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

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Open Respir Arch

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. 2025 Nov 17;8(1):100519.

doi: 10.1016/j.opresp.2025.100519. eCollection 2026 Jan-Mar.

Predictors of Progression in Pre-COPD: The 3P Study Rationale and Design

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Affiliations Expand

- **PMID: 41438363**

- **PMCID: PMC12721031**

- **DOI: 10.1016/j.opresp.2025.100519**

Abstract

in English, Spanish

Introduction: The diagnosis of chronic obstructive pulmonary disease (COPD) requires the demonstration of poorly reversible airflow obstruction (defined by a forced expiratory volume in 1 s [FEV_1]/forced vital capacity [FVC] ratio <0.7 post-bronchodilation) in the appropriate clinical context (risk factors and exposures). Nevertheless, some individuals, who may be labeled "pre-COPD", can present respiratory symptoms, structural lung abnormalities (e.g., emphysema), or other physiological abnormalities (e.g., low FEV_1 [preserved ratio impaired spirometry, PRISm], gas trapping, hyperinflation, reduced lung diffusing capacity of carbon monoxide [DL_{CO}] and/or rapid FEV_1 decline), all in the absence of airflow obstruction. For reasons that are still unclear, some - but not all - patients will eventually progress and develop airflow obstruction (i.e., COPD) over time. The aim of this study is to investigate the clinical, physiological, radiological and/or biological factors that are associated with progression from pre-COPD to COPD.

Material and methods: This will be a prospective (5-year follow-up), multicenter (conducted in 12 Spanish centers across eight geographical autonomous communities), observational, comparative study (www.clinicaltrials.gov[NCT04409275](NCT04409275)), that will recruit 285 current or former smokers (≥10 pack-years) with respiratory symptoms (dyspnea, chronic cough, sputum production, wheezing or recurrent lower respiratory tract infections) and spirometry without obstruction (pre-COPD status). Multivariate regression analysis and other tests will be used to analyze results.

Conclusion: Results are expected to provide novel, useful information for identifying pre-COPD individuals who are likely to develop progressive airflow obstruction and are potential candidates for prompt intervention.

Keywords: Biomarker; Chronic bronchitis; Emphysema; Pre-COPD; Smoking; Spirometry.

- 23 references
- 2 figures

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2

Observational Study

Respir Med

. 2026 Jan:251:108597.

doi: 10.1016/j.rmed.2025.108597. Epub 2025 Dec 17.

TETRIS - Prospective study to observe clinical outcomes of triple therapy in COPD patients: Up to 12 months interim analysis

Gernot Rohde [1], Claus F Vogelmeier [2], Kai-Michael Beeh [3], Peter Kardos [4], Thomas Paulsson [5], Henrik Watz [6], Bernd Westermayer [7], Tharishini Mohan [5], Stephen G Noorduyn [8], Jing Claussen [9]

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- PMID: 41418889

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Abstract

Background: Real-world cohorts provide a more universal understanding of the factors influencing treatment decision outcomes in patients with chronic obstructive pulmonary disease (COPD).

Methods: The objective of the TETRIS study is to elucidate influences on treatment decisions surrounding triple therapy (TT) in COPD patients over a 2-year follow-up period in a real-world setting in Germany. TETRIS included 1217 patients with COPD with/without asthma, already on TT for 2-48 weeks. Here, we report interim analyses of clinical endpoints at the 6-month and 1-year follow-up visits in subgroups of patients (n = 840) stratified based on single versus multiple-inhaler TT (SITT versus MITT), once versus twice-daily TT (OD versus BID) and different SITTs the patients were currently on.

Results: Mean number of hospitalisations due to exacerbations was significantly lower among the subgroup on fluticasone furoate, umeclidinium, and vilanterol administered OD (FF/UMEC/VI OD) versus budesonide, glycopyrrolate, and formoterol fumarate administered BID (BUD/GLY/FOR BID) subgroup at 6 months and 1-year (both, $p < 0.0001$) as well as among OD versus BID TT subgroups at 1-year ($p = 0.02$). The change in mean COPD assessment test sum score was significantly greater in the SITT versus MITT and OD versus BID TT subgroups at 6 months ($p = 0.0018$ and $p = 0.0202$, respectively) and 1-year ($p = 0.0071$ and $p = 0.0002$, respectively), and in the FF/UMEC/VI OD versus BUD/GLY/FOR BID subgroup at 1-year ($p = 0.0004$).

Conclusion: Overall, SITT dosed OD, specifically FF/UMEC/VI is associated with a significant reduction in hospitalisations due to exacerbations and improvement in symptoms at the 6-month and 1-year follow-up visits.

Registration: https://clinicaltrials.gov/study/NCT04657211.

Keywords: Chronic obstructive pulmonary disease; Multiple-inhaler triple therapy; Persistence with therapy; Single-inhaler triple therapy; Treatment adherence; Triple therapy.

Conflict of interest statement

Declaration of competing interest The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: GR reports personal fees from AstraZeneca, Atriva, Boehringer Ingelheim, GSK, Insmed, MSD, Sanofi, Novartis and Pfizer for consultancy during advisory board meetings and personal fees from AstraZeneca, Berlin-Chemie, BMS, Boehringer Ingelheim, Chiesi, Essex Pharma, Grifols, GSK, Insmed, MSD, Roche, Sanofi, Solvay, Takeda, Novartis, Pfizer and Vertex for speaker activities. CFV received grants from AstraZeneca, Boehringer Ingelheim, GSK, Grifols and Novartis and has received lecturing and personal fees from AstraZeneca, Boehringer Ingelheim, Berlin-Chemie/Menarini, Chiesi, CSL Behring, GSK, Grifols, MedUpdate, Novartis, Aerogen and Nuvaira. KMB and/or the institution he represents have in the past 5 years received compensation for services on advisory boards or consulting activities from AstraZeneca, Berlin-Chemie, Boehringer Ingelheim, Chiesi, Elpen, GSK, Mundipharma, Novartis, Pohl Boskamp, Sanofi and Teva; compensation for speaker activities in scientific meetings supported by AstraZeneca, Berlin-Chemie, Boehringer Ingelheim, Chiesi, Elpen, ERT, GSK, Novartis, Pfizer, Pohl Boskamp, Sanofi and Teva; and compensation for the design and performance of clinical trials from AstraZeneca, Boehringer Ingelheim, GSK, Novartis, Parexel, Pearl Therapeutics, Teva and Sterna. PK received honoraria for participating in zoom meetings by GSK and Sanofi; he also received honoraria for participation in advisory boards and lectures and travel costs from the following companies: AstraZeneca, Bionorica, Chiesi, Engelhard, GSK, Jansen, Klosterfrau, Novartis, MSD and Schwabe. His institution received honoraria for clinical trial participation from Bellus, the ERS NEuroCOUGH Initiative and MSD. HW and/or his institution received honoraria for consulting services, speaker activities, and clinical study conduct from AstraZeneca, Bayer, Berlin-Chemie, Boehringer Ingelheim, BMS, Chiesi, GSK, Novartis, Roche, Sanofi and Takeda. TP, BW, TM, SGN and JC are employees of GSK and hold financial equities in GSK.

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Case-finding of COPD and AI

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Affiliations Expand

- PMID: 41362904
- PMCID: PMC12681547
- DOI: 10.1016/j.opresp.2025.100512

No abstract available

- 5 references

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Review

Respir Med

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. 2026 Jan:251:108575.

doi: 10.1016/j.rmed.2025.108575. Epub 2025 Dec 6.

Comorbid management of chronic obstructive pulmonary disease and heart failure

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Affiliations Expand

- PMID: 41360234

- DOI: 10.1016/j.rmed.2025.108575

Abstract

Chronic obstructive pulmonary disease (COPD) and heart failure (HF) frequently coexist, driven by shared risk factors (smoking, inflammation) and bidirectional pathophysiological interactions, worsening prognosis. This review synthesizes evidence from PubMed, Web of Science, EMBASE, and Scopus (2005-2025), using keywords: COPD, heart failure, mechanism, and biomarkers. Included studies encompassed epidemiological, mechanistic, diagnostic, and therapeutic aspects. COPD-HF comorbidity complicates diagnosis due to overlapping symptoms and limitations of spirometry/imaging. Selective β1-blockers and bronchodilators show efficacy with cautious monitoring. Non-pharmacological interventions (rehabilitation, vaccination) reduce exacerbations. Multidisciplinary care integrating cardiopulmonary management improves outcomes. Optimizing COPD-HF management requires personalized strategies, multidisciplinary collaboration, and standardized protocols. Future research should prioritize β-blocker safety in advanced trials and artificial intelligence-driven predictive models to enhance care.

Keywords: Adrenergic beta-Antagonists; Cardiovascular diseases; Chronic obstructive; Comorbidity; Heart failure; Pulmonary disease.

Conflict of interest statement

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

Supplementary info

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Comparative Study

Pulmonology

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. 2025 Dec 31;31(1):2598913.

doi: 10.1080/25310429.2025.2598913. Epub 2025 Dec 8.

Comparison of the efficacy of high-flow nasal cannula with different initial flow settings in patients with acute exacerbations of chronic obstructive pulmonary disease: A systematic review and network meta-analysis

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Affiliations Expand

- PMID: 41358529

- DOI: 10.1080/25310429.2025.2598913

Free article

Abstract

Background: High-flow nasal cannula (HFNC) is widely used in acute exacerbations of chronic obstructive pulmonary disease (AECOPD) treatment, but the optimal initial flow settings remain unclear. Research question Which initial HFNC flow rate provides the most effective and safe clinical outcomes for patients with AECOPD? Study design.

Methods: We searched 7 databases for studies published before January 2025. Network meta-analysis was conducted using R software (version 4.2.3) within a Bayesian framework. The primary outcome was intubation rate, and secondary outcomes included short-term mortality, $PaCO_2$, pH, PaO_2/FiO_2, and length of hospital stay.

Results: The analysis included 40 RCTs with 3597 patients. HFNC showed no significant difference from NIV in intubation rates. HFNC_Low (20 to 30 L/min) significantly reduced $PaCO_2$, improved pH, and lowered incidence of nasal and facial injuries. HFNC_Mod (30 to 50 L/min) significantly shortened hospital stay. SUCRA rankings indicated HFNC_Low as most effective for $PaCO_2$, pH, and injury prevention, while HFNC_Mod ranked highest for reducing hospital stay.

Conclusions: HFNC_Low demonstrates superior efficacy in lowering $PaCO_2$ levels, the incidence of nasal and facial injuries, and improving pH. Although HFNC_Mod may reduce hospital stay, low-flow settings are recommended as the preferred initial strategy for AECOPD.

Keywords: High-flow nasal cannula; acute exacerbations of chronic obstructive pulmonary disease; network meta-analysis.

Supplementary info

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Respir Med

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. 2026 Jan:251:108544.

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Prognostic influence of cardiac comorbidities in chronic obstructive pulmonary disease

Tara Pereiro Brea [1], Carlos Zamarrón Sanz [2], Óscar Lado-Baleato [3], Francisco Gude [4], Carlos Rábade Castedo [5], Nuria Rodríguez Núñez [6], Elisa Landín Rey [7], María Elena Toubes Navarro [8], Lucía Ferreiro Fernández [9], Luis Valdés [10]

Affiliations Expand

- **PMID: 41319840**

- **DOI: 10.1016/j.rmed.2025.108544**

Free article

Abstract

Background: Chronic obstructive pulmonary disease (COPD) is frequently associated with cardiovascular diseases (CVD), which may adversely affect the prognosis of these patients.

Objective: To confirm that individuals with COPD and CVD utilize more healthcare resources, require more frequent hospitalizations, and have higher mortality rates compared to those without these comorbidities.

Methods: Population-based study including 7391 COPD patients, classified into four groups according to the presence of heart failure (HF) and ischemic heart disease (IHD). Adjusted logistic regression and proportional hazards models were performed.

Results: Of the patients, 86.3 % (6378) had COPD alone; 8.1 % (601) had COPD + HF; 3.9 % (290) had COPD + IHD; and 1.7 % (122) had all three conditions. Groups with CVD exhibited older age, higher cardiovascular risk, and increased mortality. Hospitalization was associated with older age, male sex, fewer spirometry tests performed in primary care, and the use of home oxygen therapy and non-invasive ventilation, and was linked to higher mortality compared to non-hospitalized patients. Mortality was higher among patients with COPD and CVD. It was associated with more emergency department visits, more hospital admissions, increased use of chest X-rays and CT scans, and a higher prevalence of depression. Conversely, it was also related to lower rates of vaccination, fewer spirometry tests in primary care, reduced dispensing of inhaled medications, and overall lower pharmaceutical expenditure.

Conclusion: The coexistence of COPD and CVD identifies subgroups of patients with poorer prognosis and increased healthcare resource utilization. Multidisciplinary management and prevention strategies are essential to improve outcomes and healthcare efficiency.

Keywords: Cardiovascular comorbidities; Chronic obstructive pulmonary disease; Healthcare efficiency; Healthcare resources; Hospitalizations; Mortality; Prognosis.

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

Lancet Respir Med

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. 2026 Jan;14(1):72-84.

doi: 10.1016/S2213-2600(25)00371-6. Epub 2025 Nov 27.

Trajectories of prematurity-associated lung disease: lifelong lung health

Cassidy Du Berry [1], Diane M Gray [2], Amber Bates [3], Darweeza Salaam-Geydien [4], Lex W Doyle [5], Shannon J Simpson [6]

Affiliations Expand

- PMID: 41319659

- DOI: 10.1016/S2213-2600(25)00371-6

Abstract

Preterm birth is increasingly recognised as adversely influencing lifelong lung function. This Series paper on prematurity-associated lung disease reviews studies reporting longitudinal lung function measurements in individuals who were born preterm. Evidence suggests that preterm birth alters lung function trajectories from early life onwards, with implications for future respiratory morbidity. We propose that this population needs rigorous follow up that should include systematic monitoring of lung function across the lifespan, starting in childhood. Key priorities include understanding risk factors for poor lung function trajectories and moving beyond bronchopulmonary dysplasia alone to establish the phenotype of individuals who were born preterm that are at increased risk of poor trajectory more precisely. Novel approaches, including data-driven analytics and large-scale collaborative studies, will be essential to define phenotypes and trajectories of prematurity-associated lung disease more robustly. Finally, we highlight the need for interventional studies to establish whether adverse lung function trajectories can be stabilised or improved, thereby reducing risk of early chronic obstructive pulmonary disease (ie, diagnosis at age <50 years).

Conflict of interest statement

Declaration of interests SJS and DMG have received funding from the European Respiratory Society and the Government of Western Australia for the Prematurity's Effects on the Lungs in Children and Adults Network (PELICAN) clinical research collaboration. CDB, DMG, AB, LWD, and SJS are members of PELICAN. DS-G declares no competing interests.

Supplementary info

Publication types, MeSH termsExpand

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8

Respir Med

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. 2026 Jan:251:108498.

doi: 10.1016/j.rmed.2025.108498. Epub 2025 Nov 25.

Real-world efficacy of BDP/FF/G fixed triple inhalation powder (NEXThaler) therapy in the treatment of moderate to severe COPD patients (RESPONSE study)

Viktória Dulai [1], András Keglevich [2], Balázs Sánta [3], Zsolt Abonyi-Tóth [4], Ildikó Horváth [5]

Affiliations Expand

- PMID: 41308796

- DOI: 10.1016/j.rmed.2025.108498

Free article

Abstract

Purpose: Chronic obstructive pulmonary disease (COPD) remains a leading cause of morbidity and mortality worldwide, placing a significant burden on healthcare systems and patients' quality of life. The cornerstone of treatment includes fixed triple combinations of inhaled corticosteroids (ICS), long-acting β2-agonists (LABA), and long-acting muscarinic antagonists (LAMA) shown to improve lung function, reduce exacerbations, and enhance symptom control in patients with moderate to severe disease. However, there is still a lack of clinical evidence for the real-life effectiveness of fixed triple combinations.

Patients and methods: RESPONSE was a non-interventional, prospective, 26-week study, assessing the effectiveness of beclometasone/formoterol/glycopyrronium-bromide (BDP/FF/G) 88/5/9 µg administered via a dry powder inhaler (DPI), in symptomatic COPD patients, with moderate to severe airflow obstruction, previously treated with LABA-LAMA or ICS-LABA dual combinations. The study included 3 visits, where data on demographic and COPD-specific parameters, symptoms, quality of life (based on the EQ-5D-3L questionnaire), adherence (based on the TAI-12 questionnaire) and lung function were collected. The primary

objective was the change of COPD Assessment Test (CAT) scores during the study, compared to baseline.

Results: Altogether, data of 1336 patients had been analysed. Their average age was 67 years and 50.3 % were female. The average CAT score was 20.4 and the average FEV_1 was 52.3 %. Most patients had some limitation in one or more dimensions of EQ-5D-3L, with an average visual analogue scale score (VAS) of 59.1. After 6 months of treatment, there was a significant and clinically relevant improvement in average CAT score by 6.3 points (95 % CI: 6.0-6.7; $p < 0.001$) and average FEV_1 by +120 mL (95 % CI: 100-140, $p < 0.001$). There was a significant improvement in all dimensions of EQ-5D-3L, with an average increase of 12.1 (95 % CI: 11.3-12.3, $p < 0.001$) points in the VAS score.

Conclusion: The RESPONSE study is the first to evaluate the real-world effectiveness of the BDP/FF/G 88/5/9 µg DPI in patients with moderate to severe COPD. At the time of publication, this DPI formulation represents the only available extrafine particle-size fixed triple combination therapy for COPD. We demonstrated that BDP/FF/G DPI led to improvements in symptoms, quality of life, lung function, and even in adherence after patients were switched from dual therapy (LABA/LAMA or ICS/LABA).

Keywords: Adherence; CAT; COPD; Fixed triple combination; Inhalation powder; Quality of life.

Conflict of interest statement

Declaration of competing interest The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Viktoria Dulai reports financial support was provided by Chiesi Hungary Kft. Andras Keglevich, Balazs Santa reports a relationship with Chiesi Hungary Kft that includes: employment. Zsolt Abonyi-Toth reports a relationship with Chiesi Hungary Kft that includes: consulting or advisory. Ildiko Horvath reports financial support provided by Chiesi Hungary. She also reports a relationship with AstraZeneca, Berlin-Chemie -Menarini Kft, Chiesi Hungary and Sanofi that includes: consulting or advisory and speaking and lecture fees.

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J Psychosom Res

. 2026 Jan:200:112472.

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The impact of age on prevalence of anxiety, depression and stress in patients with chronic obstructive pulmonary disease

Abebaw Mengistu Yohannes [1], Mark T Dransfield [2], Richard Casaburi [3], Nicola A Hanania [4]

Affiliations Expand

- PMID: 41297341

- DOI: 10.1016/j.jpsychores.2025.112472

Abstract

Background: Over 40 % of patients with chronic obstructive pulmonary disease (COPD) suffer from mood and anxiety disorders. However, little is known about the impact of age on the prevalence of anxiety, depression and stress in patients with COPD. We examined the prevalence of depression, anxiety and stress in patients with COPD aged 65 years and older compared to less than 65 years old and their relation to quality of life (QoL), dyspnea, lung function and exercise capacity.

Methods: From our research database, we examined 993 clinically stable COPD patients recruited from 2013 to 2019, before entering pulmonary rehabilitation (PR). At baseline, COPD patients completed: dyspnea measured by modified Medical Research Council (mMRC) scale, exercise capacity by incremental shuttle walk test (ISWT), QoL by St. George's Respiratory Questionnaire (SGRQ), and psychological distress by Depression Anxiety Stress Scale (DASS).

Results: Seven-hundred-sixty-seven patients with COPD ≥65 years with mean age (SD) 75 (6) years were compared to 226 patients with COPD <65 years with mean age 58 (6) years. Patients <65 years compared to patients ≥65 years with COPD had higher scores for DASS-depression ≥10, (61 % vs. 38 %), DASS-anxiety ≥8 (73 % vs 51 %) and DASS-stress ≥15 (45 % vs. 25 %) all ($p < 0.001$). Younger patients with COPD had poorer QoL, elevated dyspnea, and lower FEV_1 percentage predicted, (all $p < 0.001$). No significant difference in exercise capacity was seen between the two groups ($p = 0.58$).

Conclusion: Younger COPD patients exhibited higher levels of depression, anxiety and stress, with poorer QoL and elevated symptoms of dyspnea compared to older patients.

Keywords: COPD depression anxiety stress quality of life dyspnoea.

Conflict of interest statement

Declaration of competing interest None.

Supplementary info

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Observational Study

Pulmonology

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. 2025 Dec 31;31(1):2591498.

doi: 10.1080/25310429.2025.2591498. Epub 2025 Nov 24.

Prognostic implications of cluster-defined phenotypes in AECOPD patients with bronchiectasis: A multicenter study

Jiaqi Pu [1 2], Yuanming Luo [3], Hailong Wei [4], Huiqing Ge [5], Huiguo Liu [6], Jianchu Zhang [7], Xianhua Li [8], Pinhua Pan [9], XiuFang Xie [8], Menggiu Yi [10], Lina Cheng [10], Hui Zhou [11], Jiarui Zhang [1 2], Lige Peng [1 2], Jiaxin Zeng [1 2], Xueqing Chen [1 2], Qun Yi [1 12], Haixia Zhou [1 2]

Affiliations Expand

- **PMID: 41277420**

- **DOI: 10.1080/25310429.2025.2591498**

Free article

Abstract

Background: The clinical impact of bronchiectasis (BE) in acute exacerbations of COPD (AECOPD) remains controversial, with unclear phenotypic heterogeneity.

Research question: Does BE independently influence clinical outcomes and phenotypic heterogeneity in AECOPD patients?

Study design and methods: This prospective multicenter cohort study analysed 11 759 hospitalised AECOPD patients from 10 Chinese medical centres. Propensity score matching (1:3) balanced baseline characteristics, and unsupervised cluster analysis identified phenotypic subgroups. Primary endpoints included mortality and exacerbation frequency, with secondary endpoints assessing mechanical ventilation, ICU admission, and length of stay (LOS).

Results: AECOPD-BE patients had higher rates of non-invasive ventilation (23.5% vs 20.1%, $p = 0.002$), ICU admission (9.8% vs 6.5%, $p < 0.001$), and prolonged LOS (median 10 vs 9 days, $p < 0.001$). Mortality rates were similar (in-hospital: 1.1% vs 1.3%, $p = 0.477$; 3-year: 17.8% vs 21.6%, $p = 0.652$), but BE patients had more exacerbations (2.92 ± 4.30 vs 2.18 ± 2.72 events, $p = 0.004$). Cluster analysis revealed two phenotypes: a Systemic Inflammatory-High Risk (SI-HR) subgroup with severe inflammation and poorer outcomes, and a Stable Compensated (SC) subgroup with milder manifestations.

Conclusion: BE independently predicts increased acute healthcare utilisation and exacerbation risk in AECOPD without affecting mortality. The SI-HR phenotype identification supports targeted management strategies for this heterogeneous population.Clinical Trial Registration: Chinese Clinical Trail Registry NO.: ChiCTR2100044625; URL: http://www.chictr.org.cn/showproj.aspx?proj=121626.

Keywords: Chronic obstructive pulmonary disease; bronchiectasis; phenotype; prognosis.

Supplementary info

Publication types, MeSH termsExpand

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Review

Life Sci

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. 2026 Jan 1:384:124089.

doi: 10.1016/j.lfs.2025.124089. Epub 2025 Nov 15.

Exploring the gut-lung-brain axis: Focus on endothelial dysfunction, impaired bioenergetics, and strategies to mitigate lung and cognitive disorders

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Affiliations Expand

- PMID: 41248824

- DOI: 10.1016/j.lfs.2025.124089

Abstract

Dysbiosis has emerged as a major determinant in the pathogenesis of many human disorders and is a continuously expanding area of research. Identification of several microbial populations and their derived products marks an important milestone in microbiome research. Interestingly, there is evidence that gut microbiota-derived products affect distant organs such as the brain and lungs. Although the effect of gut dysbiosis on several lung- and brain-related disorders has been demonstrated, our knowledge of the mechanisms and consequences of individual microbiota-derived metabolites and products on specific cell types such as endothelial cells is still evolving. Endothelial dysfunction is a prominent feature in vascular dementia and several lung disorders. Specifically, alteration in endothelial bioenergetics is an emerging area of research. In this review, the evidence on the interconnection between dysbiosis in the gut and three lung disorders; asthma, COPD, and ARDS - is discussed. Additionally, the association between these respiratory disorders and cognitive impairment is examined with mechanistic insights. Moreover, data involving the direct impact of key microbial metabolites and their products on endothelial cells are synthesized and potential therapeutic modalities are highlighted. We identify the impact of microbial metabolites on endothelial dysfunction and bioenergetics as a potential gap in knowledge and a plausible avenue for future research.

Keywords: Cognitive impairment; Endothelial Bioenergetics; Endothelial dysfunction; Microbiota; Respiratory disorders.

Conflict of interest statement

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

Supplementary info

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Am J Med

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. 2026 Jan;139(1):108-113.

doi: 10.1016/j.amjmed.2025.09.018. Epub 2025 Sep 23.

Exploring the cardiopulmonary effects of tirzepatide in atrial fibrillation and comorbid chronic obstructive pulmonary disease

Min Choon Tan [1], Ming Fong Yee [2], Aravinthan Vignarajah [3], Girish Pathangey [2], Mahmoud Abdelnabi [2], Christopher V DeSimone [4], Abhishek J Deshmukh [4], Dan Sorajja [2], Hicham El-Masry [2], Justin Z Lee [5]

Affiliations Expand

- PMID: 40998187

- DOI: 10.1016/j.amjmed.2025.09.018

Abstract

Background: The coexistence of atrial fibrillation and chronic obstructive pulmonary disease often leads to worse clinical outcomes. Tirzepatide is a promising therapy for diabetes and weight management, with potential cardiovascular benefits via anti-inflammatory effects. However, its impact in patients with both atrial fibrillation and chronic obstructive pulmonary disease is unknown.

Methods: Using the TriNetX Analytics Research Network, patients aged ≥18 years with atrial fibrillation and chronic obstructive pulmonary disease between 6/1/2022 and 1/1/2024 were included. Patients were divided into tirzepatide and control groups. Propensity score matching included demographics, comorbidities, cardiovascular medications, and left ventricular ejection fraction. Outcomes were all-cause mortality, cardiac events, and chronic obstructive pulmonary disease exacerbation over one year.

Results: A total of 3,728 tirzepatide users and 499,199 controls were identified; 3,726 patients remained in each group after matching. Tirzepatide use was associated with lower odds of 1-year all-cause mortality (OR: 0.145; 95% CI: 0.115-0.184), hospitalization (OR: 0.284; 95% CI: 0.258-0.313), stroke (OR: 0.619; 95% CI: 0.519-0.738), cardiac arrest (OR: 0.491; 95% CI: 0.362-0.667), heart failure exacerbation (OR: 0.270; 95% CI: 0.236-0.308), and chronic obstructive pulmonary disease

exacerbation (OR: 0.586; 95% CI: 0.513-0.671). Lower odds of anti-arrhythmic drug initiation, cardioversion, and atrial fibrillation ablation were also observed.

Conclusion: Tirzepatide use was associated with improved mortality and cardiovascular outcomes in patients with atrial fibrillation and chronic obstructive pulmonary disease and reduced need for rhythm control interventions. Prospective studies are needed to validate these findings.

Conflict of interest statement

Declaration of competing interest All authors have no relationships relevant to the contents of this paper to disclose. This research received no specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Supplementary info

MeSH terms, SubstancesExpand

Full text links

Cite

13

Heart Lung

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. 2026 Jan-Feb:75:21-25.

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Evaluation of AI chatbots for patient education and information on chronic obstructive pulmonary disease

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Affiliations Expand

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- DOI: 10.1016/j.hrtlng.2025.09.002

Abstract

Background: Chronic obstructive pulmonary disease (COPD) is a chronic and progressive disease that affects patients' quality of life and functional capacity. With its widespread use and ease of access, AI chatbots stand out as an alternative source of patient-centered information and education.

Objectives: To evaluate the readability and accuracy of information provided by ChatGPT, Gemini, and DeepSeek in COPD.

Methods: Ten most frequently asked questions and answers regarding COPD in English were provided using three AI chatbots (ChatGPT-4 Turbo, Gemini 2.0 Flash, DeepSeek R1). Readability was assessed using the Flesch-Kincaid Grade Level (FKGL), while information quality was analyzed by five physiotherapists based on the guidelines. Responses were graded using a 4-point system from "excellent response requiring no explanation" to "unsatisfactory requiring significant explanation." Statistical analyses were performed on SPSS.

Results: Overall, all three AI chatbots responded to questions with similar quality, with Gemini 2.0 providing a statistically higher quality response to question 4 ($p < 0.05$). In terms of readability of the answers, DeepSeek was found to have better readability on Q5 (12.01), Q8 (9.24), Q9 (13.1) and Q10 (8.73) compared to ChatGPT (Q5:13.9, Q8:11.92, Q9:17.15, Q10:9.88) and Gemini (Q5:18.22, Q8:15.47, Q9:17.42, Q10:9.38). Gemini was observed to produce more complex and academic level answers on more questions (Q4, Q5, Q8).

Conclusions: ChatGPT, Gemini, and DeepSeek provided evidence-based answers to frequently asked patient questions about COPD. DeepSeek showed better readability performance for many questions. AI chatbots may serve as a valuable clinical tool for COPD patient education and disease management in the future.

Keywords: Artificial intelligence; COPD; ChatGPT; DeepSeek; Gemini.

Conflict of interest statement

Declaration of competing interest The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

Supplementary info

MeSH termsExpand

Full text links

14

Pulmonology

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. 2025 Dec 31;31(1):2522015.

doi: 10.1080/25310429.2025.2522015. Epub 2025 Jun 27.

How should we determine the presence of functional impairment in people with COPD?

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Affiliations Expand

- PMID: 40575957

- DOI: 10.1080/25310429.2025.2522015

Free article

No abstract available

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15

Multicenter Study

Pulmonology

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. 2025 Dec 31;31(1):2470566.

doi: 10.1080/25310429.2025.2470566. Epub 2025 Apr 2.

Quality of life associated with breathlessness in the multinational Burden of Obstructive Lung Disease (BOLD) study: A cross-sectional analysis

Alexander Müller [1 2], Emiel F M Wouters [1 3 4], Peter Burney [5], James Potts [5], Joao Cardoso [6 7], Mohammed Al Ghobain [8], Michael Studnicka [9], Daniel Obaseki [10 11], Asma Elsony [12], Kevin Mortimer [13 14], David Mannino [15 16], Rain Jõgi [17], Rana Ahmed [12], Asaad Nafees [18], Maria Fatima Rodrigues [19 20], Cristina Bárbara [21 22], Rune

Nielsen [23,24], Thorarinn Gíslason [25,26], Hamid Hacene Cherkaski [27], Karima El Rhazi [28], Christer Janson [29], Mahesh Padukudru Anand [30], Sanjay Juvekar [31,32], Herminia Brites Dias [33], Frits M E Franssen [4,34], Dhiraj Agarwal [31], Sylvia Hartl [1,3], Terence Seemungal [35], Stefanni Nonna Paraguas [36], Imed Harrabi [37], Meriam Denguezli [38,39], Abdul Rashid [40], Gregory Erhabor [10], Mohammed El Biaze [41], Parvaiz Koul [42], Daisy J A Janssen [2,34,43], André F S Amaral [5,44]; BOLD Collaborative Research Group

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- PMCID: PMC11974890

- DOI: 10.1080/25310429.2025.2470566

Abstract

Introduction: Evidence of an association between breathlessness and quality of life from population-based studies is limited. We aimed to investigate the association of both physical and mental quality of life with breathlessness across several low-, middle- and high-income countries.

Methods: We analysed data from 19 714 adults (31 sites, 25 countries) from the Burden of Obstructive Lung Disease (BOLD) study. We measured both mental and physical quality of life components using the SF-12 questionnaire, and defined breathlessness as grade ≥2 on the modified Medical Research Council scale. We used multivariable linear regression to assess the association of each quality-of-life component with breathlessness. We pooled site-specific estimates using random-effects meta-analysis.

Results: Both physical and mental component scores were lower in participants with breathlessness compared to those without. This association was stronger for the physical component (coefficient = -7.59; 95%CI -8.60, -6.58; I^2 = 78.5%) than for the mental component (coefficient = -3.50; 95%CI -4.36, -2.63; I^2 = 71.4%). The association between physical component and breathlessness was stronger in high-income countries (coefficient = -8.82; 95%CI -10.15, -7.50). Heterogeneity across sites was partly explained by sex and tobacco smoking.

Conclusion: Quality of life is worse in people with breathlessness, but this association varies widely across the world.

Keywords: Dyspnoea; breathlessness; quality of life.

Conflict of interest statement

DM is a consultant to AstraZeneca, GlaxoSmithKline, Regeneron, Genentech, Up-to-Date and is an expert witness on behalf of people suing the tobacco and vaping industries.

FR reports grants and personal fees from A. Menarini, Boehringer Ingelheim, Teva Pharma, Novartis, GlaxoSmithKline, AstraZeneca, VitalAire and Nippon Gases outside the submitted work.

DJAJ reports lecture fees from AstraZeneca, Abbott and Chiesi, all paid to the institution and outside the submitted work.

- Cited by 2 articles
- 38 references
- 2 figures

Supplementary info

Publication types, MeSH terms, Grants and fundingExpand

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16

Pulmonology

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. 2025 Dec 31;31(1):2448080.

doi: 10.1080/25310429.2024.2448080. Epub 2025 Feb 21.

Optimising non-invasive ventilation in acute COPD exacerbations: Beyond pressure and volume settings

Claudia Crimi [1] [2], Annalisa Carlucci [3] [4], Stefano Nava [5] [6]

Affiliations Expand

- PMID: 39981735

- DOI: 10.1080/25310429.2024.2448080

Free article

No abstract available

Keywords: COPD exacerbation; Non-invasive ventilation; acute hypercapnic respiratory failure.

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17

Comparative Study

Pulmonology

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. 2025 Dec 31;31(1):2430032.

doi: 10.1080/25310429.2024.2430032. Epub 2024 Nov 20.

Histopathology of the small airways: Similarities and differences between ageing and COPD

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Affiliations Expand

- PMID: 39883495

- DOI: 10.1080/25310429.2024.2430032

Free article

Abstract

Age-related lung function decline is associated with small airway closure and gas trapping. The mechanisms which cause these changes are not fully understood. It has been suggested that COPD is caused by accelerated ageing. We have investigated pathological changes in the small airways during ageing, and evaluated whether the same or different processes exist in COPD. Histopathology and immunohistochemistry were used to examine small airway remodelling in healthy ageing, and then compare to age matched COPD patients. Ageing was associated with reduced alveolar attachment numbers (rho= -0.4 p = 0.049), increased epithelial area (rho = 0.5 p = 0.01), greater luminal narrowing due to epithelial expansion (rho = 0.5 p = 0.04) and increased alveolar septal neutrophils (rho = 0.6 p = 0.005). Compared to age matched controls, COPD small airways had 31% less alveolar attachments per airway (p = 0.02) and significantly more alveoalr septal neutrophils (p = 0.0007). Increased airway wall thickness was a feature of

COPD but was not related to ageing in non-smokers. Alveolar attachment loss, accompanied by alveolar septum neutrophilic inflammation, and increased luminal narrowing due to epithelial expansion are major features of small airway remodelling during ageing. These features can explain the increased small airway narrowing and closure during ageing. Alveolar attachment loss is accelerated in COPD, likely due to increased neutrophilic inflammation.

Keywords: Alveolar attachments; emphysema; epithelium; inflammation; neutrophils.

- **Cited by 4 articles**

Supplementary info

Publication types, MeSH termsExpand

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Cite

18

Meta-Analysis

Pulmonology

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. 2025 Dec 31;31(1):2438553.

doi: 10.1080/25310429.2024.2438553. Epub 2024 Dec 13.

Associations of anxiety and depression with prognosis in chronic obstructive pulmonary disease: A systematic review and meta-analysis

Kefan Wu [1], Lifei Lu [1], Yubiao Chen [1 2], Jieqi Peng [1 2], Xiaohui Wu [1], Gaoying Tang [1], Ting Ma [3], Jing Cheng [1], Pixin Ran [1 2], Yumin Zhou [1 2]

Affiliations Expand

- **PMID: 39671175**

- **DOI: 10.1080/25310429.2024.2438553**

Free article

Abstract

The associations between anxiety, depression, and the prognosis of COPD remain uncertain. The present study aims to investigate the associations of anxiety and depression with 30-day readmission rates and acute exacerbations of COPD (AECOPD). Four databases were searched to identify relevant studies published before 13 March 2024. Studies that report on the impact of anxiety and depression on the prognosis of AECOPD were included. The pooled effect size and its 95% confidence interval (CI) were calculated using a random effects model. The primary outcomes were 30-day readmission and AECOPD within the first year after discharge in COPD patients. Of the 5,955 studies screened, 14 studies were included in the analysis. Patients with anxiety had a higher risk of AECOPD within the first year after discharge compared to those without anxiety (HR: 2.10, 95% CI: 1.28-3.45, *p* = 0.003). Patients with depression also had a higher risk of AECOPD within the first year after discharge (HR: 1.36, 95% CI: 1.10-1.69, *p* = 0.004). Similar results were observed in the associations of anxiety and depression with 30-day readmission. Our results suggested that anxiety and depression were associated with an increased risk of 30-day readmission and AECOPD in patients with COPD.

Keywords: Anxiety; COPD; acute exacerbations; depression; readmission.

19

Review

Pulmonology

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. 2025 Dec 31;31(1):2416808.

doi: 10.1016/j.pulmoe.2024.03.004. Epub 2024 Oct 24.

Issue 3-The occupational burden of respiratory diseases, an update

N Murgia [1], M Akgun [2], P D Blanc [3], J T Costa [4], S Moitra [5], X Muñoz [6], K Toren [7], A J Ferreira [8]

Affiliations Expand

- PMID: 38704309

- DOI: 10.1016/j.pulmoe.2024.03.004

Free article

Abstract

Introduction and aims: Workplace exposures are widely known to cause specific occupational diseases such as silicosis and asbestosis, but they also can contribute substantially to causation of common respiratory diseases. In 2019, the American Thoracic Society (ATS) and the European Respiratory Society (ERS) published a joint statement on the occupational burden of respiratory diseases. Our aim on this narrative review is to summarise the most recent evidence published after the ATS/ERS statement as well as to provide information on traditional occupational lung diseases that can be useful for clinicians and researchers.

Results: Newer publications confirm the findings of the ATS/ERS statement on the role of workplace exposure in contributing to the aetiology of the respiratory diseases considered in this review (asthma, COPD, chronic bronchitis, idiopathic pulmonary fibrosis, hypersensitivity pneumonitis, infectious pneumonia). Except for COPD, chronic bronchitis and infectious pneumonia, the number of publications in the last 5 years for the other diseases is limited. For traditional occupational lung diseases such as silicosis and asbestosis, there are old as well as novel sources of exposure and their burden continues to be relevant, especially in developing countries.

Conclusions: Occupational exposure remains an important risk factor for airways and interstitial lung diseases, causing occupational lung diseases and contributing substantially in the aetiology of common respiratory diseases. This information is critical for public health professionals formulating effective preventive strategies but also for clinicians in patient care. Effective action requires shared knowledge among clinicians, researchers, public health professionals, and policy makers.

Keywords: Airways; Lung; Occupational; Respiratory diseases; Work.

Cite

20

Multicenter Study

Pulmonology

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. 2025 Dec 31;31(1):2416815.

doi: 10.1016/j.pulmoe.2024.03.005. Epub 2024 Oct 24.

Association between lung function and dyspnoea and its variation in the multinational Burden of Obstructive Lung Disease (BOLD) study

A Müller [1 2], E F Wouters [1 3 4], P Koul [5], T Welte [6], I Harrabi [7], A Rashid [8], L C Loh [9], M Al Ghobain [10], A Elsony [11], R Ahmed [11], J Potts [12], K Mortimer [13 14], F Rodrigues [15 16], S N Paraguas [17], S Juvekar [18], D Agarwal [18], D Obaseki [19 20], T Gislason [21 22], T Seemungal [23], A A Nafees [24], C Jenkins [25], H B Dias [26], F M E Franssen [4 27], M Studnicka [28], C Janson [29], H H Cherkaski [30], M El Biaze [31], P A Mahesh [32], J Cardoso [33 34], P Burney [12], S Hartl [1 3], D J A Janssen [2 27], A F S Amaral [12 35]

Affiliations Expand

- PMID: 38614859

- DOI: 10.1016/j.pulmoe.2024.03.005

Free article

Abstract

Background: Dyspnoea is a common symptom of respiratory disease. However, data on its prevalence in general populations and its association with lung function are limited and are mainly from high-income countries. The aims of this study were to estimate the prevalence of dyspnoea across several world regions, and to investigate the association of dyspnoea with lung function.

Methods: Dyspnoea was assessed, and lung function measured in 25,806 adult participants of the multinational Burden of Obstructive Lung Disease study. Dyspnoea was defined as ≥2 on the modified Medical Research Council (mMRC) dyspnoea scale. The prevalence of dyspnoea was estimated for each of the study sites and compared across countries and world regions. Multivariable logistic regression was used to assess the association of dyspnoea with lung function in each site. Results were then pooled using random-effects meta-analysis.

Results: The prevalence of dyspnoea varied widely across sites without a clear geographical pattern. The mean prevalence of dyspnoea was 13.7 % (SD=8.2 %), ranging from 0 % in Mysore (India) to 28.8 % in Nampicuan-Talugtug (Philippines). Dyspnoea was strongly associated with both spirometry restriction (FVC<LLN: OR 2.07, 95 %CI 1.75-2.45) and spirometry airflow obstruction (FEV_1/FVC<LLN: OR 3.76, 95 %CI 1.04-4.65). These associations did not significantly differ between sexes, age groups or smoking history. The association of dyspnoea with airflow obstruction was weaker among obese participants (OR 2.20, 95 %CI 1.61-3.01).

Conclusion: The prevalence of dyspnoea varies substantially across the world and is strongly associated with lung function impairment. Using the mMRC scale in epidemiological research should be discussed.

Keywords: Breathlessness; Dyspnoea; Lung function; Spirometry.

- **Cited by 5 articles**

Supplementary info

Publication types, MeSH termsExpand

Full text links

Proceed to details

Cite

21

Meta-Analysis

Pulmonology

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. 2025 Dec 31;31(1):2416813.

doi: 10.1016/j.pulmoe.2023.09.002. Epub 2024 Oct 25.

Association of mild chronic obstructive pulmonary disease with all-cause mortality: A systematic review and meta-analysis

Weifeng Zou [1], Jie Ou [1], Fan Wu [2 3], Huanhuan Fan [4], Yuyan Hou [5], Haiqing Li [2], Zhishan Deng [2], Shuling Liu [1], Jinxing Hu [1], Pixin Ran [2 3]

Affiliations Expand

- **PMID: 38093693**

- DOI: 10.1016/j.pulmoe.2023.09.002

Free article

Abstract

Background: It is unclear whether patients with Global Initiative for Chronic Obstructive Lung Disease stage 1 (mild) chronic obstructive pulmonary disease (COPD) have worse respiratory outcomes than individuals with normal spirometry.

Methods: For this systematic review and meta-analysis, we conducted a search of PubMed, Embase, and Web of Science for all literature published up to 1 March 2023. Studies comparing mortality between mild COPD and normal spirometry were included. A random-effects model was used to estimate the combined effect size and its 95% confidence interval (CI). The primary outcome was all-cause mortality. Respiratory disease-related mortality were examined as secondary outcomes.

Results: Of 5242 titles identified, 12 publications were included. Patients with mild COPD had a higher risk of all-cause mortality than individuals with normal spirometry (pre-bronchodilator: hazard ratio [HR] = 1.21, 95% CI: 1.11-1.32, I^2 = 47.1%; post-bronchodilator: HR = 1.19, 95% CI: 1.02-1.39, I^2 = 0.0%). Funnel plots showed a symmetrical distribution of studies and did not suggest publication bias. In jackknife sensitivity analyses, the increased risk of all-cause mortality remained consistent for mild COPD. When the meta-analysis was repeated and one study was omitted each time, the HR and corresponding 95% CI were >1. Patients with mild COPD also had a higher risk of respiratory disease-related mortality (HR = 1.71, 95% CI: 1.03-2.82, I^2 = 0.0%).

Conclusions: Our results suggest that mild COPD is associated with increased all-cause mortality and respiratory disease-related mortality compared with normal spirometry. Further research is required to determine whether early intervention and treatment are beneficial in mild COPD.

Keywords: All-cause mortality; COPD; GOLD stage I; Meta-analysis; Systematic review; mild.

- Cited by 5 articles

Supplementary info

Publication types, MeSH termsExpand

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

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Review

Indian J Psychol Med

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. 2025 Dec 29:02537176251403605.

doi: 10.1177/02537176251403605. Online ahead of print.

A Systematic Review and Meta-analysis of the Global Prevalence of Depression in Older Adults with Multi-morbidity

Ashish Pundhir [1], Naveen Kh [2], Vijaykumar Harbishettar [3], Jang Bahadur Prasad [4], Preeti Sinha [3], Shaji Ks [5], Shantheri Pai R [3]

Affiliations Expand

- PMID: 41476935

- PMCID: PMC12747875

- DOI: 10.1177/02537176251403605

Abstract

Purpose of the review: Multi-morbidity, the coexistence of two or more chronic illnesses, is also increasing among older adults in the ageing world. The estimated prevalence of depression is 21.14% in persons with multi-morbidity compared to 3.91% in those without any chronic illness. As there was no data particularly for older adults with multi-morbidity, it was decided to conduct a systematic review of rates of depression.

Collection and analysis of data: This PROSPERO-registered study adhered to PRISMA guidelines. Searches for cross-sectional and population-based studies in the previous ten-year period (2014-2023) in databases and search engines, namely PubMed, Ovid MEDLINE, and PsycINFO, were conducted. Results: From an initial pool of 555 papers, 15 moderate-to-high quality studies were included for the systematic review, of which 10 were eligible for meta-analysis. The pooled prevalence of depression was 46.7% (95% CI = 33.8%-57.4%) for six studies with individuals aged 60 years and above and 12.9% (95% CI = 5.7%-51.5%) for four studies focusing on those aged 65 years or above. Due to variations in defining the age cut-off of 60 and 65 years for older adults, separate analyses were performed.

Conclusions: Findings reveal that nearly half of older adults with multi-morbidity experience depression. This highlights the importance of the timely detection of depression in general hospitals and primary care settings.

Keywords: Depression; chronic illness; elderly; geriatric psychiatry; multi-morbidity.

Conflict of interest statement

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

- 29 references
- 4 figures

Supplementary info

Publication typesExpand

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Cite

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Curr Opin Support Palliat Care

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. 2025 Dec 29.

doi: 10.1097/SPC.0000000000000790. Online ahead of print.

Practical aspects of managing multimorbidity in older adults with cancer

Shane O'Hanlon [1,2], Mark Baxter [3,4], Gabor Liposits [5]

Affiliations Expand

- **PMID: 41460166**
- **DOI: 10.1097/SPC.0000000000000790**

Abstract

Purpose of review: Managing multimorbidity in older adults with cancer is a central, complex challenge in modern oncology. Historically, this population was underrepresented in clinical trials, leaving clinicians without practical guidance. This review synthesizes recent evidence that moves beyond simply documenting frailty to deploying targeted, evidence-based interventions to improve supportive and palliative care.

Recent findings: The literature supports a practical 2-step approach to assessment, using screening tools like the Geriatric-8 to trigger a full Comprehensive Geriatric Assessment (CGA) with management, which is proven to reduce treatment toxicity. Goal-aligned deprescribing has emerged as an active clinical skill to manage polypharmacy. In decision-making, the focus has shifted from guideline-concordant to goal-concordant care. Finally, a needs-based paradigm for integrating palliative care is replacing older, prognosis-based models, distinguishing between generalist skills for all clinicians and specialist consultation for complex cases.

Summary: Recent evidence provides clinicians with practical approaches. By using validated screening, CGA-led interventions, systematic deprescribing, and needs-based palliative care, clinical teams can reduce treatment toxicity, lessen medication burden, and align complex cancer care with the personal priorities and quality-of-life goals of older patients.

Keywords: comprehensive geriatric assessment; geriatric oncology; multimorbidity; palliative care; supportive care.

- **43 references**

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

1

Pediatr Rev

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. 2026 Jan 1;47(1):3-14.

doi: 10.1542/pir.2024-006583.

Asthma Uncovered: A Comprehensive Look at Epidemiology, Pathophysiology, and Diagnosis

Stephen K de Waal Malefyt [1], Kate E Powers [2], Chloe Krugel [3], Robert Kaslovsky [2]

Affiliations Expand

- **PMID: 41475388**

- **DOI: 10.1542/pir.2024-006583**

No abstract available

Full text links

2

Review

Am J Physiol Lung Cell Mol Physiol

. 2025 Dec 31.

doi: 10.1152/ajplung.00060.2025. Online ahead of print.

The Role of Estrogen Receptors in Lung Diseases

Carolyn Damilola Ekpruke [1], Patricia Silveyra [1]

Affiliations Expand

- PMID: 41474472

- DOI: 10.1152/ajplung.00060.2025

Abstract

Lung diseases are major global causes of morbidity and mortality, yet the molecular basis of their observed sex differences remains unclear. Beyond their roles in reproductive biology, estrogens are central regulators of pulmonary homeostasis through three principal receptors: estrogen receptor α (ERα), estrogen receptor β (ERβ), and the G-protein-coupled estrogen receptor (GPER1). These receptors are widely expressed across the airway epithelium, smooth muscle, fibroblasts, lung endothelium, and immune cells, where they integrate slow, genomic transcriptional programs and rapid, membrane-initiated signaling cascades to regulate inflammation, oxidative balance, and tissue remodeling. ERβ, often the dominant pulmonary isoform, tends to preserve extracellular matrix integrity and attenuate maladaptive inflammation, whereas ERα frequently amplifies pro-inflammatory transcriptional programs. GPER1 mediates rapid non-genomic responses that modulate vascular tone, airway smooth-muscle reactivity, and innate immune function, and is both an important regulator of allergic inflammation and a modulator of oncogenic signaling. Together, estrogen receptor subtype balance, subcellular localization, and ligand context determine whether estrogenic signaling is protective or pathogenic. Clinically, this framework helps explain life-course and sex differences, such as post-pubertal female predominance of asthma, menstrual

and pregnancy-related exacerbations, and enhanced Chronic Obstructive Pulmonary Disease (COPD) susceptibility in women at lower tobacco exposure. In this review, we synthesize mechanistic and clinical evidence across lung diseases; delineate areas where data remain incomplete or contradictory; and outline opportunities for experimental and translational innovation. These include development of receptor-selective or biased ligands, inhaled or localized delivery, and implementation of sex-aware clinical trial designs to leverage estrogen-receptor biology for precision respiratory therapeutics.

Keywords: Asthma; COPD; Estrogen receptors; Lung cancer; Sex differences.

Supplementary info

Publication typesExpand

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Cite

3

Int Forum Allergy Rhinol

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. 2025 Dec 30.

doi: 10.1002/alr.70091. Online ahead of print.

Asthma Outcomes Following Early Versus Delayed Sinus Surgery in Chronic Rhinosinusitis With Nasal Polyps

Jamie R Oliver [1], Christopher L Crafton [2], Easton W Attwood [1], Nathan Farrokhian [1], Sanjeet Rangarajan [2 3], Jennifer A Villwock [1 2 3]

Affiliations Expand

- PMID: 41467308

- DOI: 10.1002/alr.70091

Abstract

Background: Chronic rhinosinusitis with nasal polyps (CRSwNP) often coexists with asthma. Endoscopic sinus surgery (ESS) improves asthma morbidity, but the impact of early surgery (< 6 months from diagnosis) versus later surgery (1-3 years)

is unclear. We examined whether early ESS is associated with improved asthma outcomes compared with delayed surgery.

Methods: We conducted a retrospective cohort study using the TriNetX Research Network, including adults with CRSwNP who underwent ESS. Patients were grouped as early surgery (≤ 6 months after diagnosis) or late surgery (1-3 years). Outcomes over 5 years included asthma diagnoses by severity, exacerbations, and medication use (long-acting β2-agonists [LABA], corticosteroids, biologics). Propensity score matching was performed 1:1 (N = 3683 per group) based on demographics, baseline asthma severity, and asthma medication usage.

Results: After matching, groups were well balanced. Early ESS was associated with lower risk of moderate (11.5% vs. 13.5%; odds ratio [OR] = 0.84; p = 0.012) and severe persistent asthma (6.5% vs. 8.4%; OR = 0.76; p = 0.003). Rates of mild intermittent or persistent asthma and overall new asthma diagnoses did not differ. Early surgery patients had fewer associated asthma exacerbations (6.4% vs. 8.1%; OR = 0.78; p = 0.005) and were less likely to require LABAs (23.7% vs. 29.4%; OR = 0.75; p < 0.0001), steroids (63.7% vs. 67.4%; OR = 0.85; p = 0.0009), and biologics (7.7% vs. 10.1%; OR = 0.74; p = 0.0004).

Conclusion: Early ESS for CRSwNP is associated with reduced progression to moderate/severe asthma, fewer exacerbations, and lower reliance on oral steroids, LABAs, and biologics. These findings suggest early surgery may alter asthma trajectory and reduce treatment burden in CRSwNP patients.

Keywords: asthma severity; chronic rhinosinusitis with nasal polyps (CRSwNP); endoscopic sinus surgery (ESS); timing of surgery; treatment burden.

- **24 references**

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WILEY Full Text Article UNIMORE

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4

Meta-Analysis

Sci Rep

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. 2025 Dec 29;15(1):44767.

doi: 10.1038/s41598-025-28554-w.

Effects of wearable devices on physical activity monitoring in pulmonary rehabilitation programs for chronic respiratory diseases: a systematic review and meta-analysis

Thaianne Rangel Agra Oliveira [1], Ana Tereza do Nascimento Sales Figueiredo Fernandes [2], Thayla Amorim Santino [2], Fernanda Elizabeth Pereira da Silva Menescal [3], Patrícia Angélica de Miranda Silva Nogueira [4]

Affiliations Expand

- PMID: 41461724
- PMCID: PMC12749230
- DOI: 10.1038/s41598-025-28554-w

Abstract

Wearable devices have been used in pulmonary rehabilitation (PR) programs to monitor and promote physical activity (PA) in patients with chronic respiratory diseases (CRD), such as COPD and asthma. This study aimed to identify the effects of using wearable devices to monitor PA in PR programs for CRD. This systematic review and meta-analysis, registered with the International Prospective Register of Systematic Reviews (PROSPERO) (CRD42024504137), was conducted under the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). The searches took place in five databases and in the grey literature, with no language or year restrictions. Individuals with COPD or asthma, aged 18 and over, were included. The electronic search identified 3940 references, of which nine articles met the eligibility criteria and were included in the review. Wearable devices promoted a significant increase in the number of daily steps (SMD = 0.35; 95% CI: 0.01 to 0.69; p = 0.04). However, there were no consistent effects on outcomes such as quality of life, functional capacity and anxiety. High heterogeneity and methodological limitations were observed in some studies. Wearable devices promise to increase PA in patients with CRD, especially when integrated into multidisciplinary strategies.

Keywords: Asthma; COPD; Physical Activity; Pulmonary Rehabilitation; Sensor-Based Devices; Wearable Technology.

Conflict of interest statement

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

- 48 references
- 2 figures

Supplementary info

Publication types, MeSH termsExpand

Full text links

Proceed to details

Cite

5

NPJ Prim Care Respir Med

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. 2025 Dec 29.

doi: 10.1038/s41533-025-00474-2. Online ahead of print.

Associations of asthma with cardiometabolic diseases and multimorbidity: A cohort study in the UK Biobank

Junjie Lin [#1,2], Yangyang Cheng [#1,2], Yue Zhang [1,2], Mika Kivimäki [3,4], Rodrigo M Carrillo-Larco [5,6], Chenjie Xu [7], Xiaolin Xu [8,9,10]

Affiliations Expand

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Free article

Abstract

Asthma is associated with adverse cardiovascular outcomes, but little is known about its role in the development of cardiometabolic multimorbidity (CMM). We aimed to examine the associations of asthma with both incident and coexisting cardiometabolic diseases (CMDs), characterizing their patterns and transitions to CMM in men and women. This prospective cohort study, based on the UK Biobank, included 51,335 participants with asthma and 395,890 without asthma at baseline in 2006-2010. Participants were followed for the development of CMDs, including type 2 diabetes, coronary heart disease, and stroke, using primary care records, hospital admission and death register data, and self-reported medical information up to December 31, 2022. CMM was defined as the coexistence of two or more CMDs. We used Cox proportional hazards models and multi-state models to assess the associations of asthma with the incidence and transitions to CMDs and CMM among participants free of CMDs. During a median follow-up of 13.8 years, 60,033 participants (13.4%) developed CMD, of whom 7,048 (1.6%) progressed to CMM.

Asthma was associated with increased risks of all incident CMDs and CMM (hazard ratio [HR] = 1.54, 95% confidence interval = 1.44-1.64), as well as CMD counts and CMM patterns (e.g., HR = 1.60 [1.50-1.71] for 2 CMDs, and HR = 1.70 [1.56-1.84] for comorbid type 2 diabetes and coronary heart disease). For the transitions from no CMD to first CMD, from first CMD to CMM, and from no CMDs to death, the hazard ratios were 1.29 (1.26-1.33), 1.20 (1.12-1.28), and 1.14 (1.09-1.18), respectively. All these associations were more pronounced in women. In summary, individuals with asthma were at increased risk of developing cardiometabolic diseases and progressing to cardiometabolic multimorbidity. Early prevention and management of asthma, with integration into cardiometabolic risk assessment, may be crucial for mitigating future cardiometabolic multimorbidity.

Conflict of interest statement

Competing interests: The authors declare no competing interests.

- 46 references

Supplementary info

Grants and fundingExpand

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Case Reports

Australas J Dermatol

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Dual Dupilumab and Omalizumab Therapy in Atopic Dermatitis, Chronic Spontaneous Urticaria and Asthma: Real-World Experience From an Eight-Patient Case Series

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Affiliations Expand

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No abstract available

Keywords: atopic dermatitis; chronic spontaneous urticaria; dual biologic; dupilumab; omalizumab.

Supplementary info

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Observational Study

Respir Med

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. 2026 Jan:251:108605.

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Allergic sensitization in asthma and COPD in the NOVELTY study

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Free article

Abstract

Background: Allergic sensitization is a hallmark of asthma, linked to increased disease burden. However, its role in chronic obstructive pulmonary disease (COPD) and asthma + COPD remains less understood.

Objective: This cross-sectional study evaluates the prevalence of allergic sensitization and its associations with disease severity, lung function, exacerbations and health status across these conditions in the multinational observational NOVELTY cohort.

Methods: Allergic sensitization was assessed from specific IgE (sIgE) to11 common aeroallergens. Physician-assessed severity, post-bronchodilator FEV1 % predicted, exacerbation history, and health status were evaluated. Mixed-effects multivariable regression models were used to assess associations, adjusted for age, sex, BMI, smoking history, and geographical region.

Results: Baseline sIgE data were available from n = 5389 participants (asthma:2707; asthma + COPD:773; COPD:1909). Allergic sensitization prevalence was 56 % in asthma, 36 % in asthma + COPD, and 19 % in COPD. In asthma, sensitization to any allergen, mites or molds was associated with more severe disease (odds ratios (OR) 1.46 to 2.91) and lower post-BD FEV_1 % predicted (coefficients -1.88 % to -8.94 %). Conversely, in COPD, sensitization was associated with higher FEV_1 and milder severity. Women were less likely than men to be sensitized across all diagnostic groups. Regional differences were evident, with higher sensitization rates in North America and Europe compared to Asia.

Conclusion: Allergic sensitization shows divergent clinical associations across asthma and COPD, being linked to more severe disease in asthma but higher lung function and milder severity in COPD.

Clinical implication: These findings emphasize the phenotypic heterogeneity of allergic sensitization in airway diseases and support its use in guiding personalized diagnostic and therapeutic strategies.

Keywords: Allergy; Asthma; COPD; IgE; Lung function; Severity.

Conflict of interest statement

Declaration of competing interest The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: The NOVELTY study is funded by AstraZeneca. The sponsor participated in the design of the study, data analysis, and preparation of the manuscript. Disclosure of potential conflicts of interest: C.J. has received personal fees from AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, Novartis, and Teva outside of the submitted work. AM has received lecture and/or advisory board fees from Boehringer Ingelheim and Chiesi outside the submitted study as well as in-kind support in form of nitric oxide sensors from NIOX (a producer of FeNO devices) and reagents for allergy testing and inflammation biomarkers from Thermo Fisher Scientific, both within a frame of investigator-initiated studies, MB is an employee of Thermo Fisher, RN, RH, AM, XMand HM are employees of AstraZeneca. A.P. has received personal fees for consultation or board membership or lecturing for

AstraZeneca, Boehringer Ingelheim, ChiesiFarmaceutici, Edmond Pharma, GSK, Mundipharma, Novartis, Sanofi/Regeneron, Teva, and Zambon. His Institution has received industry-sponsored grants from AstraZeneca, Chiesi Farmaceutici, Boehringer Ingelheim, and GSK. HKR has participated in advisory boards for AstraZeneca, Chiesi, GlaxoSmithKline, Novartis and Sanofi Genzyme; and has received honoraria from AstraZeneca, Boehringer Ingelheim, Chiesi, Cipla, GlaxoSmithKline, Sanofi and Teva Pharmaceuticals for independent medical educational presentations; consulting for Novartis and AstraZeneca; and independent research funding from Astra-Zeneca, GlaxoSmithKline, and Sanofi. She is Chair of the Global Initiative for Asthma Science Committee.

Supplementary info

Publication types, MeSH terms, SubstancesExpand

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Multicenter Study

Respir Med

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. 2026 Jan:251:108587.

doi: 10.1016/j.rmed.2025.108587. Epub 2025 Dec 15.

Evolution and factors associated with presenteeism in severe asthma after treatment with biologics

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Free article

Abstract

Background: Work productivity is impaired in severe asthma; however, its evolution under biologics is poorly known, particularly regarding presenteeism, fact of being present at work while ill.

Objective: To investigate the evolution and factors associated with presenteeism in severe asthma after treatment with biologics.

Methods: We conducted a national, multicentric, uncontrolled cohort study. Patients with severe asthma eligible for a biologic and having a professional activity were included. Patients were assessed at baseline and after six months of treatment. Outcomes (percentages of presenteeism, absenteeism and work productivity loss) were measured using the Work Productivity and Activity Impairment (WPAI):Asthma questionnaire.

Results: A total of 167 patients were included and 122 were analyzed (59.8 % women, mean age at 45.7 years). At inclusion, median presenteeism was at 30 %. Under biologic, we observed a significant decrease in mean presenteeism (-14.9 %, $p < 0.001$) and work productivity loss (-15.4 %, $p < 0.001$) but no difference in absenteeism (-1.8 %, $p = 0.41$). In the multivariate logistic model, high presenteeism (WPAI:Asthma-Q5 ≥4) at inclusion was associated with uncontrolled asthma (ACQ-6 ≥1.5) (OR = 18.9 [2.7; 403]) and hyperventilation symptoms (Nijmegen >17) (OR = 4.6 [1.3; 19.8]). In the multivariate linear regression model, we found an association between presenteeism evolution, ACQ-6 score at inclusion (Beta = 15.9 [8.6; 23.2], per 1-point increase) and ACQ-6 score evolution (Beta = 17.1 [9.9; 24.2], per 1-point increase).

Conclusion: Although limited by the lack of a control group, our results suggest that biologics can reduce presenteeism and work impairment in severe asthma, and that asthma control is the main factor associated with presenteeism.

Keywords: Absenteeism; Asthma burden; Asthma control; Asthma-related costs; WPAI questionnaire; Work impairment.

Conflict of interest statement

Declaration of competing interest J. Subocz declares no conflict of interest. T. Stoup declares no conflict of interest. J. Giovannelli reports personal fees from Boehringer Ingelheim, outside the submitted work. A. Bourdin reports grants from AstraZeneca, Boeringher Ingelheim and GSK, consulting fees from AstraZeneca, GSK, Sanofi, Chiesi, Celltrion, Boeringher Ingelheim and Novartis, honoraria from SanofiRegeneron, AstraZeneca, GSK, Novartis and Boeringher Ingelheim, support for attending meetings from AstraZeneca and Sanofi, participation on a data safety monitoring board or advisory board for AB science. L. Guilleminault reports grants, personal fees and non-financial support from AstraZeneca, personal fees and non-financial support from GSK and personal fees and non-financial support from Novartis, personal fees from Bayer, personal fees from Chiesi, personal fees from

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Supplementary info

Publication types, MeSH terms, SubstancesExpand

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J Allergy Clin Immunol Glob

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doi: 10.1016/j.jacig.2025.100589. eCollection 2026 Jan.

Asthma biologic effectiveness by age and sex in the US CHRONICLE study

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Affiliations Expand

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- PMCID: PMC12663509
- DOI: 10.1016/j.jacig.2025.100589

Abstract

Background: Biologic therapies are effective in reducing asthma exacerbations in patients with severe asthma; however, the impact of age and sex on the real-world effectiveness of these therapies is not well understood.

Objective: Our aim was to examine real-world outcomes before and after biologic initiation among adults with severe asthma, stratified by age and sex.

Methods: CHRONICLE was an observational study of subspecialist-treated US adults with severe asthma. Eligible patients included those receiving maintenance systemic corticosteroids or other systemic immunosuppressants or those patients whose asthma was uncontrolled despite receiving high-dosage inhaled corticosteroids and additional controllers. Asthma exacerbation rates were compared 6 months before and 6 months after biologic initiation in patients stratified by age and sex. To enable a self-controlled analysis, the included patients had no biologic use during the preinitiation period.

Results: Of the 800 patients (549 female and 251 male) who started treatment with a biologic and had complete data for at least 6 months before and 6 months after

initiation, 294 were aged 18 to 49 years, 314 were aged 50 to 64 years, and 192 were aged 65 years or older. Across the different biologic therapies evaluated, the reductions in exacerbation rate ranged from 37% to 63% among patients aged 18 to 49 years, 44% to 52% in patients aged 50 to 64 years, 56% to 63% among patients aged 65 years or older, 34% to 66% in males, and 46% to 62% in females.

Conclusion: Biologic therapies reduce asthma exacerbations in adults with severe asthma, regardless of age or sex. These findings support the use of biologics in diverse patient populations.

Keywords: Severe asthma; age; asthma exacerbation; mAb antibodies; sex.

Conflict of interest statement

The CHRONICLE study and publications are funded by 10.13039/100004325AstraZeneca. Data sharing statement: The data supporting the findings of this study are available from the corresponding author on reasonable request. Individuals who were or were not involved in the CHRONICLE study may submit publication proposals to the study's Publication Steering Committee by contacting the corresponding author. Disclosure of potential conflict of interest: A. P. Baptist reports receiving research support from the American Lung Association, AstraZeneca, Novartis, and Regeneron Pharmaceuticals and serving as a consultant for AstraZeneca, GSK, and Teva. W. Soong reports serving as a consultant for Amgen, AstraZeneca, Genentech, Novartis, Regeneron Pharmaceuticals, Sanofi, and Teva; serving as a speaker for Amgen, AstraZeneca, GSK, Regeneron Pharmaceuticals, and Sanofi; and performing research for Amgen, AstraZeneca, Genentech, GSK, Incyte, Novartis, Regeneron Pharmaceuticals, Sanofi, and Teva. B. E. Chipps reports serving as an advisory board member, consultant, and speaker for AstraZeneca, Boehringer Ingelheim, Genentech, GSK, Novartis, Regeneron Pharmaceuticals, and Sanofi-Genzyme. N. Lugogo reports serving as an advisory board member and consultant for Amgen, AstraZeneca, Genentech, GSK, Novartis, Regeneron Pharmaceuticals, Sanofi, and Teva; receiving fees for non-speakers bureau presentations from AstraZeneca, GSK, and NIOX; receiving travel support from AstraZeneca; and receiving grant support from Amgen, AstraZeneca, Avillion Life Sciences, Gossamer Bio, Genentech, GSK, Regeneron Pharmaceuticals, Sanofi, and Teva. J. Trevor reports serving as a consultant and advisory board member from AstraZeneca. D. D. Carstens, M. Pelletier, and C. S. Ambrose report being employees and shareholders of AstraZeneca.

- 22 references
- 2 figures

J Allergy Clin Immunol Glob

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Sublingual immunotherapy in children with asthma: A population-based register study

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Affiliations Expand

- PMID: 41189669
- PMCID: PMC12581690
- DOI: 10.1016/j.jacig.2025.100574

Abstract

Background: Daily sublingual immunotherapy (SLIT) for 3 years reduces symptoms of allergic disease and induces tolerance. Real-life data from children with asthma receiving SLIT are scarce.

Objective: We used population-based data to describe characteristics, SLIT duration, and changes in morbidity in children with asthma prescribed SLIT.

Methods: The study included children (5-17 years) with asthma who were prescribed SLIT, and who were registered in the Swedish National Airway Register (SNAR) before SLIT initiation (N = 1,514), of whom 782 had post-SLIT recordings in the SNAR. Age, sex, Asthma Control Test score (≤19 denotes uncontrolled asthma), spirometry data, number of SLIT tablets dispensed, and socioeconomic background were extracted from the SNAR and other national registers. SLIT duration was classified as <4, ≥4, >12, or >24 months.

Results: SLIT was more common in boys (69%) and adolescents (71%). Most children had parents with higher education (70%), and 25% had uncontrolled asthma. SLIT duration of ≥4, >12, and >24 months was identified in 86%, 50%, and 30%, respectively. Parents with higher education were associated with SLIT duration of ≥4 months (odds ratio = 3.69; 95% confidence interval 2.75-4.96). SLIT duration of >12 months was associated with lower risk of post-SLIT uncontrolled asthma (adjusted odds ratio = 0.49; 95% confidence interval, 0.25-0.99). No

associations were found between SLIT duration of ≥4, >12, or >24 months and changes in spirometry.

Conclusion: Longer SLIT duration was associated with higher education in parents and lower risk of uncontrolled asthma. Measures to improve persistence in SLIT in children with asthma may have important clinical implications.

Keywords: Allergen-specific immunotherapy; asthma; asthma control; children; epidemiology; socioeconomic status; spirometry; sublingual immunotherapy.

Conflict of interest statement

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- **37 references**
- **1 figure**

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Review

Regul Toxicol Pharmacol

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. 2026 Jan:164:105962.

doi: 10.1016/j.yrtph.2025.105962. Epub 2025 Oct 13.

Occupational asthma: dust exposure as a contributory factor and implications for classification of respiratory sensitisers

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Affiliations Expand

- PMID: 41093094

- DOI: 10.1016/j.yrtph.2025.105962

Free article

Abstract

Occupational asthma (AO) is an important chronic respiratory disease associated with airway narrowing. Chemicals that cause OA are regulated under the UN GHS endpoint of respiratory sensitisation. Such chemicals are typically identified using evidence suggesting work-related exposure resulting in the ab initio development of asthma, rather than simply aggravating pre-existing asthma (work exacerbated asthma; WEA). There exist predisposing and aggravating factors within and outside the workplace that influence the development and severity of the disease. Inhalation exposure to dusts is one factor and is recognised as directly causing respiratory disease, and also aggravating pre-existing disease, including asthma. Here the contribution of dusts to the development of work-related asthma has been re-examined with reference to published clinical case studies. The data reveal a link between exposure to dusts and OA, suggesting an additional role of dust in this respect may be the presentation of irritant or sensitising agents in a way that promotes the development of OA, even under conditions where exposure to those agents alone does not. We propose that the significance of co-exposure to dusts may be currently under-estimated in health management of OA, clinical identification of chemicals suspected of causing OA, and classification of true respiratory sensitisers.

Keywords: Dust; Occupational asthma; Respiratory irritation; Sensitisation of the respiratory tract.

Conflict of interest statement

Declaration of competing interest The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:Mark A Pemberton reports financial support was provided by Methacrylate Producers Association Inc. Ian Kimber reports financial support was provided by Methacrylate Producers Association Inc. Mark A Pemberton reports a relationship with Methacrylate Producers Association Inc that includes: consulting or advisory. Ian Kimber reports a relationship with Methacrylate Producers Association Inc that includes: consulting or advisory. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Supplementary info

Publication types, MeSH terms, SubstancesExpand

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Clinical Trial

Ann Allergy Asthma Immunol

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. 2026 Jan;136(1):61-65.e1.

doi: 10.1016/j.anai.2025.09.015. Epub 2025 Oct 8.

Effect of tezepelumab on asthma exacerbations co-occurring with infection-attributed acute respiratory illnesses

Wojciech Feleszko [1], Marco Caminati [2], James E Gern [3], Sebastian L Johnston [4], Claudio Marchese [5], Deborah Clarke [6], Christopher S Ambrose [7], Andrew W Lindsley [8]

Affiliations Expand

- PMID: 41072729

- DOI: 10.1016/j.anai.2025.09.015

Free article

Abstract

Background: Tezepelumab, a human monoclonal antibody, blocks the activity of thymic stromal lymphopoietin. In the phase 2b PATHWAY (NCT02054130) and phase 3 NAVIGATOR (NCT03347279) studies, tezepelumab reduced exacerbations and improved lung function, asthma control, and health-related quality of life vs placebo in patients with severe, uncontrolled asthma.

Objective: To evaluate the incidence of asthma exacerbations co-occurring with documented acute respiratory illnesses attributed to infections.

Methods: Patients were randomized 1:1 to receive tezepelumab 210 mg subcutaneously or placebo every 4 weeks for 52 weeks. The incidence of asthma exacerbations co-occurring with respiratory illness-related adverse events (AEs) was assessed. Co-occurrence was defined as at least 1 day of overlap between a respiratory illness-related AE and the asthma exacerbation period beginning 7 days before the start of the exacerbation until the end of the asthma exacerbation.

Results: Of the 1334 patients (tezepelumab, n = 665; placebo, n = 669) included, 312 experienced at least 1 asthma exacerbation co-occurring with a respiratory illness-related AE attributed to an infection. The incidence of asthma exacerbation co-occurring with a respiratory illness-related AE was lower in the tezepelumab group than in the placebo group overall (18.2% vs 28.6%; exposure-adjusted incidence difference [EAID], -11.1 [95% CI: -15.75, -6.41]) and among patients with perennial allergy (EAID, -11.6 [95% CI: -17.44, -5.69]) and without perennial allergy (EAID, -10.2 [95% CI: -18.16, -2.10]).

Conclusion: Tezepelumab reduced asthma exacerbations attributed to respiratory infections in patients with severe, uncontrolled asthma compared with placebo, irrespective of perennial allergy status.

Trial registration: This is a pooled analysis of 2 studies registered at Clinicaltrials.gov: PATHWAY (NCT02054130) and NAVIGATOR (NCT03347279).

Conflict of interest statement

Disclosures Dr Feleszko has received speaker fees from AstraZeneca. Dr Caminati has received fees from AstraZeneca for serving on advisory boards and has received speaker fees from GSK and Sanofi. Dr Gern has received consulting fees from AstraZeneca, Arrowhead Pharmaceuticals, and Meissa Vaccines; and owns stock options in Meissa Vaccines. Dr Johnston has received fees from AstraZeneca and GSK for serving on advisory boards and has received grant income from GSK. Mr Marchese, Dr Clarke, and Dr Ambrose are employees of AstraZeneca and may hold stock or stock options in AstraZeneca. Dr Lindsley is an employee of Amgen and owns stock in Amgen.

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. 2025 Dec 31;31(1):2571016.

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Severe acute asthma exacerbations under biological agents: A new therapeutic paradigm?

Diogo Antunes [1], Rita Oliveira [2], Marisa Paulino [1], Fernanda Paula Santos [2], Filipe Froes [2]

Affiliations Expand

- PMID: 41063683

- DOI: 10.1080/25310429.2025.2571016

Free article

No abstract available

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Comparative Study

Ann Allergy Asthma Immunol

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Comparative effectiveness of fixed-dose inhaled corticosteroid/long-acting beta-agonist therapy in adult patients with asthma

Te-Jung Kung [1], Ching-Fu Weng [2], Shan-Chieh Wu [3], Fang-Ju Lin [4]

Affiliations Expand

- PMID: 41033437

- DOI: 10.1016/j.anai.2025.09.019

Abstract

Background: Inhaled corticosteroid (ICS)/long-acting beta-agonist (LABA) therapy is a mainstay of asthma management, yet real-world comparative evidence across different formulations remains limited.

Objective: To compare the effectiveness of prescribed fixed-dose ICS/LABA combinations in reducing moderate-to-severe asthma exacerbations (MSAEs) among adults, stratified by initial ICS dose.

Methods: This retrospective cohort study used data from Taiwan's National Health Insurance Research Database and Cause of Death Registry (2016-2021). Adults with asthma who initiated fixed-dose ICS/LABA therapy between 2017 and 2020 were included. Treatment groups comprised budesonide/formoterol (reference), extrafine beclometasone dipropionate/formoterol, fluticasone propionate/salmeterol, and fluticasone furoate/vilanterol. Patients were stratified by initial ICS dosage into low-dose and medium-to-high-dose cohorts. Risk of MSAE was assessed using Cox proportional hazards model with inverse probability of treatment weighting for covariate adjustment.

Results: Among 128,426 eligible patients, 35,532 were in the low-dose and 88,954 in the medium-to-high-dose cohort. In the low-dose cohort, extrafine beclometasone dipropionate/formoterol (hazard ratio [HR]: 0.97, 95% CI: 0.88-1.09) and fluticasone propionate/salmeterol (HR: 1.16, 95% CI: 0.98-1.37) had a similar risk of MSAE compared with budesonide/formoterol. In the medium-to-high-dose cohort, fluticasone furoate/vilanterol was associated with a slightly lower MSAE risk compared with budesonide/formoterol (HR: 0.92, 95% CI: 0.86-0.97), particularly in those with prior exacerbations (HR: 0.84, 95% CI: 0.77-0.91). Extrafine beclometasone dipropionate/formoterol (HR: 0.96, 95% CI: 0.89-1.04) and fluticasone propionate/salmeterol (HR: 1.06, 95% CI: 0.98-1.15) had no significant difference.

Conclusion: The findings suggest that fluticasone furoate/vilanterol may offer a potential advantage for asthma management compared with other fixed-dose ICS/LABA combinations.

Conflict of interest statement

Disclosures The authors have no conflicts of interest to report.

Supplementary info

Publication types, MeSH terms, SubstancesExpand

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Cite

15

J Occup Environ Med

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. 2026 Jan 1;68(1):e109.

doi: 10.1097/JOM.0000000000003557. Epub 2025 Sep 26.

Letter to the Editor California response to "Work-Related Asthma Mortality, Michigan 2003-2023"

Jennifer Flattery, Eleana Martysh, Carolina Espineli, Kristin J Cummings, Robert J Harrison

- PMID: 40999571

- DOI: 10.1097/JOM.0000000000003557

No abstract available

Conflict of interest statement

Conflicts of Interest: None declared.

- 3 references

Full text links

doi: 10.1097/JOM.0000000000003556. Epub 2025 Sep 26.

More on Work-Related Asthma

Kenneth D Rosenman [1], Mary Jo Reilly

Affiliations Expand

- PMID: 40999569

- DOI: 10.1097/JOM.0000000000003556

No abstract available

Conflict of interest statement

Conflict of Interest: None for either author.

- 5 references

Full text links

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Cite

17

Pulmonology

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. 2025 Dec 31;31(1):2532980.

doi: 10.1080/25310429.2025.2532980. Epub 2025 Jul 28.

Daily digital biomarkers in the follow-up and clustering of patients with asthma

Bernardo Sousa-Pinto [1 2], Florence Schleich [3 4], Gilles Louis [4 5], Bilun Gemicioglu [6 7], Violeta Kvedarienė [8 9], Frederico S Regateiro [10 11 12], Claudia Chaves Loureiro [11 13], Luis Taborda-Barata [14 15], Rita Amaral [1 2], Josep M Antó [16 17 18], Anna Bedbrook [19], Wienczyslawa Czarlewski [19 20], Ignacio J Ansotegui [21], Karl-C Bergmann [22 23], Matteo Bonini [24 25], Apostolos Bossios [26 27], Louis-Philippe Boulet [28], Fulvio Braido [29 30], Christopher Brightling [31], Guy Brusselle [32], Luisa Brussino [33 34], G Walter Canonica [35 36], Alvaro A Cruz [37], Tari Haahtela [38], Liam G Heaney [39], Michael Hyland [40], Juan Carlos Ivancevich [41], Ludger Klimek [42 43], Marek Kulus [44], Piotr Kuna [45], Maciej Kupczyk [45], Desiree E Larenas-Linnemann [46], Michael Makris [47], Manuel Marques-Cruz [1 2], Sara Gil-Mata [1 2], Mário Morais-Almeida [48], Marek Niedoszytko [49], Markus Ollert [50 51], Nikolaos G Papadopoulos [52], Vincenzo

Patella [53 54 55], Oliver Pfaar [56], Celeste Porsbjerg [57], Francesca Puggioni [36], Santiago Quirce [13], Carlos Robalo Cordeiro [58], Nicolas Roche [59 60 61], Boleslaw Samolinski [62], Joaquin Sastre [63], Nicola Scichilone [64], Sabina Skrgat [65 66], Sanna Toppila-Salmi [67 68], Omar S Usmani [25 69], Arunas Valiulis [70 71], Brigita Gradauskiene [72], Ilgim Vardaloğlu Koyuncu [6], Maria Teresa Ventura [73 74], Rafael José Vieira [1 2], Arzu Yorgancioglu [75], João A Fonseca [1 2], Torsten Zuberbier [22 23], Benoit Pétré [5], Renaud Louis [4 5], Jean Bousquet [19 22 23]

Affiliations Expand

- PMID: 40718903

- DOI: 10.1080/25310429.2025.2532980

Free article

Abstract

Background and research question: We aimed to assess whether levels of digital biomarkers can reflect monthly patterns of asthma control.

Study design and methods: We performed a longitudinal study on patients with asthma and comorbid rhinitis who filled ≥26 days of data in a month in the MASK-air® app and who reported at least 1 day of treatment with an inhaled corticosteroid with or without a long-acting β_2-agonist (ICS ± LABA). We applied k-means cluster analysis to define clusters of months according to daily asthma control and medication use. Clusters were compared using digital biomarkers (visual analogue scale [VAS] on asthma symptoms and electronic daily asthma control score [e-DASTHMA]). We compared patients who did not switch with patients who switched their ICS ± LABA.

Results: We assessed 243 patients and 1358 months. We identified three clusters of poor asthma control despite high ICS ± LABA adherence, one cluster of poor asthma control and poor ICS ± LABA adherence, one cluster of good asthma control and high ICS ± LABA adherence and one cluster of good asthma control despite poor ICS ± LABA adherence. These clusters displayed relevant differences in VAS asthma and e-DASTHMA levels. Similar clusters were found in 'non-switchers' *versus* 'switchers'.

Conclusion: Levels of digital biomarkers reflect asthma control patterns and might be used to monitor patients with asthma.

Keywords: Asthma; PROMs; electronic symptom-medication score; inhaled corticosteroids; mHealth.

Supplementary info

MeSH terms, SubstancesExpand

Full text links

18

Randomized Controlled Trial

Ann Allergy Asthma Immunol

. 2026 Jan;136(1):54-60.e3.

doi: 10.1016/j.anai.2025.07.008. Epub 2025 Jul 13.

Albuterol-budesonide rescue inhaler for asthma: Patterns of use and safety in the MANDALA trial

Bradley E Chipps [1], Reynold A Panettieri Jr [2], Neil Skolnik [3], Christy Cappelletti [4], Sami Z Daoud [5], Lynn Dunsire [4], Ileen A Gilbert [6], Alberto Papi [7]

Affiliations Expand

- PMID: 40664332

- DOI: 10.1016/j.anai.2025.07.008

Free article

Abstract

Background: The MANDALA study (NCT03769090) in moderate-to-severe asthma served as the basis of the Food and Drug Administration's 2023 approval of albuterol-budesonide 180/160 µg pressurized metered-dose inhaler for the as-needed treatment or prevention of bronchoconstriction and to reduce exacerbation risk in patients with asthma aged 18 years or older. Clinicians would benefit from an understanding of the patterns of use of albuterol-budesonide vs albuterol and overall inhaled corticosteroid (ICS) exposure when ICS-containing rescue therapies are used alongside ICS-based maintenance therapies.

Objective: To evaluate patterns of as-needed use and safety profiles of albuterol-budesonide 180/160 µg vs albuterol 180 µg, using data from MANDALA.

Methods: Study medication use was patient-documented using an electronic diary. Safety was assessed as adverse events. Patterns of study medication use (2 inhalations = 1 dose) were summarized as mean percentages of days in which inhalations per day fell within predefined categories (0, 1-2, 3-4, 5-6, 7-8, 9-10, 11-12, and >12).

Results: The safety population included 981 patients randomized to as-needed albuterol-budesonide and 981 to as-needed albuterol. Patients adhered to maintenance therapy regimens on a mean of more than or equal to 75% of days. Use of as-needed study drug was similar in both groups (mean of 2.6 and 2.8 inhalations/d of albuterol-budesonide and albuterol, respectively). High daily use (≥8 inhalations/d) or long-term high daily use (≥7 consecutive days) was rare. Adverse event frequencies (ICS-associated and not) were low and comparable between groups, regardless of mean daily as-needed use.

Conclusion: Patterns of use and safety profiles were similar between as-needed albuterol-budesonide and albuterol.

Trial registration: ClinicalTrials.gov Identifier: NCT03769090.

Conflict of interest statement

Disclosures Dr Chipps is an advisor for, has received consultancy fees from, and is on the speakers' bureau for AstraZeneca, Boehringer Ingelheim, Genentech, GlaxoSmithKline, Novartis, Regeneron, and Sanofi Genzyme. Dr Panettieri Jr reports receiving grants and advisory board support from AstraZeneca, Sanofi, Genentech, Medimmune, Origa Pharma, Amgen, Research Institute for Fragrance Material, National Institutes of Health, Regeneron, and Novartis. Dr Skolnik served on advisory boards and as consultant for AstraZeneca, Teva, Lilly, Boehringer Ingelheim, Sanofi, Sanofi Pasteur, GlaxoSmithKline, Bayer, Genentech, Abbott, Idorsia, Merck, and Novartis; is a speaker for AstraZeneca, Boehringer Ingelheim, Lilly, GlaxoSmithKline, Bayer, and Heartland; and has received research support from Sanofi, AstraZeneca, GlaxoSmithKline, Bayer, and Novo Nordisk. Dr Cappelletti is a former employee of, and holds stock in, AstraZeneca. Dr Daoud, Ms Dunsire, and Dr Gilbert are employees of, and hold stock in, AstraZeneca. Professor Papi reports receiving grants from Chiesi, AstraZeneca, GlaxoSmithKline, Boehringer Ingelheim, TEVA, and Sanofi and consulting fees and honoraria for lectures or advisory boards from Chiesi, AstraZeneca, GlaxoSmithKline, Boehringer Ingelheim, Novartis, Sanofi, IQVIA, Avillion, Elpen Pharmaceuticals, Menarini, Zambon, and Mundipharma.

Pulmonology

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. 2025 Dec 31;31(1):2451456.

doi: 10.1080/25310429.2025.2451456. Epub 2025 Jan 27.

Respiratory syncytial virus vaccination in older adults and patients with chronic disorders: A position paper from the Portuguese Society of Pulmonology, the Portuguese Association of General and Family Medicine, the Portuguese Society of Cardiology, the Portuguese Society of Infectious Diseases and Clinical Microbiology, the Portuguese Society of Endocrinology, Diabetes and Metabolism, and the Portuguese Society of Internal Medicine

Tiago Alfaro [1 2], Filipe Froes [1 3], Cláudia Vicente [4], Rui Costa [4 5], Cristina Gavina [6 7 8], Rui Baptista [6 9 10 11 12], António Maio [13 14 15], Saraiva da Cunha [13], João Sérgio Neves [16 17 18], Pedro Leuschner [19 20 21], Sofia Duque [19 22 23], Paula Pinto [1 24 25]

Affiliations Expand

- **PMID: 39869458**

- **DOI: 10.1080/25310429.2025.2451456**

Free article

Abstract

Background: Respiratory syncytial virus (RSV) is an important cause of lower respiratory tract infection, hospitalisation and death in adults.

Methods: Based on evidence regarding the impact of RSV on adult populations at risk for severe infection and the efficacy and safety of RSV vaccines, the Portuguese Society of Pulmonology, the Portuguese Association of General and Family Medicine, the Portuguese Society of Cardiology, the Portuguese Society of Infectious Diseases and Clinical Microbiology, the Portuguese Society of Endocrinology, Diabetes and Metabolism, and the Portuguese Society of Internal Medicine endorses this position paper with recommendations to prevent RSV-associated disease and its complications in adults through vaccination.

Conclusion: The RSV vaccine is recommended for people aged ≥50 years with risk factors (chronic obstructive pulmonary disease, asthma, heart failure, coronary artery disease, diabetes, chronic kidney disease, chronic liver disease, immunocompromise, frailty, dementia, and residence in a nursing home) and all persons aged ≥60 years. If it cannot be made available to this population, then the vaccine should be prioritised for individuals aged ≥75 years and those aged ≥50 years with risk factors. The vaccine should preferably be given between September and November and can be co-administered with the influenza vaccine. Ongoing

studies on RSV vaccines may justify extending these recommendations in the future.

Keywords: Respiratory syncytial virus; chronic conditions; older people; recommendations; vaccination.

- Cited by 2 articles

Supplementary info

Publication types, MeSH terms, SubstancesExpand

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Cite

20

Pulmonology

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. 2025 Dec 31;31(1):2416869.

doi: 10.1016/j.pulmoe.2023.07.004. Epub 2024 Oct 25.

Adherence to inhaled corticosteroids and long-acting β2-agonists in asthma: A MASK-air study

B Sousa-Pinto [1,2], R Louis [3,4], J M Anto [5,6,7], R Amaral [1,2], A Sá-Sousa [1,2], W Czarlewski [8,9], L Brussino [10,11], G W Canonica [12,13], C Chaves Loureiro [14], A A Cruz [15], B Gemicioglu [16], T Haahtela [17], M Kupczyk [18], V Kvedariene [19,20], D E Larenas-Linnemann [21], Y Okamoto [22,23], M Ollert [24,25], O Pfaar [26], N Pham-Thi [27,28,29], F Puggioni [30], F S Regateiro [31,32,33], J Romantowski [34], J Sastre [35], N Scichilone [36], L Taborda-Barata [37,38], M T Ventura [39,40], I Agache [41], A Bedbrook [9,42], S Becker [43], K C Bergmann [44,45], S Bosnic-Anticevich [46,47], M Bonini [48,49,50], L-P Boulet [51], G Brusselle [52], R Buhl [53], L Cecchi [54], D Charpin [55], F de Blay [56,57], S Del Giacco [58], J C Ivancevich [59], M Jutel [60,61], L Klimek [62,63], H Kraxner [64], P Kuna [18], D Laune [65], M Makela [17], M Morais-Almeida [66], R Nadif [67,68], M Niedoszytko [69], N G Papadopoulos [70], A Papi [71], V Patella [72,73,74], B Pétré [75], D Rivero Yeverino [76], C Robalo Cordeiro [14], N Roche [77,78], P W Rouadi [79,80], B Samolinski [81], M Savouré [67,68], M H Shamji [50,82], A Sheikh [83], C Suppli Ulrik [84,85], O S Usmani [50,86], A Valiulis [87,88], A Yorgancioglu [89], T Zuberbier [44,45], J A Fonseca [1,2], E M Costa [90], J Bousquet [44,45,68,91]

Affiliations Expand

- **PMID: 37543524**

- DOI: 10.1016/j.pulmoe.2023.07.004

Free article

Abstract

Introduction: Adherence to controller medication is a major problem in asthma management, being difficult to assess and tackle. mHealth apps can be used to assess adherence. We aimed to assess the adherence to inhaled corticosteroids+long-acting β2-agonists (ICS+LABA) in users of the MASK-air® app, comparing the adherence to ICS+formoterol (ICS+F) with that to ICS+other LABA.

Materials and methods: We analysed complete weeks of MASK-air® data (2015-2022; 27 countries) from patients with self-reported asthma and ICS+LABA use. We compared patients reporting ICS+F versus ICS+other LABA on adherence levels, symptoms and symptom-medication scores. We built regression models to assess whether adherence to ICS+LABA was associated with asthma control or short-acting beta-agonist (SABA) use. Sensitivity analyses were performed considering the weeks with no more than one missing day.

Results: In 2598 ICS+LABA users, 621 (23.9%) reported 4824 complete weeks and 866 (33.3%) reported weeks with at most one missing day. Higher adherence (use of medication ≥80% of weekly days) was observed for ICS+other LABA (75.1%) when compared to ICS+F (59.3%), despite both groups displaying similar asthma control and work productivity. The ICS+other LABA group was associated with more days of SABA use than the ICS+F group (median=71.4% versus 57.1% days). Each additional weekly day of ICS+F use was associated with a 4.1% less risk in weekly SABA use (95%CI=-6.5;-1.6%;*p*=0.001). For ICS+other LABA, the percentage was 8.2 (95%CI=-11.6;-5.0%;*p*<0.001).

Conclusions: In asthma patients adherent to the MASK-air app, adherence to ICS+LABA was high. ICS+F users reported lower adherence but also a lower SABA use and a similar level of control.

Keywords: Adherence; Asthma; Formoterol; Inhaled corticosteroids; Long-acting-β2 agonist.

- Cited by 9 articles

Supplementary info

MeSH terms, SubstancesExpand

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Pulmonology

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. 2025 Dec 31;31(1):2416870.

doi: 10.1016/j.pulmoe.2023.05.002. Epub 2024 Oct 25.

Alpha-1 antitrypsin deficiency and *Pi*S* and *Pi*Z SERPINA1* variants are associated with asthma exacerbations

Elena Martín-González [1], José M Hernández-Pérez [2 3], José A Pérez Pérez [1 4], Javier Pérez-García [1], Esther Herrera-Luis [1], Ruperto González-Pérez [5 6], Orelvis González-González [7], Elena Mederos-Luis [5], Inmaculada Sánchez-Machín [5], Paloma Poza-Guedes [5 6], Olaia Sardón [8 9], Paula Corcuera [8], María J Cruz [10 11], Francisco J González-Barcala [12], Carlos Martínez-Rivera [11 13], Joaquim Mullol [11 14], Xavier Muñoz [10 11], José M Olaguibel [11 15], Vicente Plaza [11 16], Santiago Quirce [11 17], Antonio Valero [11 18], Joaquín Sastre [11 19], Javier Korta-Murua [8], Victoria Del Pozo [11 20], Fabián Lorenzo-Díaz [1 4], Jesús Villar [11 21], María Pino-Yanes [1 11 22], Mario A González-Carracedo [1 4]

Affiliations Expand

- **PMID: 37236906**

- **DOI: 10.1016/j.pulmoe.2023.05.002**

Free article

Abstract

Introduction and objectives: Asthma is a chronic inflammatory disease of the airways. Asthma patients may experience potentially life-threatening episodic flare-ups, known as exacerbations, which may significantly contribute to the asthma burden. The *Pi*S* and *Pi*Z* variants of the *SERPINA1* gene, which usually involve alpha-1 antitrypsin (AAT) deficiency, had previously been associated with asthma. The link between AAT deficiency and asthma might be represented by the elastase/antielastase imbalance. However, their role in asthma exacerbations remains unknown. Our objective was to assess whether *SERPINA1* genetic variants and reduced AAT protein levels are associated with asthma exacerbations.

Materials and methods: In the discovery analysis, *SERPINA1 Pi*S* and *Pi*Z* variants and serum AAT levels were analyzed in 369 subjects from La Palma (Canary Islands, Spain). As replication, genomic data from two studies focused on 525 Spaniards and publicly available data from UK Biobank, FinnGen, and GWAS Catalog (*Open Targets Genetics*) were analyzed. The associations between *SERPINA1 Pi*S* and *Pi*Z* variants and AAT deficiency with asthma exacerbations were analyzed with logistic regression models, including age, sex, and genotype principal components as covariates.

Results: In the discovery, a significant association with asthma exacerbations was found for both *Pi*S* (odds ratio [OR]=2.38, 95% confidence interval [CI]= 1.40-4.04, *p*-value=0.001) and *Pi*Z* (OR=3.49, 95%CI=1.55-7.85, *p*-value=0.003)Likewise, AAT deficiency was associated with a higher risk for asthma exacerbations (OR=5.18, 95%CI=1.58-16.92, *p*-value=0.007) as well as AAT protein levels (OR= 0.72, 95%CI=0.57-0.91, *p*-value=0.005). The *Pi*Z* association with exacerbations was replicated in samples from Spaniards with two generations of Canary Islander origin (OR=3.79, *p*-value=0.028), and a significant association with asthma hospitalizations was found in the Finnish population (OR=1.12, *p*-value=0.007).

Conclusions: AAT deficiency could be a potential therapeutic target for asthma exacerbations in specific populations.

Keywords: Alpha-1 antitrypsin; Alpha-1 antitrypsin deficiency; Asthma; Exacerbations; SERPINA1.

- **Cited by 9 articles**

Supplementary info

MeSH terms, SubstancesExpand

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

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Review

Expert Opin Investig Drugs
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. 2025 Dec 31:0.
doi: 10.1080/13543784.2025.2612328. Online ahead of print.
The Latest Investigational Drugs for Patients with Allergic Rhinitis
Dandan Fang [1 2], Yuan Zhang [1 2 3 4], Luo Zhang [1 2 3]
Affiliations Expand
- **PMID: 41474293**
- **DOI: 10.1080/13543784.2025.2612328**
Abstract
Introduction: Allergic rhinitis (AR) is a prevalent IgE-mediated inflammatory disease with significant global health and economic burdens. Common treatments include pharmacotherapy and allergen-specific immunotherapy (AIT), but challenges remain in managing some of the moderate-to-severe patients, driving development on targeted biologics.
Areas covered: This review covers recent advances in AR management, including optimized pharmacotherapy, biologics targeting type 2 inflammation and innovations in AIT.
Expert opinion: The management towards AR should fully consider the phenotypic and endotypic characteristics of the patients and develop stepwise, comprehensive, and personalized care pathways that combine pharmacotherapy, AIT, and biologics.

Further studies are needed to validate long-term efficacy and safety and optimize precision medicine approaches.

Keywords: Allergen specific immunotherapy; Allergic rhinitis; Biologics; Combined pharmacotherapy; Type 2 inflammation.

Supplementary info

Publication typesExpand

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Otolaryngol Head Neck Surg
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. 2025 Dec 31.
doi: 10.1002/ohn.70099. Online ahead of print.

Predictive Value of Ipratropium Responsiveness on Posterior Nasal Nerve Neurectomy Outcomes in Chronic Rhinitis

Sainiteesh Maddineni [1], Peter H Hwang [1], Noel F Ayoub [1], Zara M Patel [1], Jayakar V Nayak [1], Michael T Chang [1]

Affiliations Expand

- PMID: 41474181
- DOI: 10.1002/ohn.70099

Abstract

Objective: Procedures targeting the posterior nasal nerve (PNN) are effective in treating chronic rhinitis after failed medical therapy. We evaluate how ipratropium response predicts PNN intervention outcomes.

Study design: Retrospective review from January 2013 to June 2025.

Study setting: Tertiary academic center.

Methods: We reviewed patients with chronic rhinitis who trialed ipratropium nasal spray and received PNN surgical neurectomy or in-office ablation (cryotherapy or radiofrequency ablation). Ipratropium responsiveness was self-reported. Outcomes were assessed with the SNOT-22 questionnaire, focusing on rhinologic components.

Results: 81 patients (43 male, 38 female; mean age 57.9 years) were included, of whom 44 (54.3%) reported response to ipratropium. SNOT-22 rhinologic subdomain scores improved significantly following both in-office PNN ablation (17.7 ± 5.8-14.5 ± 7.1, P = .04) and surgical neurectomy (19.1 ± 6.7-15.8 ± 7.3, P = .02). After PNN surgical neurectomy, ipratropium responders demonstrated significant improvement in postnasal drip (P = .03), nonresponders in rhinorrhea (P = .04), and both had similar rates of clinically meaningful improvement (MCID) in the SNOT-22 rhinologic subdomain (45.2% vs 50.0%, P = .73). In contrast, for in-office PNN ablation, ipratropium responders had a significantly higher rate of MCID achievement (64.7% vs 27.8%, P = .03) and significant improvements in rhinorrhea (P = .03), thick nasal discharge (P = .03), and rhinologic subdomain scores (P = .03), while nonresponders had no significant symptom changes following in-office ablation.

Conclusion: Patients with positive response to ipratropium may be more likely to benefit from PNN in-office ablation techniques. Ipratropium response is not

predictive of outcome for surgical PNN neurectomy, as both responders and nonresponders may experience benefit.

Keywords: chronic rhinitis; cryotherapy; ipratropium; neurectomy; posterior nasal nerve; radiofrequency ablation; rhinology.

- 23 references

Full text links

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Review

Eur J Med Res

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. 2025 Dec 29;30(1):1272.
doi: 10.1186/s40001-025-03516-0.

The role of virus in nasal inflammation

Chen Wang [1], Yi-Ming Zhang [1], Min Li [1], Ke-Jia Cheng [2]

Affiliations Expand

- PMID: 41462478
- PMCID: PMC12750837
- DOI: 10.1186/s40001-025-03516-0

Abstract

Viral infection is an important pathogenic factor contributing to chronic inflammation of the nasal cavity and paranasal sinuses. Rhinovirus, parainfluenza virus, influenza virus, and respiratory syncytial virus are among the most common viral pathogens associated with nasal diseases. These viruses enter host epithelial cells through distinct receptors. In patients with chronic rhinosinusitis or allergic rhinitis, disruption of the physiological balance of the nasal and sinus epithelium increases susceptibility to viral infection. Meanwhile, viral infection can enhance type 2 inflammation, mucus hypersecretion, airway hyper-responsiveness, tissue remodeling, and ultimately contribute to the persistence of chronic inflammation. In addition, viruses can induce nasal epithelial cells, innate immune cells, and tissue-resident memory T cells to develop local immune memory, amplifying secondary inflammatory responses. Viral infection may also predispose patients to secondary bacterial infections, further exacerbating inflammation. The aim of this review is to elucidate the role of respiratory viruses, particularly rhinoviruses, in the pathogenesis of nasal inflammation and to provide new insights into its etiology and potential therapeutic targets.

Keywords: Airway epithelium; Allergic rhinitis; Chronic rhinosinusitis; Human rhinovirus.

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.

- 180 references
- 3 figures

Supplementary info
Publication types, MeSH terms, Grants and fundingExpand
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Case Reports

J Allergy Clin Immunol Glob

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. 2025 Nov 7;5(1):100577.
doi: 10.1016/j.jacig.2025.100577. eCollection 2026 Jan.

Reversible sensorineural hearing loss linked to chronic allergic rhinitis

Rinor Ajeti [1], Afrim Ajeti [1], Nagihan Bilal [2], İsa Kaya [3]
Affiliations Expand

- PMID: 41362578
- PMCID: PMC12681714
- DOI: 10.1016/j.jacig.2025.100577

Abstract
Sensorineural hearing loss (SNHL) is traditionally regarded as irreversible. Recent insights suggest that allergic inflammation may contribute to reversible SNHL in select cases. We report a 58-year-old woman with progressive bilateral SNHL who underwent audiometric evaluations and allergy testing. Treatment with intranasal corticosteroids, oral prednisone, and antihistamines resulted in significant improvement, with audiometry showing recovery from bilateral SNHL (right ear, 41.2 dB; left ear, 53.7 dB) to near-normal thresholds (right ear, 10 dB; left ear, 23.7 dB). The improvement was sustained over 3 years. IgE testing confirmed sensitization to multiple aeroallergens, supporting a diagnosis of allergic rhinitis. This case supports the hypothesis that allergic inflammation may contribute to reversible SNHL and highlights the need to include allergy screening in ear, nose, and throat evaluations.

Keywords: IgE; Sensorineural hearing loss; antihistamines; atopy; audiometry; chronic allergic rhinitis; corticosteroids; eustachian tube dysfunction; otolaryngology; reversible hearing loss.

Conflict of interest statement
Disclosure of potential conflict of interest: The authors declare that they have no relevant conflicts of interest.

- 5 references
- 2 figures

Supplementary info
Publication typesExpand
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Review

Med Clin North Am

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. 2026 Jan;110(1):31-44.
doi: 10.1016/j.mcna.2025.05.008. Epub 2025 Jul 4.

Rhinosinusitis

Oliver Liu-Lam [1], Kathryn M Hardin [1], Zachary A Warren [1], Thomas S Edwards [2]
Affiliations Expand

- PMID: 41206201
- DOI: 10.1016/j.mcna.2025.05.008

Abstract
Rhinosinusitis is a significant contributor to patient morbidity, impacting quality of life and health care costs. This article provides an evidence-based review of rhinosinusitis, including classification, pathophysiology, diagnostic criteria, and management strategies. Special emphasis is placed on differentiating rhinosinusitis from other conditions, differences between acute and chronic sinusitis, the role of imaging, and indications for referral for potential surgical intervention.

Keywords: Acute rhinosinusitis; Allergic rhinitis; Chronic sinusitis; Rhinosinusitis; Sinus infection; Sinusitis.

Conflict of interest statement
Disclosure O. Liu-Lam, K.M. Hardin, Z.A. Warren: Nothing to disclose. T.S. Edwards: Scientific advisory board member and research support from Sanofi-Aventis U.S., LLC, United States, and Regeneron Pharmaceuticals Inc., United States, for biologic therapies in CRSwNP.
Supplementary info
Publication types, MeSH termsExpand
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Cite
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Review

Clin Otolaryngol

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. 2026 Jan;51(1):17-24.
doi: 10.1111/coa.70041. Epub 2025 Oct 15.

Is Verapamil Effective for Treating Patients With Chronic Rhinosinusitis With Nasal Polyps? A Systematic Review

Fangxing Yin [1], Haris Ali [2], Alaa Abdelhalim [1], Hassan A Elhassan [3]
Affiliations Expand
- PMID: 41090403
- PMCID: PMC12703681
- DOI: 10.1111/coa.70041
Abstract
Objective: Identify and summarise the evidence on the efficacy of low-dose verapamil use for adult patients with Chronic Rhinosinusitis with Nasal Polyps (CRSwNP).
Methods: Two reviewers independently searched the data sources until the 28th of December 2023. From 262 studies identified, PRISMA guidelines were implemented to include three randomised controlled trials that used verapamil for patients diagnosed with CRSwNP. Primary endpoints were extracted, including quality-of-life questionnaires and imaging gradings.
Results: Across 116 participants, all three studies showed statistically significant improvement in the subjective scores of patients who experienced symptoms in the verapamil group. The mean differences between the two intervention groups and placebo in SNOT-22 were -19.17 (95% CI: -30.76 to -7.58) and -27.7 (95% CI: -49.36 to -6.05). On the objective metrics, statistically significant improvement in TNPS or LMS between groups was seen in two out of the three studies (0.01 [p = 0.001], -5.2 [p = 0.02]).
Conclusion: Although verapamil usage resulted in significant improvements in the subjective and objective measurements of the severity of CRSwNP, the current evidence is insufficient to support widespread usage of verapamil for CRSwNP. Further studies should focus on recruiting a clinically significant number of patients, while ensuring robustness and homogeneity in the methodological design.
Keywords: P-gP; chronic rhinosinusitis; nasal polyposis; novel therapy; type 2 inflammation; verapamil.

Conflict of interest statement
The authors declare no conflicts of interest.
- 25 references
- 4 figures

Supplementary info
Publication types, MeSH terms, SubstancesExpand
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. 2025 Dec 31;31(1):2532980.
doi: 10.1080/25310429.2025.2532980. Epub 2025 Jul 28.
Daily digital biomarkers in the follow-up and clustering of patients with asthma
Bernardo Sousa-Pinto [1 2], Florence Schleich [3 4], Gilles Louis [4 5], Bilun Gemicioglu [6 7], Violeta Kvedarienė [8 9], Frederico S Regateiro [10 11 12], Claudia Chaves

Loureiro [11 13], Luis Taborda-Barata [14 15], Rita Amaral [1 2], Josep M Antó [16 17 18], Anna Bedbrook [19], Wienczyslawa Czarlewski [19 20], Ignacio J Ansotegui [21], Karl-C Bergmann [22 23], Matteo Bonini [24 25], Apostolos Bossios [26 27], Louis-Philippe Boulet [28], Fulvio Braido [29 30], Christopher Brightling [31], Guy Brusselle [32], Luisa Brussino [33 34], G Walter Canonica [35 36], Alvaro A Cruz [37], Tari Haahtela [38], Liam G Heaney [39], Michael Hyland [40], Juan Carlos Ivancevich [41], Ludger Klimek [42 43], Marek Kulus [44], Piotr Kuna [45], Maciej Kupczyk [45], Desiree E Larenas-Linnemann [46], Michael Makris [47], Manuel Marques-Cruz [1 2], Sara Gil-Mata [1 2], Mário Morais-Almeida [48], Marek Niedoszytko [49], Markus Ollert [50 51], Nikolaos G Papadopoulos [52], Vincenzo Patella [53 54 55], Oliver Pfaar [56], Celeste Porsbjerg [57], Francesca Puggioni [36], Santiago Quirce [13], Carlos Robalo Cordeiro [58], Nicolas Roche [59 60 61], Boleslaw Samolinski [62], Joaquin Sastre [63], Nicola Scichilone [64], Sabina Skrgat [65 66], Sanna Toppila-Salmi [67 68], Omar S Usmani [25 69], Arunas Valiulis [70 71], Brigita Gradauskiene [72], Ilgim Vardaloğlu Koyuncu [6], Maria Teresa Ventura [73 74], Rafael José Vieira [1 2], Arzu Yorgancioglu [75], João A Fonseca [1 2], Torsten Zuberbier [22 23], Benoit Pétré [5], Renaud Louis [4 5], Jean Bousquet [19 22 23]
Affiliations Expand

- PMID: 40718903
- DOI: 10.1080/25310429.2025.2532980

Free article

Abstract

Background and research question: We aimed to assess whether levels of digital biomarkers can reflect monthly patterns of asthma control.

Study design and methods: We performed a longitudinal study on patients with asthma and comorbid rhinitis who filled ≥26 days of data in a month in the MASK-air® app and who reported at least 1 day of treatment with an inhaled corticosteroid with or without a long-acting β_2-agonist (ICS ± LABA). We applied k-means cluster analysis to define clusters of months according to daily asthma control and medication use. Clusters were compared using digital biomarkers (visual analogue scale [VAS] on asthma symptoms and electronic daily asthma control score [e-DASTHMA]). We compared patients who did not switch with patients who switched their ICS ± LABA.

Results: We assessed 243 patients and 1358 months. We identified three clusters of poor asthma control despite high ICS ± LABA adherence, one cluster of poor asthma control and poor ICS ± LABA adherence, one cluster of good asthma control and high ICS ± LABA adherence and one cluster of good asthma control despite poor ICS ± LABA adherence. These clusters displayed relevant differences in VAS asthma and e-DASTHMA levels. Similar clusters were found in 'non-switchers' *versus* 'switchers'.

Conclusion: Levels of digital biomarkers reflect asthma control patterns and might be used to monitor patients with asthma.

Keywords: Asthma; PROMs; electronic symptom-medication score; inhaled corticosteroids; mHealth.

Pulmonology

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. 2025 Dec 31;31(1):2419216.
doi: 10.1080/25310429.2024.2419216. Epub 2024 Nov 4.

Assessment of the underreporting of rhinitis in patients with asthma: A MASK-air® real-world study

Bernardo Sousa-Pinto [1 2], Gilles Louis [3], Rafael José Vieira [1 2], Ana Margarida Pereira [1 4 5], Bilun Gemicioglu [6 7], Maciej Kupczyk [8], Violeta Kvedariene [9 10], Renaud Louis [11 12], Oliver Pfaar [13], João A Fonseca [1 2], Torsten Zuberbier [14 15], Jean Bousquet [14 15]
Affiliations Expand

- **PMID: 39883497**

- **DOI: 10.1080/25310429.2024.2419216**

Free article

Abstract

Rhinitis is a common comorbidity in patients with asthma. However, the frequency of underreported rhinitis in asthma is not known. In this study, we aimed to assess the characteristics of patients with self-reported asthma and no self-reported rhinitis, as well as the extent of the underreporting of rhinitis. We performed a cross-sectional study of all MASK-air® users (2015-2022, 27 countries), comparing reported symptoms and medication use in patients with (i) self-reported asthma without rhinitis ("asthma alone"), (ii) self-reported rhinitis+asthma and (iii) self-reported rhinitis without asthma ("rhinitis alone"). In patients reporting asthma alone and providing MASK-air® data in at least three different months, a cluster analysis was performed to potentially identify groups of patients underreporting rhinitis and/or undertreated for rhinitis. We assessed 35,251 users (529,751 days): 671 (1.9%) reporting asthma alone 25,882 (73.4%) reporting rhinitis alone and 8698 (24.7%) reporting rhinitis+asthma. Overall, 27% of the patients reporting asthma alone were treated with rhinitis medications. Patients reporting asthma alone displayed a lower frequency of days under rhinitis medication and less severe nasal symptoms than those reporting rhinitis+asthma. Among patients reporting asthma alone, three clusters of patients were identified: (A; 22.2%) severe rhinitis symptoms and low frequency of rhinitis medication use, (B, 41.0%) moderate rhinitis symptoms and high frequency of rhinitis medication use (41.0%), and (C, 36.8%) mild or no rhinitis symptoms and almost no rhinitis medication use. This study suggests that, among patients with self-reported asthma, the underreporting or undertreatment of rhinitis may be common.

Keywords: Asthma; mHealth; rhinitis.

Supplementary info

MeSH termsExpand

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

1

ERJ Open Res

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. 2025 Dec 29;11(6):00658-2025.

doi: 10.1183/23120541.00658-2025. eCollection 2025 Nov.

Telehealth group behavioural cough-suppression therapy for refractory chronic cough using a rolling enrolment model

Laurie J Slovarp [1], Jane R Salois [1], Kinsey Roberts [1], Emily Ehli [1], Mackenzie Majors [1], Mackenzie Rosenleaf [1]

Affiliations Expand

- PMID: 41473549
- PMCID: PMC12746117
- DOI: 10.1183/23120541.00658-2025

Abstract

Background: Refractory chronic cough (RCC) is a burdensome condition with few effective treatments. While behavioural cough-suppression therapy (BCST) has demonstrated high efficacy, access is limited by geographical and provider constraints. This pilot study evaluated the efficacy of BCST delivered in a group telehealth format.

Methods: BCST was delivered to small groups (2-5 participants) *via* telehealth using a rolling enrolment model. Participants attended 4-6 sessions (60-90 min each), led by a trained speech-language pathologist and a graduate student. Each session followed a structured format with emphasis on understanding cough hypersensitivity, training in cough-suppression techniques, adherence monitoring and discussion of participant challenges related to cough suppression. Outcome measures included the Leicester Cough Questionnaire (LCQ) and Patient Global Impression of Severity (PGI-S), with optional cough frequency monitoring using the CoughPro smartphone app.

Results: 47 participants (mean age 56.8 years; 42 women) from four countries completed the study. Six participants provided sufficient cough monitoring data. After treatment, 98% (46 of 47) exceeded the LCQ's minimal clinically important difference of 1.3 points. Mean LCQ improvement was 7.04 at both 1 week and 1 month after treatment assessments (both $p<0.001$; $d=2.54$ and 2.35, respectively). PGI-S scores showed a median reduction of 2 points. Among those with cough monitoring, the mean hourly cough rate dropped by 68% and cough bouts decreased by 78%.

Discussion: Group telehealth BCST focused primarily on consistent cough suppression is an extremely efficacious intervention and can increase availability and access to treatment for patients with RCC.

Conflict of interest statement

Conflict of interest: L.J. Slovarp reports consultancy fees from Hyfe Inc. and stock (or stock options) with Hyfe Inc. J.R. Salois reports consultancy fees from Hyfe Inc. K. Roberts, E. Ehli, M. Majors and M. Rosenleaf have no conflicts of interest to report.

- 39 references
- 4 figures

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Open Respir Arch

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. 2025 Nov 17;8(1):100519.

doi: 10.1016/j.opresp.2025.100519. eCollection 2026 Jan-Mar.

Predictors of Progression in Pre-COPD: The 3P Study Rationale and Design

Cruz González-Villaescusa [1 2], Julia Tarrasó Castillo [2], Dolores Martínez-Pitarch [3], Juan A Riesco Miranda [4], Elena García-Castillo [5], Carolina Gotera Rivera [6], Laura Carrasco Hernández [7], Patricia Sobradillo Ecenarro [8], Jaime Signes-Costa [1 2], Elsa Naval Sendra [9], Francisco Javier Callejas González [10], Andrea Yordi León [11], Laura Vigil Gimenez [12], Marta Núñez Fernández [13], Marta Palop Cervera [14], Juan A Carbonell-Asins [15], Alvar Agusti [16 17 18]; Field Investigators

Affiliations Expand

- PMID: 41438363
- PMCID: PMC12721031
- DOI: 10.1016/j.opresp.2025.100519

Abstract

in English, Spanish

Introduction: The diagnosis of chronic obstructive pulmonary disease (COPD) requires the demonstration of poorly reversible airflow obstruction (defined by a forced expiratory volume in 1 s [FEV_1]/forced vital capacity [FVC] ratio <0.7 post-bronchodilation) in the appropriate clinical context (risk factors and exposures). Nevertheless, some individuals, who may be labeled "pre-COPD", can present respiratory symptoms, structural lung abnormalities (e.g., emphysema), or other physiological abnormalities (e.g., low FEV_1 [preserved ratio impaired spirometry, PRISm], gas trapping, hyperinflation, reduced lung diffusing capacity of carbon monoxide [DL_{CO}] and/or rapid FEV_1 decline), all in the absence of airflow obstruction. For reasons that are still unclear, some - but not all - patients will eventually progress and develop airflow obstruction (i.e., COPD) over time. The aim of this study is to investigate the clinical, physiological, radiological and/or biological factors that are associated with progression from pre-COPD to COPD.

Material and methods: This will be a prospective (5-year follow-up), multicenter (conducted in 12 Spanish centers across eight geographical autonomous communities), observational, comparative study (www.clinicaltrials.govNCT04409275), that will recruit 285 current or former smokers (≥10 pack-years) with respiratory symptoms (dyspnea, chronic cough, sputum production, wheezing or recurrent lower respiratory tract infections) and spirometry without obstruction (pre-COPD status). Multivariate regression analysis and other tests will be used to analyze results.

Conclusion: Results are expected to provide novel, useful information for identifying pre-COPD individuals who are likely to develop progressive airflow obstruction and are potential candidates for prompt intervention.

Keywords: Biomarker; Chronic bronchitis; Emphysema; Pre-COPD; Smoking; Spirometry.

- 23 references
- 2 figures

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Associated dataExpand

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Open Respir Arch

. 2025 Oct 7;8(1):100500.

doi: 10.1016/j.opresp.2025.100500. eCollection 2026 Jan-Mar.

An Early Sign? Low Birth Weight and Childhood Respiratory Infections as Predictors of Chronic Cough in Adult Asthma

Stephany Ivonne Briones Alvarado [1], Carlos Luis Sarango Parrales [2], Rafael Gregorio Marulanda Melo [1], Javier De Miguel Diez [1], Luis Puente Maestu [1]

Affiliations Expand

- PMID: 41210400
- PMCID: PMC12589863
- DOI: 10.1016/j.opresp.2025.100500

Abstract

in English, Spanish

Chronic refractory cough is a symptom that affects a significant subgroup of asthmatic patients, even when the disease is controlled. This condition negatively impacts quality of life and is often resistant to conventional asthma treatments, posing a significant clinical challenge. Despite its frequency, the pathophysiology of chronic cough in the context of adult asthma remains poorly understood and understudied. This lack of evidence hinders the development of effective and personalized therapeutic strategies. Therefore, it is essential to better characterize this entity and its possible underlying mechanisms to optimize its clinical management.

Keywords: Asthma; Childhood; Chronic; Cough; Low birth weight; Respiratory infections.

- 12 references
- 1 figure

Cite

4

Am J Med

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. 2026 Jan;139(1):99-107.e9.

doi: 10.1016/j.amjmed.2025.07.027. Epub 2025 Aug 5.

Decoding objective cough features in progressive pulmonary fibrosis: A 6-month feasibility study

Micheal D Feist [1], Yiming Huang [2], Meena Kalluri [2], Janis Cole [3], Esmatullah Naikyar [1], Pierre Boulanger [4], Umberto Zanini [5], Surinder Birring [6], Giovanni Ferrara [7]

Affiliations Expand

- PMID: 40754253

- DOI: 10.1016/j.amjmed.2025.07.027

Free article

Abstract

Objectives: Cough is a significant medical problem in progressive pulmonary fibrosis. This study assessed the feasibility of utilizing an objective cough monitoring device over an extended duration and whether big data analytics could correlate with the Leicester Cough (LCQ) and King's Brief Interstitial Lung Disease (K-BILD) questionnaires.

Methods: Patients with progressive pulmonary fibrosis were enrolled and followed throughout the six-month protocol. The primary outcome was for the participants to use the device for more than 70% of the days of the expected study duration. The secondary outcome involved an exploratory big data analysis, correlating the measurements from the device to the questionnaires scores.

Results: Eight patients were enrolled in the study. Only one met the primary outcome. Nevertheless, the amount of data recorded during the study allowed for the correlation of cough intensity with the scores of LCQ and K-BILD. Cough count varied over time in all the patients, independently of the questionnaires.

Conclusion: For the first time, this study suggests that long-term digital cough data obtained directly from the patients through wearables may enable monitoring the course of diseases such as progressive pulmonary fibrosis.

Keywords: Big data; Cough; Machine learning; Patient reported outcome measures; Predictive analysis; Progressive pulmonary fibrosis.

Conflict of interest statement

Declaration of competing interest Giovanni Ferrara received fees for lectures and advisory boards from Roche, Boehringer Ingelheim, AstraZeneca and Fondazione Menarini. Surinder Birring received fees for consultations and lectures from Avalyn, Merck, Bellus and AstraZeneca and holds license for the LCQ and K-BILD questionnaire. Meena Kalluri received grants and fees for lectures from Boehringer Ingelheim. Micheal D. Feist, Yiming Huang, Janis Cole, Esmatullah Naikyar, Pierre Boulanger and Umberto Zanini have no conflicts of interest to declare. This study was supported with grants by the University of Alberta and Alberta Innovates. A patent application has been filled about the subject matter of the manuscript.

Supplementary info

MeSH termsExpand

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Pulmonology

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. 2025 Dec 31;31(1):2416810.

doi: 10.1016/j.pulmoe.2023.08.003. Epub 2024 Nov 11.

Disease burden, comorbidities and antecedents of chronic cough phenotypes in Australian adults

S Suresh [1 2], J L Perret [2], E H Walters [2 3], M J Abramson [4], G Bowatte [2], C Lodge [2], A Lowe [2], B Erbas [5], P Thomas [6], G S Hamilton [7 8], A B Chang [9 10 11], S C Dharmage [2 12], D S Bui [2]

Affiliations Expand

- PMID: 37743172

- DOI: 10.1016/j.pulmoe.2023.08.003

Free article

Abstract

Background and objectives: While adult chronic cough has high burden, its phenotypes, particularly those without aetiologically related underlying conditions, are understudied. We investigated the prevalence, lung function and comorbidities of adult chronic cough phenotypes.

Methods: Data from 3608 participants aged 53 years from the Tasmanian Longitudinal Health Study (TAHS) were included. Chronic cough was defined as cough on most days for >3 months in a year. Chronic cough was classified into "explained cough" if there were any one of four major cough-associated conditions (asthma, COPD, gastroesophageal reflux disease or rhinosinusitis) or "unexplained cough" if none were present. Adjusted regression analyses investigated associations between these chronic cough phenotypes, lung function and non-respiratory comorbidities at 53 years.

Results: The prevalence of chronic cough was 10% (95%CI 9.1,11.0%) with 46.4% being "unexplained". Participants with unexplained chronic cough had lower FEV_1/FVC (coefficient: -1.2% [95%CI:-2,3, -0.1]) and increased odds of comorbidities including obesity (OR=1.6 [95%CI: 1.2, 2.3]), depression (OR=1.4 [95%CI: 1.0, 2.1]), hypertension (OR=1.7 [95%CI: 1.2, 2.4]) and angina, heart attack or myocardial infarction to a lesser extent, compared to those without chronic cough. Participants with explained chronic cough also had lower lung function than both those with unexplained chronic cough and those without chronic cough.

Conclusions: Chronic cough is prevalent in middle-age and a high proportion is unexplained. Unexplained cough contributes to poor lung function and increased comorbidities. Given unexplained chronic cough is not a symptom of major underlying respiratory conditions it should be targeted for better understanding in both clinical settings and research.

Keywords: Chronic cough; Comorbidity; Cough phenotypes; Lung function.

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

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ERJ Open Res

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. 2025 Dec 29;11(6):00389-2025.

doi: 10.1183/23120541.00389-2025. eCollection 2025 Nov.

Molecular endotyping in people with bronchiectasis based on response to antibiotic treatment: iBEST study

Gisli G Einarsson [1 2 3], Laura J Sherrard [1 2 3], Andrew J Lee [1 2], Jack Carson [1 2], Andrew Marshall [1 2], Aya Alkhatib [1 2], Vanessa Brown [1 4], Deirdre F Gilpin [1 2], Gerhild Angyalosi [5], Michael R Loebinger [6 7], James D Chalmers [8], Francesco Blasi [9 10], Charles S Haworth [11 12], Eva Polverino [13], Harm A W M Tiddens [14 15], Herman Goossens [16], Felix C Ringshausen [17], Adam T Hill [18], J Stuart Elborn [1 4 19], Michael M Tunney [1 2 19]

Affiliations Expand

- PMID: 41473552

- PMCID: PMC12746121

- DOI: 10.1183/23120541.00389-2025

Abstract

Background: Culture-independent molecular techniques could potentially be used to measure microbiological efficacy in response to antibiotic treatment and improve understanding of the role of the airway microbiota in determining response in patients with chronic respiratory disease.

Methods: Using molecular methods, we analysed changes in the sputum microbiota in samples from 107 participants with bronchiectasis recruited to the iBEST-1 study, and defined community endotypes based on response to tobramycin inhalation powder (TIP) treatment. The relationship between microbiota metrics in these endotypes and clinical and inflammatory biomarkers were also determined.

Results: There was a significant reduction in *Pseudomonas aeruginosa* density, measured by quantitative polymerase chain reaction (qPCR), between Days 1 and 29 for participants in the TIP treatment (n=63; p<0.0001) but not placebo (n=20; p>0.05) group. Based on decrease in *P. aeruginosa* density (*oprL* copies·mL^{-1}) over 28 days, two clusters of participants receiving TIP were observed and stratified as either responders (≥2Log$_{10}$; n=26) or non-responders (<2Log$_{10}$; n=37). In responders, a shift to a microbial community structure less dominated (p=0.018) by a pathogen was apparent and associated with a greater improvement in inflammatory and fewer participant exacerbations in the following 6 months (27% *versus* 49%; p=0.117) when compared to non-responders. Lung function was higher at Day 1 in responders ($_{median}$=64.6% predicted) than non-responders ($\tilde{\mu}_{median}$=50.3% predicted) and independently predicted response to treatment with TIP (p=0.013).

Conclusions: qPCR may be a useful, culture-independent microbiological efficacy end-point in clinical trials. Using qPCR, participants with bronchiectasis were stratified into endotpyes which predicted response to antimicrobial treatment, potentially allowing for a more personalised approach to therapy.

Conflict of interest statement

Conflict of interest: G. Angyalosi was employed by Novartis during the study. M.R. Loebinger reports grants from European Union IMI Grant (in collaboration with Novartis), during the conduct of the study; and personal fees from Insmed, 30 T, AstraZeneca, Parion, Chiesi, Zambon, Recode, Boehringer Ingelheim, Ethris, Electromed, Armata, AN2 Therapeutics, Mannkind and Cepheid, outside the submitted work. J.D. Chalmers reports grants from European Union IMI Grant (in collaboration with Novartis), during the conduct of the study; grants and personal fees from GSK, Boehringer Ingelheim, AstraZeneca, Pfizer, Bayer Healthcare, Grifols, Napp, Aradigm Corporation and Insmed, outside the submitted work; and is an associated editor of this journal. F. Blasi reports grants and personal fees from AstraZeneca, personal fees from Chiesi, GlaxoSmithKline, Grifols and Guidotti, grants and personal fees from Insmed, personal fees from Menarini, Novartis, Om Pharma, Pfizer, Sanofi, Vertex, Viatris and Zambon, outside the submitted work. C.S. Haworth reports grants from European Union IMI Grant (in collaboration with Novartis), during the conduct of the study; and grants and personal fees from Aradigm, Chiesi, Gilead, Grifols, GSK, Insmed, International Biophysics, Janssen, Mylan, Novartis, Teva, Vertex and Zambon, outside the submitted work. E. Polverino reports grants from European Union IMI Grant (in collaboration with Novartis), during the conduct of the study; personal fees from Bayer and Menarini, grants and personal fees from Grifols, personal fees from Zambon and Pfizer, grants and personal fees from Chiesi, personal fees from Teva, Shire, Insmed and Polyphor, outside the submitted work. H.A.W.M. Tiddens reports grants from European Union IMI Grant (in collaboration with Novartis), during the conduct of the study; grants and personal fees from Vertex, personal fees from Gilead, grants and personal fees from Novartis, and grants from Roche, Chiesi and Vectura, outside the submitted work. H. Goossens reports grants from European Union IMI Grant (in collaboration with Novartis), during the conduct of the study. F.C. Ringshausen is/was honorarily engaged as Coordinator of the ERN-LUNG Bronchiectasis Core Network; Chair of the German Bronchiectasis Registry PROGNOSIS; Member of the SteerCo of the European Bronchiectasis Registry EMBARC; Co-Speaker of the Medical Advisory Board of the German Kartagener Syndrome and PCD Patient Advocacy Group; Speaker of the Respiratory Infections and TB group of the German Respiratory Society; Speaker of the Cystic Fibrosis group of German Respiratory Society (DGP); principal investigator of the German Center for Lung Research; Member of the Protocol Review Committee of the PCD-CTN; and Member of Physician Association of the German Cystic Fibrosis Patient Advocacy Group. A. T. Hill reports grants from European Union IMI Grant (in collaboration with Novartis), during the conduct of the study. J. S. Elborn reports grants from European Union IMI Grant (in collaboration with Novartis), during the conduct of the study; grants from Novartis, and personal fees from Vertex, Galapagos and Ionis, outside the submitted work. M.M. Tunney reports grants from European Union IMI Grant (in collaboration with Novartis), during the conduct of the study; and grants from Antabio and Shionogi, outside the submitted work. A. Alkhatib, V. Brown, J. Carson, D. Gilpin, A. Lee. A.

Marshall, L. Sherrard and G. Einarsson have no potential conflicts of interest to disclose.

- 28 references
- 4 figures

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Review

Pulm Ther

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. 2025 Dec 29.

doi: 10.1007/s41030-025-00339-6. Online ahead of print.

Fungal-Associated Endotypes as a Treatable Trait in Bronchiectasis

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Affiliations Expand

- **PMID: 41466080**
- **DOI: 10.1007/s41030-025-00339-6**

Free article

Abstract

Emerging evidence demonstrates the evolving role of fungi in the pathophysiology and disease progression observed in bronchiectasis. Fungal-associated traits are linked to disease severity, exacerbation frequency and airway inflammation. Structural abnormalities and impaired mucociliary clearance, characteristic of bronchiectasis, predispose to fungal colonisation, with subsequent immunopathogenic responses dependent on underlying host immunity. The diagnosis of fungal infection remains challenging in clinical settings, owing to the limitations of existing diagnostic modalities; however, the development of culture-

independent molecular techniques shows promise. The use of next-generation sequencing has significantly advanced our understanding of the fungal microbiome in bronchiectasis, identifying fungi that are challenging to culture. Integrative microbiomics further elucidates the intricate and dynamic role of fungi in relation to other microbial kingdoms, and across distant organs such as the gut, revealing important relationships with bacterial pathogens including Pseudomonas aeruginosa. Airway inflammatory profiling has shown fungal-associated inflammatory endotypes which may serve as treatable traits. Environmental influences on fungi and bronchiectasis-exacerbated by air pollution and climate change-underscore the key role of the exposome in fungal-associated endotypes in bronchiectasis. This review outlines the clinical significance of fungi in bronchiectasis, the current diagnostic and treatment challenges, and emerging fungal-associated endotypes in the context of environmental influence on disease.

Keywords: Aspergillus; Bronchiectasis; Endotypes; Fungi; Mycobiome.

Conflict of interest statement

Declarations. Conflict of Interest: Sanjay H. Chotirmall has served on advisory boards for CSL Behring, Pneumagen Ltd., Zaccha Pte Ltd, Boehringer Ingelheim, GSK and Sanofi, on DSMBs for Inovio Pharmaceuticals and Imam Abdulrahman Bin Faisal University and has received personal fees from AstraZeneca and Chiesi Farmaceutici, all unrelated to this work. Kai Xian Thng and Micheál Mac Aogáin have no potential conflicts of interest with respect to the research, authorship, and/or publication of this article. Ethical Approval: This article is based on previously conducted studies and does not contain any new studies with human participants or animals performed by any of the authors.

- 151 references

Supplementary info

Publication types, Grants and fundingExpand

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Meta-Analysis

Respir Med

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. 2026 Jan:251:108607.

doi: 10.1016/j.rmed.2025.108607. Epub 2025 Dec 22.

Exacerbation risk in patients with bronchiectasis receiving DPP-1 inhibitors vs placebo: A meta-analysis of RCTs

Giulia Carvalhal [1], Júlia Moreira Diniz [2], Larissa Calixto Hespanhol [1], David Curi Barbosa Izoton Cabral [3], Jafar Aljazeeri [4]

Affiliations Expand

- PMID: 41443427

- DOI: 10.1016/j.rmed.2025.108607

Abstract

Background: No therapies have been approved to alter bronchiectasis progression. Dipeptidyl peptidase-1 (DPP-1) inhibitors, which target neutrophil serine protease activation, are under investigation as potential disease-modifying agents.

Methods: We conducted a systematic review and meta-analysis of randomized controlled trials (RCTs) comparing DPP-1 inhibitors versus placebo in patients with non-cystic fibrosis bronchiectasis. PubMed, Cochrane, EMBASE, Web of Science, Scopus, ClinicalTrials.gov, and ICTRP were searched from inception until April 26, 2025. Primary outcomes included time to first exacerbation and proportion of patients remaining exacerbation-free. Secondary outcomes included post-bronchodilator % Forced Expiratory Volume in 1 s (FEV_1), Quality of Life-Bronchiectasis (QoL-B) questionnaire scores, and rate of adverse events. Time-to-event outcome was analyzed using Kaplan-Meier (KM)-estimated individual patient data (IPD), whereas random-effects meta-analyses were performed for remaining outcomes.

Results: 2523 patients from four RCTs were included, of whom 1689 (66.9 %) received DPP-1 inhibitors. Compared with placebo, DPP-1 inhibitors prolonged the time to first exacerbation (HR 0.79; 95 % CI: 0.71 to 0.88) and increased the proportion of patients remaining exacerbation-free (RR 1.33; 95 % CI 1.12 to 1.58). A slower decline in post-bronchodilator % FEV1 was observed (MD 1.1 %; 95 % CI 0.05 to 2.15), but no difference in QoL-B scores (MD 1.35; 95 % CI -0.72 to 3.42). The safety profile of DPP-1 inhibitors was acceptable and comparable to placebo. Moderate certainty was found across endpoints.

Conclusions: DPP-1 inhibitors prolong time to first exacerbation and reduce exacerbation rates in patients with bronchiectasis, with an acceptable safety profile. These findings support their potential as a disease-modifying strategy.

Registration: PROSPERO (CRD420251042542).

Keywords: Bronchiectasis; DPP-1 inhibitor; Dipeptidyl-peptidases and tripeptidyl-peptidases; Meta-analysis; Randomized controlled trials; 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

Respir Med

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Bronchiectasis and treatable traits: the journey from concept to clinical practice

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Abstract

Background: Bronchiectasis is a chronic and heterogeneous airway disease characterized by abnormal bronchial dilation, impaired mucus clearance, and recurrent infections. Despite advances in understanding its pathophysiology, current treatment strategies are still limited. Treatable traits (TT) approach, initially proposed for other chronic airway diseases such as Chronic Obstructive Pulmonary

Disease and asthma, offers a precision medicine strategy focused on identifying and targeting clinically relevant, measurable, and modifiable traits.

Sources and synthesis: We conducted a comprehensive update on the TT framework in bronchiectasis by searching on PubMed the recent literature until July 1, 2025, including clinical and translational studies and drawing comparisons with other pulmonary diseases. Historically, TT in bronchiectasis have been classified into pulmonary, extrapulmonary, etiological, and lifestyle domains. We reviewed diagnostic and monitoring tools, as well as biological pathways and emerging treatments as part of the TT framework. Multiple traits, including daily sputum production, chronic infection, frequent exacerbations, T2-high inflammation, and comorbidities, coexist in most patients. Available treatments, such as antibiotics, airway bronchodilators, inhaled corticosteroids, chest physiotherapy and pulmonary rehabilitation, can address some traits, but evidence remains limited. Emerging therapies mainly targeting neutrophilic pathways represent promising avenues for selected endotypes. However, challenges persist in prioritizing traits, managing complex interventions, and designing clinical trials that balance scientific rigor with real-life complexity.

Conclusions: The TT approach represents a paradigm shift toward precision medicine in bronchiectasis, with potential to improve patient-centered outcomes and prognosis. Future research should focus on validating this strategy through dedicated clinical studies always considering patient preferences and treatment goals.

Keywords: Bronchiectasis; Comorbidities; Disease heterogeneity; Endotypes; Phenotypes; Precision medicine; Treatable traits.

Conflict of interest statement

Declaration of competing interest The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:SA received consulting fees from INSMED Incorporated, INSMED Italy, INSMED Ireland Ltd, INSMED Netherlands BV, ZAMBON Spa, AstraZeneca, Menarini, CSL Behring GmbH, Pfizer, 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, and Verona; received payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing or educational events (payments made to the author) from GlaxoSmithKline Spa, Fondazione Internazionale Menarini, INSMED Italy, INSMED Ireland Ltd, Boehringer Ingelheim, Zambon, and Vertex Pharmaceuticals; participated on a Data Safety Monitoring Board or Advisory Board (payments made to the author) for INSMED Incorporated, INSMED Italy, AstraZeneca UK Limited, MSD Italia S.r.l, and Verona pharma plc.JDC reports grants or contracts from Grifols; consulting fees from Antabio, AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, Grifols, Insmed, Janssen, Novartis, Pfizer, and Zambon; and leadership or fiduciary roles as Chair of the European Respiratory Society Bronchiectasis Guideline Task Force, Chief Editor of European Respiratory Journal, and Chair of EMBARC Clinical Research Collaboration.OS received consulting fees from Insmed and Boehringer-IngelheimAll other authors declare no competing interests.

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Observational Study

Pulmonology

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Prognostic implications of cluster-defined phenotypes in AECOPD patients with bronchiectasis: A multicenter study

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Free article

Abstract

Background: The clinical impact of bronchiectasis (BE) in acute exacerbations of COPD (AECOPD) remains controversial, with unclear phenotypic heterogeneity.

Research question: Does BE independently influence clinical outcomes and phenotypic heterogeneity in AECOPD patients?

Study design and methods: This prospective multicenter cohort study analysed 11 759 hospitalised AECOPD patients from 10 Chinese medical centres. Propensity

score matching (1:3) balanced baseline characteristics, and unsupervised cluster analysis identified phenotypic subgroups. Primary endpoints included mortality and exacerbation frequency, with secondary endpoints assessing mechanical ventilation, ICU admission, and length of stay (LOS).

Results: AECOPD-BE patients had higher rates of non-invasive ventilation (23.5% vs 20.1%, $p = 0.002$), ICU admission (9.8% vs 6.5%, $p < 0.001$), and prolonged LOS (median 10 vs 9 days, $p < 0.001$). Mortality rates were similar (in-hospital: 1.1% vs 1.3%, $p = 0.477$; 3-year: 17.8% vs 21.6%, $p = 0.652$), but BE patients had more exacerbations (2.92 ± 4.30 vs 2.18 ± 2.72 events, $p = 0.004$). Cluster analysis revealed two phenotypes: a Systemic Inflammatory-High Risk (SI-HR) subgroup with severe inflammation and poorer outcomes, and a Stable Compensated (SC) subgroup with milder manifestations.

Conclusion: BE independently predicts increased acute healthcare utilisation and exacerbation risk in AECOPD without affecting mortality. The SI-HR phenotype identification supports targeted management strategies for this heterogeneous population.Clinical Trial Registration: Chinese Clinical Trail Registry NO.: ChiCTR2100044625; URL: http://www.chictr.org.cn/showproj.aspx?proj=121626.

Keywords: Chronic obstructive pulmonary disease; bronchiectasis; phenotype; prognosis.

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Impulse oscillometry in the evaluation of non-cystic fibrosis bronchiectasis in adults: A systematic literature review

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Free article

Abstract

Background: Non-cystic fibrosis bronchiectasis (NCFB) is a chronic respiratory disease marked by irreversible airway dilation, persistent inflammation, and recurrent infections. Impulse oscillometry (IOS) assesses lung function non-invasively, particularly in patients unable to perform spirometry, but its role in NCFB remains underexplored.

Research question: This systematic review examined the role of IOS in adults with NCFB, focusing on diagnostic value, correlation with disease severity, airway reversibility prediction, and associations with exacerbations, hospitalisations, and mortality.

Study design and methods: A systematic literature search in PubMed, Scopus, Web of Science, and Cochrane databases was performed in January 2025, following PRISMA guidelines. Eligible studies assessed IOS in adult NCFB and reported associations with clinical, radiological, or functional outcomes. Study quality was assessed using the Newcastle-Ottawa Scale adapted for cross-sectional studies.

Results: Seven studies were included. IOS was more sensitive than spirometry in detecting small-airway dysfunction, particularly in early disease. Several IOS parameters correlated with radiological and severity scores, though findings were heterogeneous. Associations with exacerbations and hospitalisations were inconsistent. One study suggested R5-R20 may predict bronchodilator response. IOS parameters appeared stable across disease stages.

Conclusion: IOS may complement conventional assessment of NCFB, especially for small-airway evaluation, but standardisation and longitudinal research remain necessary.

Keywords: Non-cystic fibrosis bronchiectasis; disease severity; exacerbation; impulse oscillometry; pulmonary function tests.

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Editorial

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Bronchodilators in bronchiectasis: A story difficult to understand

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Affiliations Expand

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Reliability of blood eosinophil count in steady-state bronchiectasis

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Free article

Abstract

Rationale: The baseline value of eosinophils in peripheral blood (BEC) has been associated with different degrees of severity, prognosis and response to treatment in patients with bronchiectasis. It is not known, however, if this basal value remains constant over time.

Objectives: The aim of this study was to assess whether the BEC remains stable in the long term in patients with bronchiectasis.

Methods and measurements: Patients from the RIBRON registry of bronchiectasis diagnosed by computed tomography with at least 2 BEC measurements one year apart were included in the study. Patients with asthma and those taking anti-eosinophilic drugs were excluded. Reliability was assessed using the intra-class correlation coefficient (ICC). A patient with a BEC of at least 300 cells/uL or less than 100 cells/uL was considered eosinophilic or eosinopenic, respectively. Group changes over time were also calculated.

Main results: Seven hundred and thirteen patients were finally included, with a mean age of 66.5 (13.2) years (65.8 % women). A total of 2701 BEC measurements were performed, with a median number of measurements per patient of 4 (IQR: 2-5) separated by a median of 12.1 (IQR: 10.5-14.3) months between two consecutive measurements. The ICC was good (>0.75) when calculated between two consecutive measurements (approximately one year apart) but had dropped significantly by the time of the next annual measurements. Similarly, the change from an eosinophilic or eosinopenic patient to a non-eosinophilic or non-eosinopenic patient, respectively, was less than 30 % during the first year with respect to the baseline value but was close to 50 % in later measurements.

Conclusions: Given the significant changes observed in the baseline value of the BEC over time, its monitoring is necessary in patients with bronchiectasis in order to more reliably assess its usefulness.

Keywords: Bronchiectasis; Eosinophils; Exacerbations; Severity.

- Cited by 5 articles

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