospital. Broncho alveolar lavage for culture and sensitivity was done. Disease severity was assessed by cough score, mMRC dyspnea score, oxygen saturation, no of lobes affected in CT chest and modified rieff score, Spirometry and classification of severity by FEV1, and finally FACED and BSI scores were calculated. Isolation of H.Influenza represents 40%, Pseudomonas represents 26.7%, Klebsiella represents 20%, Staph aureus represents 10% and Pseudomonas& Klebsiella represent 3.3%. There was a statistically significant lower mean of oxygen saturation in cases infected with both pseudomonas and Klebsiella. There was a statistically significant high percentage of mild Modified Reiff score among cases infected with H. influenza, moderate degree among cases infected with Klebsiella, but severe degree among cases infected with pseudomonas.

Conclusion: H. influenzae consider as a major pathogen isolated by BAL culture in patients with bronchiectasis exacerbation, followed by P. aeruginosa, then klebsiella then S. aureus. Cases infected with P. aeruginosa and klebsiella have the worst oxygen saturation. The highest modified Rieff score was in P. aeruginosa than other isolated organisms.

Keywords: Bronchiectasis; Fayoum; Microbiome.

Conflict of interest statement

Declarations. Ethics approval and consent to participate: This study was conducted in accordance with the Declaration of Helsinki. Ethics approval was obtained from the Faculty of Medicine Research Ethical Committee (approval number M583), Fayoum university and the participants were informed about the study's purpose, the examination, and the investigation that would be done, in addition to the confidentiality of their information and their freedom to refuse participation. Informed consent was supplied by all individuals before being included in the study. Consent for publication: Not applicable. Competing interests: The authors declare no competing interests.

- **22 references**
- **1 figure**

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Thorax

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doi: 10.1136/thorax-2025-223305.

Clinical, molecular and microbial characterisation of the eosinophilic endotype of bronchiectasis: data from the EMBARC-BRIDGE study

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Free article

Abstract

Objectives: Eosinophilic bronchiectasis is defined by a blood eosinophil count (BEC) ≥300 cells/µL, but blood eosinophils imperfectly reflect airway eosinophilic inflammation. Here, we investigated the relationship between eosinophilic airway inflammation, blood eosinophils and clinical severity in bronchiectasis and explored the phenotype associated with eosinophilic bronchiectasis.

Methods: Sputum from 180 patients with stable CT-confirmed bronchiectasis was utilised to investigate airway levels of eosinophil proteins (eosinophil peroxidase (EPX), eosinophil derived-neurotoxin (EDN), eosinophil cationic protein (ECP), major basic protein (MBP) and Galectin-10 (Gal-10)) using a novel stable isotope dilution liquid chromatography-tandem mass spectrometry (LC-MS/MS) assay. To profile eosinophilic bronchiectasis, a nested analysis of patients with BEC <150 cells/µL (n=52) and ≥300 cells/µL (n=49) was conducted.

Results: Sputum concentrations of Gal-10, ECP and EDN were weakly but significantly associated with radiological severity, FEV_1 and sputum culture positivity for *Pseudomonas aeruginosa*. Airway eosinophil protein concentrations did not associate with exacerbation frequency. Total eosinophil protein concentration moderately correlated with BECs (r=0.33 95% CI 0.14 to 0.49, p=0.0007). Nested analysis revealed increased sputum PCR-positivity for *P. aeruginosa* (26.7% vs 7.7%, p=0.033) and an increased frequency of patients showing signs of *Aspergillus* sensitisation (defined as *Aspergillus*-specific IgE titres >0.35 kUA/L, 24.5% vs 3.8%) in eosinophilic bronchiectasis. Sputum inflammatory biomarkers and clinical parameters did not differ between groups.

Conclusions: LC-MS/MS can detect eosinophilic inflammation within bronchiectasis sputum. Weak associations between elevated airway eosinophil proteins, bronchiectasis severity and *P. aeruginosa* infection were observed. Direct measurement of eosinophilic airway inflammation provides additional information in addition to BECs. Eosinophilic bronchiectasis associated with *P. aeruginosa* infection and *Aspergillus* sensitisation.

Keywords: Bronchiectasis; Eosinophil Biology.

Conflict of interest statement

Competing interests: MS: grants or contracts from GSK, Trudell Medical Int and Tel Aviv League for Lung Disease; Consulting fees from Astra Zeneca, Boehringer Ingelheim, Dexcel, Kamada, Synchrony Medical, Trumed, Vertex and Zambon; payment of honoraria from Astra Zeneca, Boehringer Ingelheim, GSK, Kamada, Sanofi and Insmed; support for attending meetings and/or travel from Boehringer Ingelheim Israel, Astra Zeneca Israel, Kamada, Rafa and GSK Israel; participation on a Data Safety Monitoring Board or Advisory Board from Bonus Biotherapeutics, Boehringer Ingelheim and Astra Zeneca; AJRCCM Associate Editor, management board member: Israeli Pulmonology Society, Israeli Society for Tuberculosis and Mycobacterial Diseases, Management Board member: EMBARC, editorial board member: ERJ, Chest and ERJ taskforce member: bronchiectasis guidelines; and receipt of equipment from Trudell Medical International for clinical trial. SA: grants or contracts from Insmed, Chiesi and Fisher and Paykel; royalties or licences from McGraw Hill; consulting fees from Insmed, Zambon, Astra Zeneca, CSL Behring GmbH, Grifols, Fondazione Internazionale Menarini, Moderna Italy, Moderna TX, Boehringer Ingelheim, Chiesi farmaceutica Spa, MSD Italia S.r.l., Vertex Pharmaceuticals, BRAHMS GMBH, Physioassist SAS, AN2 Therapeutics, GlaxoSmithKline Spa; payment or honoraria from GlaxoSmithKline Spa, Thermofisher Scientific, INSMED Italy, INSMED Ireland Ltd, Boehringer Ingelheim, Zambon, Vertex Pharmaceuticals, Fondazione Internazionale Menarini; participation on a Data Safety Monitoring Board or Advisory Board - INSMED Incorporated, INSMED Italy, AstraZeneca UK Limited, MSD Italia S.r.l and Verona Pharma plc. CH: consulting fees from 30 Technology, AstraZeneca, BiomX, Chiesi, Infex, Insmed, LifeArc, Pneumagen, Vertex and Zambon; payment or honoraria from Chiesi, Insmed, Vertex and Zambon; payment for expert testimony from Zambon; and unpaid ECFS Board member. SC: grants or contracts from Singapore Ministry of Health's National Medical Research Council under its Clinician-Scientist Individual Research Grant (MOH-001356), Singapore Ministry of Health's National Medical Research Council under its Clinician Scientist Award (MOH-000710), Open Fund Individual Research Grant (MOH-000955), Singapore Ministry of Education under its AcRF Tier 1 Grant (RT1/22) (S.H.C), National Research Foundation Singapore under its Open Fund-Large Collaborative Grant (MOH-001636) administered by the Singapore Ministry of Health's National Medical Research Council; consulting fees from CSL Behring, Boehringer Ingelheim, Pneumagen Ltd, Sanofi, Zaccha Pte Ltd.; payment or honoraria from Astra Zeneca and Chiesi Farmaceutici; participation on a Data Safety Monitoring Board or Advisory Board – Inovio Pharmaceuticals Inc. and Imam Abdulrahman Bin Faisal University. EP: grants or contracts from Grifols; consulting fees from Insmed, Grifols, Pfizer, Moderna, Chiesi, N2Therapeutics, Pari and Electromed; Payment or honoraria from Insmed, Pari, Teva, GSK, Pfizer, Moderna, Chiesi, Grifols and Vertex; support for attending meetings from Insmed; Director of the Scientific Relationship of ERS with European Union PG – Payment or honoraria from Insmed, RMEI, Astra Zeneca and GSK; support for attending meetings from Astra Zeneca; participation on a Data Safety Monitoring Board or Advisory Board – Boehringer, MSD and Pfizer; unpaid member of Belgian Respiratory Society Board Member. ML: consulting fees from Armata, 30T, Astra Zeneca, Parion, Insmed, Chiesi, Zambon, Electromed, Recode, Boehringer Ingelheim, Ethris, Mannkind, AN2 Therapeutics; payment or honoraria from Insmed. NL: ERJ taskforce member - bronchiectasis guidelines and Management board member: EMBARC. FR – grants or contracts from German Center for Lung Research (DZL), German Center for Infection Research (DZIF), IMI (EU/EFPIA) and iABC

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Editorial

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Granules of truth: unpacking the eosinophilic endotype in bronchiectasis

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Conflict of interest statement

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