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

1

Eur Respir J

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. 2025 Sep 11:2501165.

doi: 10.1183/13993003.01165-2025. Online ahead of print.

Absolute benefit measures are essential for guiding therapies in COPD in an era of precision medicine: a viewpoint on NNT

Don D Sin [1], Ramin Rezaeianzadeh [2], Mohsen Sadatsafavi [3 2]

Affiliations Expand

- PMID: 40935585

- DOI: 10.1183/13993003.01165-2025

No abstract available

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2

Eur Respir J

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. 2025 Sep 11:2501295.

doi: 10.1183/13993003.01295-2025. Online ahead of print.

Reduction in sputum inflammatory cells after a single dose of cepeprubart in COPD patients

Dave Singh [1 2], Thomas Southworth [3 2], Alex Mulvanny [2], Nick Stefanko [4], Amy Ascher [4], Russell P Rother [4]

Affiliations Expand

- PMID: 40935581

- DOI: 10.1183/13993003.01295-2025

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3

BMJ Open Respir Res

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. 2025 Sep 10;12(1):e002722.

doi: 10.1136/bmjresp-2024-002722.

Virtual reality in adults with respiratory diseases experiencing dyspnoea: a systematic review and meta-analysis

Johan Wormser [1 2], Christophe Romanet [1], Marine Cachanado [3], Maëlle Youinou [3], Gilles Chatellier [3], Irene Torres Sánchez [4], François Philippart [1 5]

Affiliations Expand

- PMID: 40935562

- DOI: 10.1136/bmjresp-2024-002722

Abstract

Objectives: Our aim was to evaluate virtual reality's effects in dyspnoea's management.

Methods: Information sources: Trials were identified through a systematic search carried out on MEDLINE, Web of Science, Scopus and CINAHL until 17 March 2025.

Eligibility criteria: Eligible studies were controlled trials including adults with dyspnoea associated with respiratory diseases, for whom virtual reality was implemented and compared with another intervention. Risk of bias: Risk of bias (ROB) was assessed using the ROB 2 tool.

Synthesis of results: The primary outcome was dyspnoea. Secondary outcomes included exercise capacity, health-related quality of life (HRQOL) and muscle function. Effect size was expressed using standardised mean difference (SMD) or MD for primary and secondary outcomes, respectively (random-effects model). We used the Grading of Recommendations Assessment, Development and Evaluation approach to judge the certainty of evidence.

Results: Included studies: 13 studies were selected, including 483 adults and using non-immersive tools (n=7) or immersive tools (n=6). Risk of bias in these studies was low (n=1), some concerns (n=8) and high risk (n=4).

Synthesis of results: No difference was found in dyspnoea (8 studies, 224 participants; SMD 0.02, 95% CI -0.82 to 0.86, I^2=88.2%), exercise capacity (5 studies, 183 participants; MD 3.62, 95% CI -19.39 to 26.63, I^2=39.8%) and in HRQOL (4 studies, 127 participants; MD -11.81, 95% CI -42.95 to 19.33, I^2=98.9%). The data available were insufficient to conduct a pooled analysis for muscle function.

Conclusions: Limitations of evidence: The evidence is very uncertain about virtual reality's effects on dyspnoea due to risk of bias, imprecision and heterogeneity.

Interpretation: Further studies are needed and should explore various aspects of the application of immersive virtual reality.

Prospero registration number: CRD42023443280.

Keywords: COVID-19; Exercise; Perception of Asthma/Breathlessness; Pulmonary Disease, Chronic Obstructive; Pulmonary Rehabilitation.

Conflict of interest statement

Competing interests: None declared.

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4

Eur J Heart Fail

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. 2025 Sep 11.

doi: 10.1002/ejhf.70046. Online ahead of print.

Beta-blockers in patients with heart failure with reduced ejection fraction and concomitant chronic obstructive pulmonary disease: Cardiovascular and respiratory outcomes

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Affiliations Expand

- PMID: 40932340

- DOI: 10.1002/ejhf.70046

Abstract

Aims: Patients with heart failure (HF) with reduced ejection fraction (HFrEF) and chronic obstructive pulmonary disease (COPD) are poorly represented in HFrEF trials testing beta-blockers. We assessed cardiovascular effectiveness and respiratory safety of beta-blockers in these patients.

Methods and results: Patients with HFrEF and COPD in the Swedish HF Registry (2006-2023) were included. Overlap-weighted models were used to assess associations between beta-blocker use and 5-year risk of outcomes, with

cardiovascular death/total hospitalizations for HF (HHF) representing the primary cardiovascular effectiveness outcome, and total severe COPD exacerbations being the primary respiratory safety outcome. Of 5084 patients with HFrEF and COPD, median age was 75 years (interquartile range [IQR] 69-81), 68.3% were male, 36.9% were in GOLD group E, 91.5% used beta-blockers. Over a median follow-up of 2.5 years (IQR 1.0-4.8), beta-blocker users had lower crude risk of cardiovascular death/total HHF (rate ratio [RR] 0.66, 95% confidence interval [CI] 0.56-0.78) and total severe COPD exacerbations (RR 0.75, 95% CI 0.60-0.93). After overlap weighting, beta-blocker use was independently associated with lower risk of cardiovascular death/total HHF (RR 0.74, 95% CI 0.58-0.96) but not total severe COPD exacerbations (RR 0.99, 95% CI 0.73-1.35). These associations were consistent across subgroups (including GOLD groups), except for the greater magnitude of the association with lower risk of cardiovascular death/total HHF in patients with left ventricular ejection fraction <30% (p for interaction = 0.004). Falsification analyses suggested no influence from residual confounding.

Conclusions: In patients with HFrEF and COPD, beta-blocker use was associated with lower risk of cardiovascular death/total HHF, without evidence of safety concerns for COPD exacerbations.

Keywords: Beta-blocker; Chronic obstructive pulmonary disease; Effectiveness; HFrEF; Heart failure; Safety.

- 36 references

Supplementary info

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5

Am J Respir Crit Care Med

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. 2025 Sep 10.

doi: 10.1164/rccm.202505-1157VP. Online ahead of print.

Targeting Treatable Traits Across the Lifespan in Preterm-Born Individuals with Chronic Lung Disease of Prematurity

Lorenzo Zanetto [1], Luca Bonadies [2], Chiara Pertoldi [3], Alberto Papi [4], Eugenio Baraldi [5]

Affiliations Expand

- PMID: 40929522

- DOI: 10.1164/rccm.202505-1157VP

No abstract available

Keywords: bronchopulmonary dysplasia; chronic obstructive lung disease; precision medicine; premature birth; treatable traits care model.

6

Editorial

ERJ Open Res

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. 2025 Sep 8;11(5):00833-2025.

doi: 10.1183/23120541.00833-2025. eCollection 2025 Sep.

On the effectiveness of rehabilitative exercise training in COPD: why does contractile muscle fatigue matter?

Mathieu Marillier [1]

Affiliations Expand

- PMID: 40927551

- PMCID: PMC12415723

- DOI: 10.1183/23120541.00833-2025

Abstract

Is fatigue necessarily bad? Contractile muscle fatigue is a biomarker of effectiveness of rehabilitative exercise training in COPD, and this applies to patients with chronic respiratory failure. https://bit.ly/44RG0XW.

Conflict of interest statement

Conflict of interest: The author has nothing to disclose.

- **24 references**

Supplementary info

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ERJ Open Res

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. 2025 Sep 8;11(5):00990-2024.

doi: 10.1183/23120541.00990-2024. eCollection 2025 Sep.

Does quadriceps contractile fatigue influence rehabilitation outcomes in COPD-chronic respiratory failure patients?

Mara Paneroni [1], Beatrice Salvi [1], Carla Simonelli [1], Massimo Venturelli [2], Michele Vitacca [1]

Affiliations Expand

- **PMID: 40927546**
- **PMCID: PMC12415736**
- **DOI: 10.1183/23120541.00990-2024**

Abstract

Background: In patients with moderate COPD, response to pulmonary rehabilitation including exercise training varies according to the presence of peripheral muscle fatigue (pMF) of quadriceps. This study investigates the role of pMF in predicting pulmonary rehabilitation outcomes in more severe COPD patients who have already developed chronic respiratory failure (COPD-CRF).

Methods: A *post hoc* analysis of a prospective randomised controlled trial was performed at Istituti Clinici Scientifici Maugeri Lumezzane (Brescia, Italy), involving 30 COPD-CRF patients undergoing a pulmonary rehabilitation programme comprising 20 endurance training sessions. Pre-to-post assessment included a 6-min walk test (6MWT), Fatigue Severity Scale (FSS), Barthel dyspnoea index, and quality-of-life questionnaires. We assessed the contractile pMF of quadriceps *via* electrical nerve stimulation pre-to-post a cycling fatiguing task, using the change in potentiated quadriceps twitch for pMF.

Results: At baseline, 12 (40%) patients developed pMF (pMF group), while 18 (60%) did not (no-pMF group). The pMF group had a lower baseline 6-min walk distance (6MWD) with greater FSS and lower quadriceps thickness. After pulmonary rehabilitation, no change in contractile pMF was found in the overall group, but pMF ameliorated only in the pMF group. The pMF group had a greater increase in 6MWD (71.67±53.64 m *versus* 35.28±36.01 m, $p<0.05$) and was more likely to exceed the minimal clinically important difference in 6MWD (OR 6.25, 95% CI 1.05-37.07; $p=0.044$). Other pulmonary rehabilitation outcomes improved similarly between groups.

Conclusion: Baseline quadriceps pMF predicted greater improvement in the 6MWT in COPD-CRF patients, suggesting it may be a new target for predicting pulmonary rehabilitation outcomes and optimising training protocols.

Conflict of interest statement

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

- **43 references**
- **3 figures**

Full text links

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8

ERJ Open Res

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. 2025 Sep 8;11(5):00023-2025.

doi: 10.1183/23120541.00023-2025. eCollection 2025 Sep.

Preserved ratio impaired spirometry, dysanapsis and airflow obstruction with low forced expiratory volume in 1 s in childhood asthma

Caroline Stridsman [1], Helena Backman [1], Lowie E G W Vanfleteren [2 3], Anna Asarnoj [4 5], Henrik Ljungberg [4 5], Anne Lindberg [1], Apostolos Bossios [6 7], Jon R Konradsen [4 5]

Affiliations Expand

- PMID: 40927545

- PMCID: PMC12415717

- DOI: 10.1183/23120541.00023-2025

Abstract

Background: Airway obstruction is a characteristic spirometric finding in asthma but the clinical significance of other abnormal spirometric patterns is less well described. We aimed to explore pre- and post-bronchodilator (BD) prevalences and clinical characteristics of preserved ratio impaired spirometry (PRISm), dysanapsis and airflow obstruction with low forced expiratory volume in 1 s (FEV_1) in children diagnosed with asthma.

Methods: We extracted specialist care data (clinical and spirometry) from the Swedish National Airway Register (n=3301, age 5-17 years). Normal spirometry was defined as FEV_1≥ lower limit of normal (LLN) and FEV_1/forced vital capacity (FVC)≥LLN. PRISm was defined as forced FEV_1< LLN and FEV_1/FVC≥LLN, dysanapsis as FEV_1/FVC<LLN and FEV_1≥LLN, and airflow obstruction with reduced FEV_1 as FEV_1/FVC<LLN and FEV_1<LLN. The BD response (BDR) was calculated as ((post-BD(L)-pre-BD(L))/predicted (L))×100. Values >10% were considered positive (BDRpos). Groups were compared using parametric tests and associations were explored using logistic regression analysis.

Results: Pre-/post-BD PRISm, dysanapsis and obstruction with low FEV_1 were identified in 9%/7%, 10%/4% and 8%/2%, respectively. Compared with normal spirometry, all three groups were associated with older age and BDRpos in pre-BD analyses. Furthermore, dysanapsis was associated with overweight/obesity and obstruction with low FEV_1 with uncontrolled asthma and more treatment.

Interpretation: In this paediatric asthma cohort, PRISm and dysanapsis were associated with BDRpos and they were at least as common as airflow obstruction with reduced FEV_1. These spirometric phenotypes should be addressed in the

management of childhood asthma and testing of BDR should be considered also in children with PRISm and dysanapsis.

Conflict of interest statement

Conflict of interest: C. Stridsman reports personal fees from AstraZeneca and GSK, and institutional fees from Chiesi and TEVA outside the submitted work. J.R. Konradsen reports advisory board fees from Novartis and ALK, and institutional fees from Regeneron Pharmaceuticals and Thermo Fisher Scientific outside the submitted work. A. Asarnoj reports lecture fees from Orion Pharma, Nestlé, Semper, ACO, Scandinavian Biopharma, Thermo Fisher Scientific and ALK, and advisory board fees from Novartis, Sanofi, Danone, and Nestlé, all outside the submitted work. L.E.G.W. Vanfleteren reports grants from AstraZeneca, and personal fees for lectures and/or advisory boards from AstraZeneca, GSK, Novartis, Boehringer, Pulmonx, Grifols and Chiesi. A. Lindberg reports personal fees and/or advisory board fees from AstraZeneca and GSK. H. Backman reports personal fees from AstraZeneca. A. Bossios reports institutional fees from Chiesi, GSK and AstraZeneca, and institutional grants from AstraZeneca outside the submitted work. H. Ljungberg holds minority stock and is a board member of Medituner AB, and is an expert group member (respiratory) of the Drug Therapeutic Committee and the Health and Medical Care Administration of the Region of Stockholm, Sweden.

- 27 references
- 2 figures

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ERJ Open Res

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. 2025 Sep 8;11(5):01276-2024.

doi: 10.1183/23120541.01276-2024. eCollection 2025 Sep.

Predictors of mortality and hospitalised exacerbations in obstructive airway diseases

Delphine Vauterin [1 2], Frauke Van Vaerenbergh [1 2], Maxim Grymonprez [1 3], Guy Joos [4], Lies Lahousse [1 5]

Affiliations Expand

- PMID: 40927543

- PMCID: PMC12415753

- DOI: 10.1183/23120541.01276-2024

Abstract

Background: In Belgium, age-standardised hospital admission and mortality rates for asthma and COPD are higher than the European average. Understanding the factors that lead to a hospitalised exacerbation and/or mortality is needed to optimise patient management.

Methods: Patients ≥18 years old obtaining two claims for drugs for obstructive airway diseases (ATC code R03) in 1 year between 2017 and 2022 were identified in Belgian nationwide claims-based data. A multivariable Cox model was used to investigate predictors of all-cause mortality and hospitalised exacerbation.

Results: Among 1 006 968 patients included in this study, 39 214 patients (3.9%) had a hospitalised exacerbation during follow-up and 145 021 patients (14.4%) died. Next to age, sex, Charlson comorbidity index and socioeconomic status, significant predictors for mortality were being frail (adjusted hazard ratio (aHR) 2.09, 95% confidence interval (CI) 2.06-2.12), heavy overuse of short-acting bronchodilators (SABDs) (≥6 packages per year, aHR 1.81, 95% CI 1.78-1.84), current smoking (aHR 1.64, 95% CI 1.61-1.66) and a history of ≥2 outpatient exacerbations in the previous year (aHR 1.52, 95% CI 1.49-1.54). A recent hospitalised exacerbation (aHR 5.67, 95% CI 5.51-5.84), current smoking (aHR 3.69, 95% CI 3.60-3.78), heavy overuse of SABDs (aHR 3.15, 95%CI 3.08-3.23) and being frail (aHR 1.07, 95% CI 1.03-1.10) were important additional risk factors for hospitalised exacerbation.

Conclusion: Previous exacerbations, current smoking, frailty and overuse of SABDs were significantly associated with hospitalised exacerbations and mortality in patients with asthma and/or COPD. The results of this nationwide cohort study highlight the importance of achieving disease control, smoking prevention and tackling frailty in primary care.

- 42 references

- 2 figures

10

Tuberc Respir Dis (Seoul)

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. 2025 Sep 10.

doi: 10.4046/trd.2025.0040. Online ahead of print.

Clinical Characteristics of Individuals with COPD, Pre-COPD, Smokers with Normal Lung Function in Korea: Updated Analysis of the KOCOSS Cohort

Jong Geol Jang [1], Youlim Kim [2], Jung-Kyu Lee [3], Hye Yun Park [4], Dong Il Park [5], Seung Won Ra [6], Hyun-Kuk Kim [7], Myung Goo Lee [8], Yong Bum Park [9], Kwang Ha Yoo [2]

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- PMID: 40926396

- DOI: 10.4046/trd.2025.0040

Free article

Abstract

Background: Chronic obstructive pulmonary disease (COPD) is a heterogeneous lung disease characterized by persistent airflow limitation and is a leading cause of mortality worldwide. Pre-COPD refers to a pre-disease state associated with an increased risk of COPD development. This study aims to evaluate the clinical characteristics of individuals with COPD, pre-COPD, and smokers with normal lung function in South Korea, and to provide an updated analysis of the KOCOSS cohort data.

Methods: We analyzed data from 4,502 participants in the KOCOSS database collected between 2012 and 2025, including 4,197 with COPD, 126 with pre-COPD, and 179 smokers with normal lung function. Baseline characteristics were compared across these groups.

Results: Patients with COPD were more likely to be male, older, and had a lower body mass index than those with pre-COPD and smokers with normal lung function. Symptom burden, as assessed by the COPD Assessment Test and modified Medical Research Council dyspnea scale, was highest in patients with COPD, followed by pre-COPD and smokers with normal lung function. Patients with COPD had the highest overall use of respiratory medications (89.3%), including inhalers and other treatments, followed by pre-COPD individuals (61.5%) and smokers with normal lung function (47.4%). Hypertension was the most common comorbidity across all groups, with no significant differences in the prevalence of comorbidities.

Conclusion: This analysis of the KOCOSS cohort highlights the distinct clinical characteristics of individuals with COPD, pre-COPD, and smokers with normal lung function. Notably, individuals without spirometric COPD still showed substantial symptom burden and inhaler use.

Keywords: Chronic obstructive pulmonary disease; KOCOSS cohort; Pre-COPD.

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Cite

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Medicine (Baltimore)

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. 2025 Sep 5;104(36):e42754.

doi: 10.1097/MD.0000000000042754.

Establishment and validation of a nomogram for predicting acute exacerbation of chronic obstructive pulmonary disease based on the C-reactive protein-triglyceride-glucose index

Dandan Zhang [1], Lianbo Zhao [1], Zheng Wang [2], Ming Zhai [1], Yan Chen [1], Caoyang Fang [3]

Affiliations Expand

- **PMID: 40922377**
- **PMCID: PMC12419302**
- **DOI: 10.1097/MD.0000000000042754**

Abstract

The C-reactive protein-triglyceride-glucose index (CTI) is becoming a new indicator for the comprehensive evaluation of inflammation and insulin resistance severity. This study aimed to analyze the correlation between CTI and the risk of acute exacerbation in chronic obstructive pulmonary disease (COPD), as well as its influencing factors, and construct and validate a risk prediction nomogram. We selected 447 COPD patients who visited the First People's Hospital of Mengcheng County from January 2020 to May 2024, among whom 266 were acute exacerbation

patients. They were randomly divided into a training set and a validation set in a 7:3 ratio. Clinical data were collected, and multiple logistic regression was used to explore the risk factors for acute exacerbation in COPD patients. Based on the results of the multiple logistic regression, a risk prediction nomogram was constructed. Internal validation of the nomogram was performed using receiver operating characteristic curve analysis to assess discrimination, Hosmer-Lemeshow test and calibration curve analysis to assess calibration, and decision curve analysis to evaluate the clinical usefulness of the nomogram. The results of multiple logistic regression analysis showed that smoking, hypertension, red blood cells, and CTI were risk factors for acute exacerbation of COPD ($P < .05$). A risk prediction nomogram for acute exacerbation of COPD was constructed based on the results of multiple logistic regression analysis. The receiver operating characteristic curve analysis showed that the area under the curve of the nomogram for predicting acute exacerbation of COPD was 0.985 (95% CI: 0.976-0.994); the results of Hosmer-Lemeshow test and calibration curve analysis indicated that the nomogram had a good fit in the modeling group ($\chi 2 = 12.95$, $P = .1136$). The decision curve analysis results showed that the net clinical benefit of the nomogram was > 0 when the threshold probability was > .05 in the modeling group. The nomogram model for predicting the risk of acute exacerbation in COPD patients based on CTI has good consistency, calibration, clinical applicability, and discriminability. The nomogram prediction model constructed by these factors can identify COPD patients with acute exacerbation early, which is helpful for early intervention and improvement of patient prognosis.

Keywords: C-reactive protein–triglyceride–glucose index; COPD; CTI; nomogram; predicted.

Conflict of interest statement

The authors have no conflicts of interest to disclose.

- 32 references
- 4 figures

Supplementary info

Publication types, MeSH terms, SubstancesExpand

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12

Tuberc Respir Dis (Seoul)

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. 2025 Sep 8.

doi: 10.4046/trd.2025.0058. Online ahead of print.

Risk factors for Progression to Frequent Exacerbators in Stable Patients with COPD

Sang Hyuk Kim [1 2], Hye Yun Park [3], Hyun Lee [4], Hyewon Seo [5], Ji-Hyun Lee [6], Hyeon-Kyoung Koo [7], Na Young Kim [8], Kwang Ha Yoo [9], Ju Ock Na [10], Youlim Kim [9]

Affiliations Expand

- PMID: 40921436

- DOI: 10.4046/trd.2025.0058

Free article

Abstract

Background: Little is known about the transition to frequent exacerbators in stabilized patients with chronic obstructive pulmonary disease (COPD).

Methods: This study utilized data obtained from the Korean COPD subgroup study cohort (KOCOSS), including 511 patients with infrequent exacerbations. The outcome for these groups was progression to frequent exacerbators. Multivariable logistic regression analysis was used to investigate the risk factors for progression.

Results: Within one year, 40 patients (7.8%) progressed to frequent exacerbators. Among those patients with severe airflow limitation and those who used inhaled corticosteroids (ICS), incidence of progression was significantly higher. The risk factors for this progression were older age (adjusted odds ratio [aOR] = 1.99, 95% confidence interval [CI] = 1.19-3.34; per 10-year increase), decreased post-bronchodilator forced expiratory volume in 1 second (aOR = 1.32, 95% CI = 1.05-1.66; per 10% predicted decrease), increased blood eosinophil count (aOR = 1.21, 95% CI = 1.08-1.35; per 100 cells/μL increase), and use of ICS/long-acting beta-agonists (LABA) (aOR = 9.16, 95% CI = 1.38-60.82) and ICS/LABA/long-acting muscarinic antagonists (aOR = 8.00, 95% CI = 1.25-51.18).

Conclusions: Among stable COPD patients, older age, decreased lung function, increased eosinophil counts, and use of ICS-containing inhalers were associated with progression to frequent exacerbators.

Keywords: Chronic Obstructive Pulmonary Disease; Disease Progression; Eosinophil; Exacerbation; Prediction.

Cite

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Am J Respir Crit Care Med

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. 2025 Sep 8.

doi: 10.1164/rccm.202502-0404OC. Online ahead of print.

Randomized Sham Controlled Trial of Targeted Lung Denervation in Patients with COPD (AIRFLOW-3)

Pallav L Shah [1], Dirk-Jan Slebos [2], Richard Sue [3], Surya P Bhatt [4], Christian Ghattas [5], Charlie Strange [6], Bruno Degano [7], Arschang Valipour [8], Stephan Eisenmann [9], Jose De Cardenas [10], Charles-Hugo Marquette [11 12], Jose Soto-Soto [13], Frank C Sciurba [14], Francesca Conway [15], James Tonkin [16], Anand Tana [17], Nathaniel Marchetti [18], Jorine E Hartman [19], Valentin Heluain [20], Nicolas Guibert [21], Gerard J Criner [22 23]; AIRFLOW-3 Study Group

Affiliations Expand

- PMID: 40920914

- DOI: 10.1164/rccm.202502-0404OC

Abstract

Rationale: AIRFLOW-3 was a 1:1 randomized, double blind, sham controlled trial of the d'Nerva Targeted Lung Denervation (TLD) System in patients with COPD.

Objective: Evaluate the impact of TLD on COPD exacerbations compared to optimal medical treatment.

Methods: AIRFLOW-3 patients were symptomatic (CAT ≥10) with moderate to very severe airflow obstruction (25% ≤ FEV_1 ≤ 80% predicted) and GOLD E status (≥2 moderate or ≥1 severe exacerbation over prior 12 months). The primary endpoint was comparison of time-to-first moderate or severe COPD exacerbation through 12 months between the Treatment (TLD + optimal medical treatment) and Sham Control groups (sham procedure + optimal medical treatment). Secondary endpoints included rate of severe COPD exacerbations, change in quality of life (SGRQ-C and SF-36), change in lung function (FVC, FEV1, RV), and change in CAT.

Measurements and main results: 388 patients were randomized 1:1 at 32 sites. There was no difference between TLD compared to sham treatment in probability of participants having a moderate or severe COPD exacerbation, HR 1.268 (95% CI, 0.988 to 1.628). At 1 year, the TLD group had less dyspnea (> 1 point improvement in TDI 35.4 vs 24.1%, p 0.021) compared to sham. Post-hoc analyses revealed that

failure to reach the primary endpoint was driven by an insufficient number of patients exhibiting an airway-predominant phenotype (lung hyperinflation without significant emphysema).

Conclusions: AIRFLOW-3 failed to meet its primary endpoint. However, post-hoc analyses identified a responder profile; a prospective multicenter randomized controlled trial is being designed to confirm these findings.

Keywords: anticholinergic; bronchoscopy; chronic obstructive pulmonary disease; targeted lung denervation.

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Ann Am Thorac Soc

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. 2025 Sep 8.

doi: 10.1513/AnnalsATS.202412-1265OC. Online ahead of print.

Neutrophil-to-Lymphocyte Ratio (NLR) as a Biomarker in Clinically Stable Chronic Obstructive Pulmonary Disease: SPIROMICS cohort

Daniel T Hoesterey [1], Hong Dang [2], Daniela Markovic [3], Russell G Buhr [4 5], Donald P Tashkin [6], R Graham Barr [7], John A Belperio [8], Russell P Bowler [9], Eugene R Bleecker [10], David J Couper [11], Gerard G Criner [12 13], Christopher B Cooper [14], Claire M Doerschuk [15], Mark T Dransfield [16], M Bradley Drummond [11], Ashraf Fawzy [17 18], Christine M Freeman [19 20], MeiLan K Han [21], Nadia N Hansel [22], Annette T Hastie [23], Eric A Hoffman [24], Yvonne J Huang [25], Robert J Kaner [26], Richard E Kanner [27], Victor Kim [28], Jerry A Krishnan [29], Fernando J Martinez [30], Wanda K O'Neal [31], Victor E Ortega [32], Robert Paine 3rd [33], Abhishek K Shrivastav [34], J Michael Wells [35], Prescott G Woodruff [36], Jeffrey L Curtis [37 38], Igor Barjaktarevic [39]

Affiliations Expand

- PMID: 40920896

- DOI: 10.1513/AnnalsATS.202412-1265OC

Abstract

Rationale: Inflammation is central to chronic obstructive pulmonary disease (COPD) pathogenesis but incompletely represented in COPD prognostic models. Neutrophil to lymphocyte ratio (NLR) is a readily available inflammatory biomarker.

Objectives: To explore the associations of NLR with smoking status, clinical features of COPD, and future adverse outcomes.

Methods: We analyzed NLR calculated from the complete blood count of participants who currently or formerly smoked (n = 2,624) and tobacco-naïve controls (n = 187) in the SPIROMICS multicenter observational cohort study. We assessed the stability of NLR at 6 weeks and 1 year, the association with select blood biomarkers, and the impact of smoking on NLR and cell counts. We stratified participants by NLR quartiles to compare cross-sectional clinical features at enrollment, prospectively observed exacerbations at 1 year, and mortality during longitudinal follow-up.

Results: Higher NLR quartiles were broadly associated with more severe clinical features of COPD. NLR values were repeatable at 6 weeks (ICC=0.74) and 1 year (ICC=0.62). The impact of smoking on NLR varied with the severity of airflow limitation, mediated by an interaction between smoking, FEV1 % predicted, and neutrophil counts but not lymphocyte counts. The highest NLR quartile (>3.11) was associated with an increased risk of exacerbation over 1-year (adjusted OR=1.51 95%CI 1.18, 1.92) and increased risk of mortality (adjusted HR=1.41, 95%CI 1.20, 1.66) compared to quartiles 1-3.

Conclusions: Elevated NLR in stable COPD is a widely available biomarker associated with increased risk for exacerbation and death. The impact of cigarette smoking on NLR varies with disease severity.

Supplementary info

Grants and fundingExpand

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Review

Respir Med

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Efficacy of dupilumab and mepolizumab in eosinophilic COPD: insights from phase 3 trials

Philipp Suter [1], Robert Greig [1], Rory Chan [1], Brian Lipworth [2]

Affiliations Expand

- PMID: 40915326

- DOI: 10.1016/j.rmed.2025.108343

Free article

Abstract

Background: Eosinophilic chronic obstructive pulmonary disease (eCOPD), characterized by type 2 inflammation, is an emerging target for biologic therapies.

Objective: To indirectly compare the efficacy of dupilumab and mepolizumab in eCOPD, defined as blood eosinophil counts ≥300 cells/μL, by synthesizing data from phase 3 randomized controlled trials: BOREAS and NOTUS for dupilumab, MATINEE for mepolizumab.

Methods: We performed an indirect comparison of trial primary and secondary outcomes including annual exacerbation rates (AER), quality of life (St. George's Respiratory Questionnaire, SGRQ), symptoms (E-RS-COPD), and lung function (FEV_1). Rate ratios and mean differences with crude 95% CI were evaluated using forest plots.

Results: Both dupilumab and mepolizumab significantly reduced AER versus placebo, with comparable magnitude based on overlapping 95% CI. The time needed to prevent one exacerbation was shorter for dupilumab (2.3-3.1 years) compared to mepolizumab (4.8 years). However, dupilumab but not meplizumab showed significant improvements in quality of life, symptoms, and FEV_1, along with enhanced effects in patients with elevated fractional exhaled nitric oxide (FeNO ≥20 ppb). None of the secondary outcomes reached the minimal clinical important difference.

Conclusion: While both biologics reduced AER in eCOPD, dupilumab demonstrated statistically but not clinically relevant improvements on quality of life, symptoms, and lung function. Especially in patients with elevated FeNO, dupilumab demonstrated an improvement. Further direct comparisons and biomarker-driven studies are warranted.

Keywords: biologics; chronic obstructive pulmonary disease; dupilumab; eosinophil; mepolizumab.

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: Philipp Suter reports a relationship with AstraZeneca that includes: speaking and lecture fees. Philipp Suter reports a relationship with GSK that includes: speaking and lecture fees. Philipp Suter reports a relationship with Lung league Fribourg that includes: funding grants and speaking and lecture fees. Philipp Suter reports a relationship with Swiss Lung Foundation that includes: funding grants. Robert Greig reports a relationship with AstraZeneca that includes: speaking and lecture fees. Rory Chan reports a relationship with AstraZeneca that includes: speaking and lecture fees. Rory Chan reports a relationship with Vitalograph Ltd that includes: consulting or advisory. Rory Chan reports a relationship with Thorasys that includes: speaking and lecture fees. Brian J Lipworth reports a relationship with AstraZeneca that includes: consulting or advisory, funding grants, speaking and lecture fees, and travel reimbursement. Brian J Lipworth reports a relationship with Sanofi that includes: consulting or advisory and speaking and lecture fees. Brian J Lipworth reports a relationship with NIOX Group Plc that includes: consulting or advisory and speaking and lecture fees. Brian J Lipworth reports a relationship with Chiesi that includes: consulting or advisory, funding grants, speaking and lecture fees, and travel reimbursement. Brian J Lipworth reports a relationship with Lupin Pharmaceuticals, Inc. that includes: consulting or advisory. Brian J Lipworth reports a relationship with Glenmark Pharmaceuticals Limited that includes: consulting or advisory and speaking and lecture fees. Brian J Lipworth reports a relationship with Sandoz Inc that includes: consulting or advisory. The son of Dr Brian J Lipworth is presently an employee of AstraZeneca. 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 typesExpand

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Cite

16

J Med Econ

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. 2025 Dec;28(1):1564-1573.

doi: 10.1080/13696998.2025.2555144. Epub 2025 Sep 11.

Real world evidence on health care resource utilization and economic burden of arrhythmias in patients with COPD

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- PMID: 40905164

- DOI: 10.1080/13696998.2025.2555144

Free article

Abstract

Aims: Cardiac arrhythmias are common in chronic obstructive pulmonary disease (COPD) and are associated with poor outcomes. Their impact on healthcare resource utilization (HCRU) and costs is increasingly recognized. The incremental economic burden of arrhythmias in patients with COPD and the impact of early detection using ambulatory electrocardiogram (AECG) monitors remain unknown. This real-world analysis quantified incremental HCRU and costs associated with arrhythmia in COPD, and the impact of early detection through AECG monitoring.

Methods: We conducted a retrospective claims analysis using the Merative MarketScan database (2006-2024) to identify patients with COPD aged ≥ 18 years. We examined three sub-cohort pairs of these patients, with and without arrhythmia, and those who underwent AECG monitoring, comparing demographics, hospitalization rates, all-cause readmissions within 30 days, emergency room visits, and total care costs. Each cohort pair was reweighted using entropy balancing on the following baseline variables: age, sex, region, insurance type, and comorbidities. The HCRU and cost drivers were analyzed over 24 months from the index date, and significance was assessed using Tweedie distributions for costs and zero-inflated binomial distributions for HCRU rates.

Results: Healthcare costs and HCRU were significantly higher in the 71,585 patients with COPD and arrhythmia than in the 261,188 matched patients without arrhythmia. In the second comparison, patients with COPD and arrhythmia who were monitored using AECG had a higher utilization rate than their counterparts who did not have arrhythmia. In the third comparison, patients with COPD and arrhythmia who were monitored using AECG had lower utilization than their counterparts who were never monitored.

Limitations: As a retrospective analysis of claims data, this study was limited by the population under investigation and the availability of the measured variables.

Conclusions: Arrhythmias in COPD substantially increase healthcare utilization and costs. Early detection by AECG monitoring may mitigate this burden.

Keywords: COPD; ECG; I11; I13; I15; I18; ambulatory monitoring; arrhythmia; cardiac arrhythmias; entropy balance; healthcare costs; healthcare utilization; outcomes research; real-world evidence.

Full text links

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Cite

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Sleep

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. 2025 Sep 9;48(9):zsaf009.

doi: 10.1093/sleep/zsaf009.

Association between positive airway pressure therapy and healthcare costs among older adults with comorbid obstructive sleep apnea and common chronic conditions: an actuarial analysis

Emerson M Wickwire [1 2], Chris R Fernandez [3], Nhan Huynh [4], Nathaniel F Watson [3 5], Ian Duncan [4 6]

Affiliations Expand

- PMID: 39803895

- DOI: 10.1093/sleep/zsaf009

Abstract

Study objectives: To determine the association between adherence to positive airway pressure and healthcare costs among a national sample of older adults with comorbid obstructive sleep apnea (OSA) and common chronic conditions.

Methods: Our data source was a random sample of Medicare administrative claims for years 2016-2019. Inclusion criteria included age ≥65 years and new diagnosis of OSA. Exclusion criteria included evidence of prior OSA treatment during the 12 months prior to the index date, active cancer, or end-stage renal disease. OSA was defined using physician-assigned diagnostic codes. Common chronic conditions included chronic obstructive pulmonary disease, congestive heart failure, depression, hypertension, type 2 diabetes mellitus, obesity, and stroke. Based on Medicare policy, individuals were classified as adherers, nonadherers, or noninitiators. Risk adjustment was based on the Centers for Medicare and Medicaid Hierarchical Condition Categories approach developed by the Centers for Medicaid and Medicare Service specifically to estimate anticipated costs. To examine the impact of PAP adherence on costs, we employed a weighted DID regression

framework to account for baseline variations in health status and other confounding factors.

Results: Participants included 28 220 Medicare beneficiaries with comorbid OSA. Of these, 45% were adherent to PAP, 10% were nonadherent, and 44% did not initiate PAP. Relative to noninitiators, beneficiaries who initiated PAP displayed $195 reduced per-member per-month costs over 24 months. This finding remained consistent across all seven medical and psychiatric subgroups, as well as among individuals with multimorbidity.

Conclusions: In this national analysis of Medicare beneficiaries with common chronic conditions, PAP adherence was associated with reduced costs over 24 months.

Keywords: Medicare; adherence; costs; health economics; obstructive sleep apnea; older adults; positive airway pressure.

Comment in

- Positive airway pressure therapy lowers healthcare costs in older adults, but initiation remains a challenge.

Luyster FS, Strollo PJ Jr.Sleep. 2025 Sep 9;48(9):zsaf036. doi: 10.1093/sleep/zsaf036.PMID: 39923130 Free PMC article. No abstract available.

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

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Geriatr Gerontol Int

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. 2025 Sep 11.

doi: 10.1111/ggi.70175. Online ahead of print.

Multimorbidity patterns and disability risk in aging populations: Insights from machine learning

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Affiliations Expand

- PMID: 40936221

- DOI: 10.1111/ggi.70175

No abstract available

Supplementary info

Publication typesExpand

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2

Review

Ageing Res Rev

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. 2025 Sep 9:102897.

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Prognostic effects of multimorbidity clusters on health outcomes in adults: A systematic review and meta-analysis

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Affiliations Expand

- PMID: 40934974

- DOI: 10.1016/j.arr.2025.102897

Abstract

Background: Multimorbidity is an important global health concern. We evaluated the prognostic impacts of multimorbidity clusters on health outcomes in adults.

Methods: This study was registered in PROSPERO (CRD42024528148), and no funding was received. Eight databases (PubMed, EMBASE, Cochrane Library, Web of Science, PsycINFO, CINAHL, Wan Fang, and CNKI) were searched for longitudinal studies reporting the prognostic impacts of multimorbidity clusters. Methodological quality was assessed using Newcastle-Ottawa Scale. Data analysis incorporated narrative synthesis, random-effects meta-analysis, subgroup analysis, meta-regression, sensitivity analysis, and Egger's test.

Results: Forty articles identifying 12 multimorbidity clusters were included. Cardiometabolic multimorbidity (adjusted hazard ratio [HR]: 1.97, 95% confidence interval [CI]: 1.76-2.21; adjusted odds ratio [OR]: 1.44, 95% CI: 1.16-1.80) had strong prognostic impact on all-cause mortality, followed by cardiopulmonary (adjusted HR: 1.70, 95% CI: 1.38-2.09), and digestive multimorbidity (adjusted HR: 1.46, 95% CI: 1.11-1.93). It also predicted circulatory (adjusted HR: 3.41, 95% CI: 2.27-5.12) and cancer mortality (adjusted HR: 1.32, 95% CI: 1.04-1.67), activities of daily living disability (adjusted OR: 1.76, 95% CI: 1.57-1.99), and depression (adjusted OR: 1.53, 95% CI: 1.27-1.85). Multi-system multimorbidity predicted all-cause mortality (adjusted OR: 1.41, 95% CI: 1.12-1.77) and activities of daily living disability (adjusted OR: 2.04, 95% CI: 1.36-3.05). Cardiometabolic multimorbidity predicted a higher risk of all-cause mortality when identified using a pre-determined method.

Conclusion: Multimorbidity clusters strongly impact activities of daily living, depression, and mortality, with cardiometabolic multimorbidity warranting particular attention. However, due to methodological limitations, heterogeneity, Asian-dominant samples, and language bias, these results should be interpreted with caution.

Keywords: Meta-analysis; Multimorbidity cluster; Prognosis; 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.

Supplementary info

Publication typesExpand

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PLoS Med

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. 2025 Sep 11;22(9):e1004740.

doi: 10.1371/journal.pmed.1004740. eCollection 2025 Sep.

Correction: Depression and physical multimorbidity: A cohort study of physical health condition accrual in UK Biobank

Kelly J Fleetwood, Bruce Guthrie, Caroline A Jackson, Paul A T Kelly, Stewart W Mercer, Daniel R Morales, John D Norrie, Daniel J Smith, Cathie Sudlow, Regina Prigge

- PMID: 40934184

- DOI: 10.1371/journal.pmed.1004740

Abstract

[This corrects the article DOI: 10.1371/journal.pmed.1004532.].

Erratum for

- Depression and physical multimorbidity: A cohort study of physical health condition accrual in UK Biobank.

Fleetwood KJ, Guthrie B, Jackson CA, Kelly PAT, Mercer SW, Morales DR, Norrie JD, Smith DJ, Sudlow C, Prigge R.PLoS Med. 2025 Feb 13;22(2):e1004532. doi: 10.1371/journal.pmed.1004532. eCollection 2025 Feb.PMID: 39946376 Free PMC article.

BJGP Open

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. 2025 Sep 10:BJGPO.2025.0094.

doi: 10.3399/BJGPO.2025.0094. Online ahead of print.

Artificial-Intelligence driven exercise programmes in personalising the management of multimorbidity

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- **PMID: 40930845**

- **DOI: 10.3399/BJGPO.2025.0094**

Free article

No abstract available

Keywords: artificial-Intelligence; exercise programme; multimorbidity.

Full text links

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Arch Osteoporos

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doi: 10.1007/s11657-025-01604-6.

Effect of comorbidities and multimorbidity on bone mineral density in patients with osteoporosis

Luis Leal-Vega [1], María Begoña Coco-Martín [2], Adrián Martín-Gutiérrez [1], José Antonio Blázquez-Cabrera [3], Francisca Arranz-García [4], Amalia Navarro [3], María

Jesús Moro [5], José Filgueira [6], Manuel Sosa-Henríquez [7], María Ángeles Vázquez [8], María José Montoya [8], Manuel Díaz-Curiel [9], José Manuel Olmos [10], José Luis Pérez-Castrillón [11]; OSTEOMED Group

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- PMID: 40921881
- PMCID: PMC12417292
- DOI: 10.1007/s11657-025-01604-6

Abstract

This retrospective cohort study analysed a total of 344 patients from the OSTEOMED registry with matched baseline and follow-up DXA data, finding that comorbidities such as nephrolithiasis, hypertension or coronary heart disease may influence the response to prescribed anti-osteoporotic treatment.

Purpose: To determine: 1) comorbidities associated with reduced bone mineral density (BMD), T-score and Z-score at the lumbar spine (L1 to L4 vertebrae), femoral neck and total hip; and 2) the role of multimorbidity (≥ 2 comorbidities) in reduced BMD, T-score and Z-score at the lumbar spine, femoral neck and total hip.

Methods: Retrospective cohort study analyzing patients [319 females (92.73%), 25 males (7.27%), age 62.13 ± 10.46 years] from the OSTEOMED registry with matched baseline and follow-up dual-energy X-ray absorptiometry (DXA) data. Patients' sex, age, body mass index (BMI), comorbidities and treatments were collected from their medical records after they had given written informed consent.

Results: Considering a least significant change (LSC) of 4.2%, neither comorbidity nor multimorbidity was statistically significantly associated with a reduction in BMD in any of the bone regions studied. However, binary logistic regression analyses adjusted for sex, age, BMI and treatments showed that nephrolithiasis (p = 0.044) and coronary heart disease (p = 0.026) were statistically significantly associated with a reduction in total hip T-score and that hypertension (p = 0.049) and coronary heart disease (p = 0.01) were statistically significantly associated with a reduction in total hip Z-score.

Conclusion: Despite comorbidity and multimorbidity, patients with osteoporosis are mostly well protected by anti-osteoporotic treatment in daily clinical practice. However, nephrolithiasis, hypertension, and coronary heart disease can influence the response to prescribed anti-osteoporotic treatment, especially at the total hip level.

Keywords: Bone density; Comorbidity; Dual-energy X-ray absorptiometry; Evidence-based practice; Multimorbidity; Osteoporosis.

Conflict of interest statement

Declarations. Ethics approval: This study was conducted in accordance with the Declaration of Helsinki of the World Medical Association and was approved by the Clinical Research Ethics Committee of the Albacete University Hospital Complex (Act 02/11). Informed consent: All patients signed a written informed consent form to be included in the cohort prior to the collection of their personal or clinical data. Conflicts of interest: Luis Leal-Vega, María Begoña Coco-Martín, Adrián Martín-Gutiérrez, José Antonio Blázquez-Cabrera, Francisca Arranz-García, Amalia Navarro, María Jesús Moro, José Filgueira, Manuel Sosa-Henríquez, María Ángeles Vázquez, María José Montoya, Manuel Díaz-Curiel, José Manuel Olmos, and José Luis Pérez-Castrillón declare that they have no conflicts of interest.

- **45 references**

Supplementary info

MeSH termsExpand

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Cite

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Sleep

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. 2025 Sep 9;48(9):zsaf009.

doi: 10.1093/sleep/zsaf009.

Association between positive airway pressure therapy and healthcare costs among older adults with comorbid obstructive sleep apnea and common chronic conditions: an actuarial analysis

Emerson M Wickwire [1 2], Chris R Fernandez [3], Nhan Huynh [4], Nathaniel F Watson [3 5], Ian Duncan [4 6]

Affiliations Expand

- **PMID: 39803895**

- **DOI: 10.1093/sleep/zsaf009**

Abstract

Study objectives: To determine the association between adherence to positive airway pressure and healthcare costs among a national sample of older adults with comorbid obstructive sleep apnea (OSA) and common chronic conditions.

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Conclusions: In this national analysis of Medicare beneficiaries with common chronic conditions, PAP adherence was associated with reduced costs over 24 months.

Keywords: Medicare; adherence; costs; health economics; obstructive sleep apnea; older adults; positive airway pressure.

Comment in

- Positive airway pressure therapy lowers healthcare costs in older adults, but initiation remains a challenge.

Luyster FS, Strollo PJ Jr.Sleep. 2025 Sep 9;48(9):zsaf036. doi: 10.1093/sleep/zsaf036.PMID: 39923130 Free PMC article. No abstract available.

- Cited by 1 article

Supplementary info

MeSH terms, Grants and fundingExpand

Full text links

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

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JMIR Res Protoc

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. 2025 Sep 11:14:e70517.

doi: 10.2196/70517.

Using mHealth to Predict Asthma Exacerbations in Children and Adolescents (Mobile Health for Kids With Asthma): Protocol for an Observational Study

Naphtal Nyirimanzi [1], Myriam Bransi [2 3], François-Pierre Counil [4 5], Olivier Drouin [6 7], Jocelyn Gravel [6 8], Anne Hicks [9], Cristina Longo [10 11], Theo J Moraes [12 13], Esli Osmanlliu [14], Dhenuka Radhakrishnan [15 16], Connie Yang [12 13], Teresa To [17 18], Bruce Wright [19], Sze Man Tse [8 20]

Affiliations Expand

- PMID: 40934499

- DOI: 10.2196/70517

Abstract

Background: Asthma exacerbation is a major cause of emergency department visits in children and adolescents. Most of the existing asthma prediction scores and biomarkers are designed to predict severe exacerbations in the medium to long term. Mobile health (mHealth) is a promising approach for integrating real-time, multimodal data to improve the prediction of asthma exacerbation. Using mHealth can enable the identification of at-risk children and the implementation of timely interventions.

Objective: The primary objective of the Mobile Health for Kids With Asthma (MoKA) study is to develop a validated predictive model for imminent asthma exacerbation in children using multimodal data, including participant-reported questionnaires through the RespiSentinel mobile app, augmented with publicly sourced environmental and epidemiological data. Furthermore, we will evaluate the association between the frequency of nocturnal cough measured in real time and asthma control and severe asthma exacerbation, and the acceptability of the RespiSentinel app in asthma self-management.

Methods: This is a prospective cohort study with in-person and remote recruitment at 7 tertiary pediatric centers in Canada. Parents of children aged between 1 and 17 years, as well as children who have experienced at least one wheezing episode or asthma exacerbation during the 12 months before recruitment, will be eligible to participate (estimated number of children: n=2000). The planned duration of study participation is 6 months following the date of enrollment (cohort entry), regardless of the number of asthma exacerbations during the follow-up period. The primary outcome will be asthma exacerbation defined by asthma symptoms requiring systemic corticosteroid use and an urgent care or emergency department visit or hospitalization. The predictive model will be created using questionnaire data on asthma control via the RespiSentinel app as well as by integrating publicly available local daily data on air pollutant levels (National Air Pollution Surveillance Program) and weekly prevalence of respiratory viruses (National Canadian Respiratory Virus Detection Surveillance Program). Nocturnal cough frequency will be determined by using nighttime audio recordings, and their contribution to predict imminent asthma exacerbation will be evaluated. Acceptability of the RespiSentinel app will be assessed through an app-based questionnaire.

Results: We will train and validate an asthma exacerbation prediction model using multimodal data sources. This approach may help patients, their families, and health professionals anticipate upcoming loss of asthma control and take the necessary steps to prevent a severe asthma exacerbation.

Conclusions: The MoKA study will harness real-time mHealth data to identify children at imminent risk of asthma exacerbation with the ultimate goal of designing timely interventions to prevent morbidity in this group of patients.

Keywords: asthma; children; exacerbation; multimodal data; prediction.

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A plain language summary of the MIRACLE study: benralizumab in people in Asia with severe asthma

Kefang Lai [1], Dejun Sun [2], Ranran Dai [3], Hae-Sim Park [4], Annika Åstrand [5], David Cohen [6], Maria Jison [6], Vivian H Shih [7], Viktoria Werkström [5], Yuhui Yao [8], Yajuan Zhang [8], Nanshan Zhong [1]; MIRACLE Study Investigators

Affiliations Expand

- PMID: 40931778

- DOI: 10.1080/1750743X.2025.2550237

No abstract available

Plain language summary

What is this summary about?This summary describes the results of the Phase 3 MIRACLE study, originally published in the *Respiratory Medicine* journal. MIRACLE was the first clinical trial to evaluate the efficacy and safety of benralizumab injections in a large group of people from Asia with severe asthma.What were the main results of the MIRACLE study?People with severe asthma who took benralizumab had fewer asthma attacks (also called exacerbations). They also had better lung function, fewer asthma symptoms, better symptom control, and better health-related quality of life. The improvements in lung function and symptom control began as early as 4 weeks after the first benralizumab dose. A similar percentage of people in the benralizumab and placebo groups had adverse events.What do the results of MIRACLE mean?The MIRACLE results support the use of benralizumab as a treatment option for people in Asia with severe eosinophilic asthma. Benralizumab shows potential to improve asthma control and health-related quality of life in this population.[Box: see text].

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. 2025 Sep 8;51(3):e20240388.

doi: 10.36416/1806-3756/e20240388. eCollection 2025.

Evaluation of the accuracy of ChatGPT in answering asthma-related questions

Bruno Pellozo Cerqueira [1], Vinicius Cappellette da Silva Leite [1], Carla Gonzaga França [1], Fernando Sergio Leitão Filho [2], Sonia Maria Faresin [2], Ricardo Gassmann Figueiredo [3], Andrea Antunes Cetlin [4], Lilian Serrasqueiro Ballini Caetano [2], José Baddini-Martinez [2]

Affiliations Expand

- PMID: 40929479
- PMCID: PMC12401147
- DOI: 10.36416/1806-3756/e20240388

Abstract

Objective: To evaluate the quality of ChatGPT answers to asthma-related questions, as assessed from the perspectives of asthma specialists and laypersons.

Methods: Seven asthma-related questions were asked to ChatGPT (version 4) between May 3, 2024 and May 4, 2024. The questions were standardized with no memory of previous conversations to avoid bias. Six pulmonologists with extensive expertise in asthma acted as judges, independently assessing the quality and reproducibility of the answers from the perspectives of asthma specialists and laypersons. A Likert scale ranging from 1 to 4 was used, and the content validity coefficient was calculated to assess the level of agreement among the judges.

Results: The evaluations showed variability in the quality of the answers provided by ChatGPT. From the perspective of asthma specialists, the scores ranged from 2 to 3, with greater divergence in questions 2, 3, and 5. From the perspective of laypersons, the content validity coefficient exceeded 0.80 for four of the seven questions, with most answers being correct despite a lack of significant depth.

Conclusions: Although ChatGPT performed well in providing answers to laypersons, the answers that it provided to specialists were less accurate and superficial. Although AI has the potential to provide useful information to the public, it should not replace medical guidance. Critical analysis of AI-generated information remains essential for health care professionals and laypersons alike, especially for complex conditions such as asthma.

Conflict of interest statement

CONFLICTS OF INTEREST: None declared.

- 15 references
- 2 figures

Supplementary info

Publication types, MeSH termsExpand

Full text links

Proceed to details

Cite

4

Rhinology

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. 2025 Sep 10.

doi: 10.4193/Rhin25.157. Online ahead of print.

Indication for biologics in a real-world cohort of dupilumab treated chronic rhinosinusitis with nasal polyps patients according to international recommendations: evidence from the European CRS Outcome Registry (CHRINOSOR)

G Mortuaire [1], S F Seys [2], J de Kinderen [2], G Bettio [2], C Cavaliere [3], S Reitsma [4], S Schneider [5], A Andrianakis [6], P-V Tomazic [6], M Wagenmann [7], A Ciofalo [3], Z Diamant [8 9 10], J Eckl-Dorna [5], W J Fokkens [4], M de Vincentiis [3], C Holzmeister [6], G Mariën [2], S Masieri [11], J J Otten [4], K Scheckenbach [7], A Tu [5], C Bachert [12 13], I Alobid [14], P W Hellings [8 15], C Hopkins [16], V Hox [17], A Kjeldsen [18], V J Lund [19], A Laulajainen-Hongisto [20], L Van Gerven [8 15 21]

Affiliations Expand

- **PMID: 40927953**

- **DOI: 10.4193/Rhin25.157**

Abstract

Background: Criteria for biologic treatment of uncontrolled severe chronic rhinosinusitis with nasal polyps (CRSwNP) differ across international recommendations and prescription of biologics depends on national reimbursement criteria. CHRINOSOR offers an opportunity to analyse biologic indications in the real-world setting according to international recommendations.

Methods: CRSwNP patients who received dupilumab treatment in the ENT clinic of 6 tertiary centres (5 countries) were included. Baseline demographic and lifestyle factors, NP score, SinoNasal Outcome Test-22 score, visual analogue scale for sinus symptoms, and Asthma Control Test score were retrieved from the medical

records. Indication criteria for biologic treatment according to EUFOREA 2021, and EPOS/EUFOREA 2023 recommendations was applied. Dupilumab effectiveness was assessed at baseline, 24 and 52 weeks in relation to these criteria.

Results: 61.8% and 79.8% of patients met respectively the EUFOREA 2021 or the EPOS/EUFOREA 2023 indication criteria for biologic treatment. Dupilumab was effective in patients who met or did not meet international criteria for biologic indication. However, patients who met the indication criteria showed overall a more pronounced effect on most of the outcome parameters than patients who did not meet the criteria.

Conclusions: Real-world management of CRSwNP with biologics does not strictly follow the indication criteria established by international recommendations but depends on management criteria established by local authorities. These vary significantly and are either more or less stringent from one country to another. Dupilumab effectiveness in CRSwNP, whether these criteria are met or not, suggests that a broader CRSwNP population may benefit from dupilumab.

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. 2025 Sep 8;11(5):00023-2025.

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Preserved ratio impaired spirometry, dysanapsis and airflow obstruction with low forced expiratory volume in 1 s in childhood asthma

Caroline Stridsman [1], Helena Backman [1], Lowie E G W Vanfleteren [2 3], Anna Asarnoj [4 5], Henrik Ljungberg [4 5], Anne Lindberg [1], Apostolos Bossios [6 7], Jon R Konradsen [4 5]

Affiliations Expand

- PMID: 40927545

- PMCID: PMC12415717

- DOI: 10.1183/23120541.00023-2025

Abstract

Background: Airway obstruction is a characteristic spirometric finding in asthma but the clinical significance of other abnormal spirometric patterns is less well described. We aimed to explore pre- and post-bronchodilator (BD) prevalences and clinical characteristics of preserved ratio impaired spirometry (PRISm), dysanapsis and airflow obstruction with low forced expiratory volume in 1 s (FEV_1) in children diagnosed with asthma.

Methods: We extracted specialist care data (clinical and spirometry) from the Swedish National Airway Register (n=3301, age 5-17 years). Normal spirometry was defined as FEV_1≥ lower limit of normal (LLN) and FEV_1/forced vital capacity (FVC)≥LLN. PRISm was defined as forced FEV_1< LLN and FEV_1/FVC≥LLN, dysanapsis as FEV_1/FVC<LLN and FEV_1≥LLN, and airflow obstruction with reduced FEV_1 as FEV_1/FVC<LLN and FEV_1<LLN. The BD response (BDR) was calculated as ((post-BD(L)-pre-BD(L))/predicted (L))×100. Values >10% were considered positive (BDRpos). Groups were compared using parametric tests and associations were explored using logistic regression analysis.

Results: Pre-/post-BD PRISm, dysanapsis and obstruction with low FEV_1 were identified in 9%/7%, 10%/4% and 8%/2%, respectively. Compared with normal spirometry, all three groups were associated with older age and BDRpos in pre-BD analyses. Furthermore, dysanapsis was associated with overweight/obesity and obstruction with low FEV_1 with uncontrolled asthma and more treatment.

Interpretation: In this paediatric asthma cohort, PRISm and dysanapsis were associated with BDRpos and they were at least as common as airflow obstruction with reduced FEV_1. These spirometric phenotypes should be addressed in the management of childhood asthma and testing of BDR should be considered also in children with PRISm and dysanapsis.

Conflict of interest statement

Conflict of interest: C. Stridsman reports personal fees from AstraZeneca and GSK, and institutional fees from Chiesi and TEVA outside the submitted work. J.R. Konradsen reports advisory board fees from Novartis and ALK, and institutional fees from Regeneron Pharmaceuticals and Thermo Fisher Scientific outside the submitted work. A. Asarnoj reports lecture fees from Orion Pharma, Nestlé, Semper, ACO, Scandinavian Biopharma, Thermo Fisher Scientific and ALK, and advisory board fees from Novartis, Sanofi, Danone, and Nestlé, all outside the submitted work. L.E.G.W. Vanfleteren reports grants from AstraZeneca, and personal fees for lectures and/or advisory boards from AstraZeneca, GSK, Novartis, Boehringer, Pulmonx, Grifols and Chiesi. A. Lindberg reports personal fees and/or advisory board fees from AstraZeneca and GSK. H. Backman reports personal fees from AstraZeneca. A. Bossios reports institutional fees from Chiesi, GSK and AstraZeneca, and institutional grants from AstraZeneca outside the submitted work. H. Ljungberg holds minority stock and is a board member of Medituner AB, and is an expert group member (respiratory) of the Drug Therapeutic Committee and the Health and Medical Care Administration of the Region of Stockholm, Sweden.

- 27 references
- 2 figures

Full text links

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6

ERJ Open Res

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. 2025 Sep 8;11(5):01276-2024.

doi: 10.1183/23120541.01276-2024. eCollection 2025 Sep.

Predictors of mortality and hospitalised exacerbations in obstructive airway diseases

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Affiliations Expand

- **PMID: 40927543**
- **PMCID: PMC12415753**
- **DOI: 10.1183/23120541.01276-2024**

Abstract

Background: In Belgium, age-standardised hospital admission and mortality rates for asthma and COPD are higher than the European average. Understanding the factors that lead to a hospitalised exacerbation and/or mortality is needed to optimise patient management.

Methods: Patients ≥18 years old obtaining two claims for drugs for obstructive airway diseases (ATC code R03) in 1 year between 2017 and 2022 were identified in Belgian nationwide claims-based data. A multivariable Cox model was used to investigate predictors of all-cause mortality and hospitalised exacerbation.

Results: Among 1 006 968 patients included in this study, 39 214 patients (3.9%) had a hospitalised exacerbation during follow-up and 145 021 patients (14.4%) died. Next to age, sex, Charlson comorbidity index and socioeconomic status, significant predictors for mortality were being frail (adjusted hazard ratio (aHR) 2.09, 95% confidence interval (CI) 2.06-2.12), heavy overuse of short-acting bronchodilators (SABDs) (≥6 packages per year, aHR 1.81, 95% CI 1.78-1.84), current smoking (aHR 1.64, 95% CI 1.61-1.66) and a history of ≥2 outpatient exacerbations in the previous year (aHR 1.52, 95% CI 1.49-1.54). A recent hospitalised exacerbation (aHR 5.67, 95% CI 5.51-5.84), current smoking (aHR 3.69, 95% CI 3.60-3.78), heavy overuse of SABDs (aHR 3.15, 95%CI 3.08-3.23) and being frail (aHR 1.07, 95% CI 1.03-1.10) were important additional risk factors for hospitalised exacerbation.

Conclusion: Previous exacerbations, current smoking, frailty and overuse of SABDs were significantly associated with hospitalised exacerbations and mortality in patients with asthma and/or COPD. The results of this nationwide cohort study highlight the importance of achieving disease control, smoking prevention and tackling frailty in primary care.

- **42 references**
- **2 figures**

Full text links

Cite

7

ERJ Open Res

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. 2025 Sep 8;11(5):01285-2024.

doi: 10.1183/23120541.01285-2024. eCollection 2025 Sep.

Minimal clinically important difference in physical activity in people with asthma

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Affiliations Expand

- **PMID: 40927542**

- PMCID: PMC12415719

- DOI: 10.1183/23120541.01285-2024

Abstract

Background: Previous studies have shown that increasing physical activity in daily life (PADL) improves asthma clinical control and quality of life. However, the minimal clinically important difference (MCID) to promote those improvements remains unclear. The aim of this study was to estimate the MCID for PADL in people with moderate-to-severe asthma.

Methods: Data from consecutive individuals with moderate-to-severe asthma who completed an 8-week (once weekly) face-to-face behavioural intervention to increase PADL were included to compute the MCID. The MCID was estimated based on the number of steps·day^{-1} and time in moderate-to-vigorous physical activity (MVPA) (min·day^{-1}), which included analyses *via* anchor-based methods (linear regression and receiver operating characteristic curves) and distribution-based methods (half of the standard deviation and the standard error of the mean). The pooled MCID was estimated by calculating the weighted arithmetic mean of the results from the anchor-based (Asthma Control Questionnaire and Asthma Quality of Life Questionnaire) and distribution-based methods.

Results: The MCID estimates for steps·day^{-1} ranged from 446 to 1995, which were derived from anchor-based and distribution-based methods. With respect to MVPA, MCID estimates ranged from 2 to 13 min·day^{-1}, which were also derived from both methods. The pooled MCIDs were 1413 for steps·day^{-1} and 8 min·day^{-1} for MVPA.

Conclusion: The MCIDs proposed in this study are 1413 steps for steps·day^{-1} and 8 min of MVPA per day in people with asthma. These values can be used to interpret the efficacy of intervention programmes to improve health outcomes.

Conflict of interest statement

Conflict of interest: All authors have nothing to disclose.

- 50 references

- 4 figures

Respirology

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. 2025 Sep 9.

doi: 10.1111/resp.70124. Online ahead of print.

The Association Between Use of Inhaled Corticosteroids and Long-Acting Beta2-Agonists During Pregnancy and Adverse Fetal Outcomes

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Affiliations Expand

- **PMID: 40923553**

- **DOI: 10.1111/resp.70124**

Abstract

Background and objective: Women with asthma should continue controller therapy during pregnancy, but current evidence on the effects of inhaled corticosteroids (ICS) and long-acting beta2-agonists (LABA) on adverse fetal outcomes remains unclear.

Methods: This was a population-based retrospective cohort study. Data were derived from the Health and Welfare Database, Birth Certificate Application, and Maternal and Child Health Database in Taiwan, from January 1, 2007 to December 31, 2018. Pregnant women with asthma were enrolled. Three independent variables included ICS use, ICS dose-response effects, and LABA use during pregnancy. Adverse fetal outcomes included low birth weight, small for gestational age, preterm birth, and congenital anomalies. Propensity score matching (PSM) and inverse probability of treatment weighting (IPTW) were used to adjust for confounders, including sociodemographics, comorbidities, comedications, and asthma severity. Logistic regression models were used to calculate adjusted odds ratios (aORs).

Results: There were 4538 pregnant women with asthma enrolled in this study. After adjustment, neither ICS nor LABA use was significantly associated with any adverse fetal outcomes. However, among women exposed to ICS, high-dose ICS use during pregnancy was associated with a significantly higher risk of congenital anomalies (aOR: 3.87; 95% CI: 1.29-11.60) within 1 year of delivery.

Conclusions: ICS or LABA use during pregnancy was not associated with the risk of adverse fetal outcomes. Pregnant women with asthma should be advised to maintain controller therapy and avoid potential allergens to reduce the need for high-dose ICS.

Keywords: Taiwan; adverse fetal outcome; asthma; inhaled corticosteroid; long-acting beta2-agonist; pregnancy.

- 43 references

Supplementary info

Grants and fundingExpand

Full text links

Proceed to details

Cite

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Medicine (Baltimore)

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. 2025 Sep 5;104(36):e44294.

doi: 10.1097/MD.0000000000044294.

Exploring the association between triglyceride glucose index-related obesity indices and asthma-COPD overlap: NHANES 2001 to 2018

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- PMID: 40922315
- PMCID: PMC12419257
- DOI: 10.1097/MD.0000000000044294

Abstract

The association between asthma and chronic obstructive pulmonary disease overlap (ACO) and insulin resistance (IR) has not been adequately investigated. Triglyceride glucose (TyG) index-related obesity indices offer a novel measure for assessing IR. We aimed to explore the associations between these indices and ACO in US population. Data used in this study were obtained from the National Health and Nutrition Examination Survey. We performed logistic regression analysis, restricted cubic spline modeling, subgroup analysis, sensitivity analysis, and

additional analyses to examine the association between TyG-related obesity indices and ACO. The study involved 11,453 participants. TyG-waist to height ratio, TyG-body mass index, TyG-weight adjusted waist index, and TyG-waist circumference were all associated with ACO in multivariate logistic regression, with adjusted odds ratios (ORs) (95% confidence interval [CI]) of 1.23 (1.11-1.37), 1.32 (1.12-1.57), 1.20 (1.08-1.34), 1.14 (1.06-1.22), respectively. The highest quartile of all indices had the strongest link with ACO, as evidenced for TyG-waist to height ratio (OR [95% CI] = 1.80 [1.29-2.52]), TyG-body mass index (OR [95% CI] = 1.59 [1.19-2.14]), TyG-weight adjusted waist index (OR [95% CI] = 1.82 [1.23-2.69]), and TyG-waist circumference (OR [95% CI] = 1.75 [1.28-2.39]) in the fully adjusted model. Most subgroup, sensitivity, and supplementary analyses revealed similar results. TyG-related obesity indices were significantly associated with ACO. This finding indicates a strong correlation between high IR and susceptibility to ACO in the US population.

Keywords: NHANES; TyG-related obesity index; asthma–COPD overlap; insulin resistance.

Conflict of interest statement

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

- 48 references
- 3 figures

Supplementary info

MeSH terms, SubstancesExpand

Full text links

Proceed to details

Cite

10

Respiration

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. 2025 Sep 8:1-22.

doi: 10.1159/000548349. Online ahead of print.

Benralizumab-induced asthma remission: impact of different tools and thresholds to define good asthma control

Marek Lommatzsch, Henrik Watz, Thorsten Grund, Tanja Plate, Matthias Saathoff, Stephanie Korn

- PMID: 40920618

- DOI: 10.1159/000548349

Free article

Abstract

Background: Current definitions of clinical remission (CR) use different tools and thresholds to define good asthma control. Their differential impact on CR rates in severe asthma is poorly understood.

Methods: Data from a real-world study in patients with SEA treated with benralizumab (imPROve Asthma, NCT04184284, total number of patients: 244 patients) were analyzed. Four-component CR (4-CR) was defined as: no exacerbations, no systemic steroid treatment, stable or normal lung function and good asthma control, for at least 12 months. The impact of 2 different asthma control measures (Asthma Control Questionnaire, ACQ, and Asthma Control Test, ACT) with varying thresholds for good asthma control (ACQ: ≤1.5 or ≤0.75, ACT: ≥20 or ≥23) on CR rates was examined.

Results: Complete data on all remission criteria were available for 131 patients after 12 months of follow-up, and 85 patients after 24 months of follow-up. After 12 months, 4-CR criteria were fulfilled in 42.7 % (ACQ-6≤1.5), 36.9% (ACT≥20), 24.4 % (ACQ-6≤0.75) and 21.5% (ACT≥23) of the patients. After 24 months, 4-CR criteria were fulfilled in 39.2 % (ACQ-6 ≤1.5), 31.8 % (ACT≥20), 22.8 % (ACQ-6≤0.75) and 17.6 % (ACT≥23) of the patients.

Conclusion: CR is achievable in a substantial proportion of patients with SEA treated with benralizumab in a real-world setting. CR rates are strongly dependent on definitions of asthma control, with almost twice as high CR rates found using the ACQ-6 ≤1.5 criterion as compared with the ACT≥23 criterion.

Full text links

Proceed to details

Cite

11

Clin Exp Immunol

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. 2025 Sep 5:uxaf041.

doi: 10.1093/cei/uxaf041. Online ahead of print.

Thymic stromal lymphopoietin as a therapeutic target in patients with chronic rhinosinusitis and nasal polyps

Anju T Peters [1], Joseph K Han [2], Enrico Heffler [3 4], Freyja McClenahan [5], Scott Caveney [6], Tham T Le [7], Ayman Megally [8], Joseph D Spahn [9], Andrew Foster [10], Joseph D Sherrill [11]

Affiliations Expand

- PMID: 40919679

- DOI: 10.1093/cei/uxaf041

Abstract

Chronic rhinosinusitis with nasal polyps (CRSwNP) is an inflammatory disorder of the sinonasal mucosa, predominantly characterized by epithelial dysfunction and chronic heterogeneous mucosal inflammation. CRSwNP and asthma are common comorbidities with overlapping pathophysiology, epithelial impairment and activation of downstream type 2 inflammation. Thymic stromal lymphopoietin (TSLP) is an epithelial cytokine that sits at the top of the immunological cascade and initiates and amplifies type 2-dependent and -independent inflammatory responses. Although the role of TSLP in asthma has been well described, the role of TSLP in CRSwNP has yet to be comprehensively outlined. This review examines the evidence for TSLP as a key factor in CRSwNP pathogenesis. We explore what is known about TSLP expression patterns within the sinonasal mucosa, finding that TSLP expression is increased in patients with CRSwNP compared with healthy controls, and in eosinophilic- versus non-eosinophilic CRSwNP. We discuss the impact of environmental triggers and genetic factors on TSLP expression and activity, as well as other upstream regulators of TSLP signalling. We then consider the known mechanisms and effects of TSLP signalling on the recruitment and activation of various immune and structural cell types in CRSwNP. Finally, we consider the available evidence on the therapeutic potential of targeting TSLP signalling for the treatment of CRSwNP and discuss ongoing trials of promising therapeutic candidates.

Keywords: Cytokines; Eosinophils; Inflammation; Mucosa.

Cite

12

J Allergy Clin Immunol Pract

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. 2025 Sep 5:S2213-2198(25)00828-1.

doi: 10.1016/j.jaip.2025.08.027. Online ahead of print.

Observational analysis of biological remission as a treatment target for severe asthma: UK severe asthma registry

McDowell P Jane [1], Redmond Charlene [2], Busby John [3], Patel Pujan [4], Jackson David J [5], Pfeffer Paul E [6], Mansur Adel H [7], Patel Mitesh [8], Brown Thomas [9], Burhan Hassan [10], Chaudhuri Rekha [11], Rupani Hitasha [12], Heaney Liam G [13]

Affiliations Expand

- PMID: 40915535

- DOI: 10.1016/j.jaip.2025.08.027

Abstract

Background: The aim of biologic therapies in severe asthma is inhibition of T2 inflammatory pathways.

Objective: We hypothesized that patients who achieve complete suppression of IL-5 & IL4/IL13 pathways with biologic therapy (FeNO <20ppb & blood eosinophil count (BEC) <0.15x10ˆ9, 'biological remission') would have better outcomes than patients with incomplete suppression of T2 biology.

Methods: Retrospective analysis of severe asthma patients in the United Kingdom Severe Asthma Registry (UKSAR) who met strict national access criteria for biologics. Characteristics pre-biologic & at annual review were compared across biological remission (BR) & non-BR.

Results: Of 778 patients, 148 (19%) had BR and 630 (81%) non-BR. BR did not confer additional benefit in exacerbation reduction, oral steroid exposure, lung function improvement, symptom improvement or T2-biomarker reduction. The BR cohort were less T2-high prior to commencing biologics. Long disease duration (adjOR 1.96, 95% CI 1.17 to 3.28), macrolide therapy (adjOR 2.08, 95% CI 1.17 to 3.71), & smoking history (adjOR 1.63, 95% CI 1.11 to 2.39) were positive predictors of BR, while higher-T2 biomarkers predicted non-BR. However, BEC & FeNO both had a negative correlation with lung function.

Conclusion: Patients who achieve BR do not have superior outcomes compared to those who do not achieve BR. BR denotes a cohort of patients with a lower burden of T2 disease & additional factors driving disease severity. However, suppression of T2 biology is important for lung function gain. Prospective evaluation of treatment strategies that completely supress IL5 & IL4/13 pathways in T2-composite high patients is needed.

Keywords: Asthma; T2 inflammation; UKSAR; biologics; monoclonal antibodies; remission.

Full text links

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Cite

13

J Asthma

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. 2025 Sep 5:1-7.

doi: 10.1080/02770903.2025.2552737. Online ahead of print.

Oscillometry-defined small airway dysfunction in steroid-naïve adult bronchial asthma: association with eosinophilic and non-eosinophilic phenotypes

Aditi Maheshwari [1], Sajal De [1]

Affiliations Expand

- **PMID: 40911390**

- **DOI: 10.1080/02770903.2025.2552737**

Abstract

Objective: Small airway dysfunction (SAD) is a common feature of bronchial asthma. However, its association with asthma phenotypes remains poorly understood. This study aimed to assess the prevalence of oscillometry-defined SAD in steroid-naïve adult bronchial asthma and to explore its association with asthma phenotypes based on peripheral blood eosinophil count (BEC).

Methods: A total of 320 consecutive cases of bronchial asthma patients were enrolled. The severity of impairment in oscillometry parameters was expressed in *z*-

scores. SAD in oscillometry was defined as R5-19 > upper limit of normal and/or X5 < lower limit of normal. The cohort was categorized into eosinophilic asthma (EA) and non-eosinophilic asthma (NEA) using a BEC cutoff of 300 cells/μL.

Results: The mean age of the cohort was 37.5 ± 12.5 years, and 58.1% were male. The median BEC was 350 cells/μL. The mean FEV_1 was 66.7 ± 18.4 %predicted. Oscillometry-defined SAD was observed in 54.4% (95% CI: 48.1-59.4). Patients with SAD exhibited significantly lower spirometric indices compared to those without SAD. The proportion of EA was 58.4% (95% CI: 53.4-64.7). Spirometric parameters did not differ significantly between the EA and NEA. The severity of impairment in R5 and X5 was less in EA compared to NEA, though the difference was not statistically significant. The proportion of impaired R5-19 was significantly less in EA than NEA (47.6% vs. 57.9%; *p* = .04).

Conclusions: Half of steroid-naïve bronchial asthma patients exhibited SAD at the time of diagnosis. NEA phenotypes are associated with higher impairment in oscillometry.

Keywords: Asthma; eosinophilic asthma; non-eosinophilic asthma; oscillometry; phenotypes; small airway dysfunction.

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Review

J Asthma

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. 2025 Sep 6:1-21.

doi: 10.1080/02770903.2025.2555300. Online ahead of print.

Asthma endotypes in flux: integrating type 1 and type 2 inflammation for biological therapy advancement

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Affiliations Expand

- PMID: 40884772

- DOI: 10.1080/02770903.2025.2555300

Abstract

Objective: To synthesize current understanding of type 1 (T1) and type 2 (T2) asthma endotypes and evaluate how their integration can advance precision biological therapy selection for improved patient outcomes.

Data sources: Comprehensive literature review of peer-reviewed articles from PubMed, Embase, and Cochrane databases focusing on asthma immunopathology, endotype characterization, biomarker development, and biological therapies. Additional sources included clinical trial registries, regulatory agency documents, and recent conference proceedings.

Study selection: Studies were selected based on relevance to T1/T2 inflammatory pathways, biomarker validation, biological therapy efficacy, and endotype-guided treatment strategies. Priority was given to randomized controlled trials, systematic reviews, and large observational studies with clear endotype characterization.

Results: T2 inflammation, characterized by interleukin-4 (IL-4), IL-5, and IL-13 pathways with eosinophilic involvement, has well-established biomarkers (blood eosinophils, fractional exhaled nitric oxide (FeNO), periostin) and successful targeted biologics (anti-IL-5, anti-IL-4 receptor alpha (anti-IL-4Rα), anti-immunoglobulin E (anti-IgE)). T1 inflammation, involving interferon-gamma (IFN-γ), tumor necrosis factor-alpha (TNF-α), and IL-17 with neutrophilic predominance, lacks validated biomarkers and effective therapeutics. Emerging evidence demonstrates significant T1/T2 overlap in severe asthma, challenging traditional dichotomous classification. Multi-pathway targeting strategies and upstream cytokine inhibition show promise for mixed endotypes.

Conclusion: Integration of T1 and T2 endotype characterization through validated biomarkers and multi-omics approaches is essential for advancing precision medicine in asthma. Future therapeutic strategies must address endotype plasticity and mixed inflammatory patterns to optimize biological therapy selection and improve treatment outcomes in heterogeneous asthma populations.

Keywords: Asthma endotypes; biological therapy; biomarkers; cytokines; endotype plasticity; eosinophils; immunopathology; neutrophils; personalized treatment; precision medicine; type 1 inflammation; type 2 inflammation.

Supplementary info

Publication typesExpand

Full text links

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

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Review

Curr Allergy Asthma Rep

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. 2025 Sep 11;25(1):37.

doi: 10.1007/s11882-025-01221-w.

The Roles of Acetylcholine and Muscarinic Receptors in Allergic Rhinitis: Mechanisms, Clinical Insights and Future Directions

Xian Li [1 2 3], Yuan Zhang [4 5 6], Luo Zhang [7 8 9]

Affiliations Expand

- PMID: 40932538

- DOI: 10.1007/s11882-025-01221-w

Abstract

Purpose of review: Allergic rhinitis (AR) is a very common and troubling disorder that severely affects patients' quality of life. There is an urgent need to understand the immunopathologic factors behind the disease. Acetylcholine is a neurotransmitter that has emerged as one of the critical regulators of AR pathogenesis.

Recent findings: The elevation of cholinergic transmitters and their muscarinic receptors is a major driver of nasal hypersensitivity and excessive nasal secretion in AR pathogenesis. In addition to inducing extensive mucus secretions, the relevant research data for acetylcholine in immune regulation and airway remodeling remain fragmented. The immunopathological mechanisms underlying acetylcholine signaling pathways associated with AR may provide clinical practitioners with novel insights for medication selection in controlling patients' symptoms. We highlight the roles of acetylcholine in AR pathogenesis and the findings of clinical trials on intranasal anticholinergics use in AR, and hope to provide a reference for patients' management.

Keywords: Acetylcholine; Allergic rhinitis; Intranasal anticholinergics; Muscarinic receptor.

Conflict of interest statement

Declarations. Human and Animal Rights and Informed Consent: This article does not contain any studies with human or animal subjects performed by any of the authors. Competing Interests: The authors declare no competing interests.

- **75 references**

Supplementary info

Publication types, MeSH terms, SubstancesExpand

Full text links

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Cite

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Glob Health Action

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. 2025 Dec;18(1):2547434.

doi: 10.1080/16549716.2025.2547434. Epub 2025 Sep 10.

Bibliometric analysis of the association between air pollution and allergic rhinitis

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Affiliations Expand

- **PMID: 40926650**
- **PMCID: PMC12424152**
- **DOI: 10.1080/16549716.2025.2547434**

Abstract

Background: Allergic rhinitis (AR) is an increasingly prominent global public health issue, where air pollution significantly contributes to its rising incidence. Although numerous studies have explored the link between air pollution and AR pathogenesis, comprehensive summaries are still limited.

Objective: This study performs a bibliometric analysis to identify research hotspots and emerging trends, offering insights into AR prevention and management.

Methods: Literature related to on air pollution and AR was retrieved from the Web of Science Core Collection database. Visualization tools, including VOSviewer, CiteSpace, and Bibliometrix R, were utilized to analyze contributions by countries, institutions, authors, journals, and keywords, with the aim of predicting future research trends.

Results: A total of 4,020 authors, 1,368 institutions, and 75 countries contributed to 753 publications. The United States leads in research contributions, while China has shown rapid growth since 2012. Prominent authors include Deng Qihong and Lu Chan have made significant contributions. Keyword analysis revealed five major clusters: Asthma and Allergic Diseases, Environmental Factors, Climate Change and Exposures, Epidemiology and Risk Factors, and Population-Specific Research. Key topics covered include atopy, childhood asthma, climate change, pollution exposure, and air pollutants.

Conclusion: This first bibliometric analysis of air pollution and AR highlights a strong link between air pollution and AR pathogenesis. Enhanced environmental controls and air quality monitoring are essential for AR prevention. However, the complex composition of air pollutants presents challenges in elucidating specific mechanisms.

Keywords: Bibliometric; Web of Science; air pollution; allergic rhinitis; visualization.

Plain language summary

Main findings: Air pollutant exposure has been identified as a significant risk factor contributing to the progressive rise in allergic rhinitis prevalence. As the first bibliometric analysis of the air pollution-Allergic rhinitis relationship, it shows contributions and theme evolution, enriching the research framework. Added knowledge: Our study identified 75 countries, 4,020 authors, and 1,368 institutions' global participation, with the US and China leading. Research grew notably from 2005-2011 and after 2010, and five keyword clusters clarified research focuses.Global health impact for policy and action: It also proves environmental governance and air quality monitoring are crucial for Allergic rhinitis prevention, with European strategies as models for global policy-making to relieve Allergic rhinitis epidemic pressure.

Conflict of interest statement

The authors declare that this article was conducted in the absence of any financial relationships that could be construed as a potential conflict of interest. All the data in this study are from the public database of Web of Science.

- **38 references**
- **8 figures**

Supplementary info

MeSH terms, SubstancesExpand

Full text links

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Cite

3

Horm Metab Res

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. 2025 Sep 8.

doi: 10.1055/a-2687-6822. Online ahead of print.

Epidemiology, Prevention, and Clinical Management of Allergic Rhinitis

Vijayshwari Mishra [1], Ramenani Hari Babu [1]

Affiliations Expand

- PMID: 40921161

- DOI: 10.1055/a-2687-6822

Abstract

Allergic rhinitis (AR) is a widespread chronic condition caused by immune responses involving immunoglobulin E (IgE) when exposed to airborne allergens. It frequently coexists with conditions such as asthma and eye inflammation and represents a major public health issue due to its significant burden and associated disabilities across the globe. Key contributing factors include exposure to airborne or workplace-related allergens and hereditary predispositions. AR negatively impacts daily life, including social interactions, academic performance, and productivity at work, while also leading to considerable economic expenses. The ARIA (Allergic Rhinitis and its Impact on Asthma) guidelines categorize AR based on duration (intermittent or persistent) and severity (mild or moderate/severe). Diagnosis primarily relies on clinical evaluation, and in patients with uncontrolled or long-term symptoms, confirmation may involve skin prick testing or detecting specific IgE antibodies in the blood. Common treatments include oral, nasal, or eye-drop antihistamines (H1-blockers), nasal corticosteroids, or a combination of both delivered intranasally. Allergen-specific immunotherapy, administered by qualified specialists and using standardized extracts, is beneficial for individuals with ongoing symptoms. Insights from real-life data collected through mobile applications are enhancing understanding of AR types and their management. Future developments aim to improve recognition of complex overlapping conditions, utilize health technology evaluations, and promote patient-involved treatment decisions.

Conflict of interest statement

The authors declare that they have no conflict of interest.

Full text links

Proceed to details

Cite

4

Review

Respir Med

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. 2025 Sep 5:248:108344.

doi: 10.1016/j.rmed.2025.108344. Online ahead of print.

Asthma-OSA overlap syndrome: A distinct endophenotype?

Antonio Fabozzi [1], Izolde Bouloukaki [2], Matteo Bonini [3], Sophia E Schiza [2], Paolo Palange [3]

Affiliations Expand

- **PMID: 40915327**

- **DOI: 10.1016/j.rmed.2025.108344**

Free article

Abstract

Purpose: Asthma and obstructive sleep apnea (OSA) are two respiratory diseases that often may coexist, resulting in Alternative Overlap Syndrome (aOVS), which is still underestimated and underdiagnosed.

Objectives: This state-of-art review aims to describe the current evidence on aOVS, including its pathophysiology, clinical, functional and therapeutic implications. A secondary objective is to assess whether aOVS can be identified as a distinct endophenotype needing personalized diagnostic and therapeutic strategies.

Results: Asthma and OSA share several common risk factors, including obesity, gastroesophageal reflux disease (GERD) and rhinitis, which contribute to the

pathogenesis of aOVS. From a pathophysiological perspective, aOVS has unique characteristics such as a low arousal threshold, nocturnal bronchial hyperresponsiveness and autonomic nervous system (ANS) dysfunction. These features lead to sleep fragmentation, altered ventilatory control, increased upper and lower airway resistance, and airway and systemic inflammation. From a functional perspective, patients with aOVS present lower FEV_1 and increased nocturnal hypoxemia compared to subjects with only asthma or only OSA. From a clinical perspective, aOVS is linked to reduced asthma control, frequent exacerbations, and a lower quality of life. From a therapeutic perspective, continuous positive airway pressure (CPAP) has a positive impact on asthma control, symptom burden and inflammatory response. Weight loss, GERD and rhinitis management, and emerging therapies such as GLP-1 agonists and biological agents may provide additional benefit.

Conclusions: Current evidence suggests that aOVS may be considered a distinct clinical endophenotype. Its identification is crucial to ensure timely diagnosis, improve management, and direct future research about long-term outcomes and personalized therapy.

Keywords: Alternative overlap syndrome; Asthma; Bronchial asthma; Continuous positive airway pressure; Disorders of excessive somnolence; Obstructive sleep apnea; Polysomnography.

Conflict of interest statement

Declaration of competing interest All authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

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chronic cough

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Respir Med

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Associations between chronic airflow limitation, respiratory symptoms, and quality of life across alcohol use categories: a population based study

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Abstract

Introduction: Alcohol use has significant health implications, yet the association between alcohol use and respiratory symptoms remains relatively understudied. This study examines the prevalence of hazardous alcohol use and its associations with breathlessness, chronic cough, and health-related quality of life (HRQoL) and whether these associations with chronic airway limitation (CAL) differ by alcohol use.

Methods: Cross-sectional study of the Swedish CArdioPulmonary bioImage Study (SCAPIS) comprising 25,424 aged 50-64. Hazardous alcohol use was defined as an Alcohol Use Disorders Identification Test (AUDIT) score ≥8. CAL was defined as a post-bronchodilator FEV1/FVC ratio <0.7. Breathlessness (mMRC rating ≥2), chronic cough, and HRQoL, measured using the Short Form 12 (SF-12) were assessed through questionnaires. Associations were analysed using multivariable regression models adjusted for smoking, BMI, age, sex, comorbidities, and predicted FEV1/FVC %. In secondary analyses, associations between CAL and outcomes were examined stratified by alcohol use.

Results: Hazardous alcohol use was present in 11% of the analytic sample and in 15% of those with CAL. Hazardous alcohol use was associated with increased odds of breathlessness (odds ratio [OR] 1.37; [95% confidence interval] 1.09-1.70) and chronic cough (OR 1.46; 1.32-1.62), and with lower physical and mental HRQoL scores. CAL was more strongly associated with symptoms in participants with hazardous alcohol use than in lower-level users.

Conclusion: Hazardous alcohol use was linked to increased breathlessness, chronic cough, and lower HRQoL. Associations between CAL and respiratory symptoms were stronger among individuals with hazardous alcohol use, suggesting a potential interaction.

Keywords: Alcohol; Breathlessness; Chronic Airway Limitation; Chronic cough; HRQoL.

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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Chest

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Pediatric bronchiectasis action management plan to improve clinical outcomes: An RCT

Schutz KI [1], Chang Ab [2], Versteegh LA [3], Yerkovich St [4], Morris Ps [5], Laird P [6], Schultz A [7], Marchant Jm [2], McCallum Gb [8]

Affiliations Expand

- **PMID: 40930343**

- **DOI: 10.1016/j.chest.2025.08.021**

Abstract

Background: Managing bronchiectasis exacerbations is a priority for patients/parents/caregivers of children with bronchiectasis, yet evidence-based strategies among the pediatric population remain limited.

Research question: Does the use of a personalized, written bronchiectasis action management plan (BAMP), compared to standard care, reduce non-scheduled doctor visits among children/adolescents with chronic suppurative lung disease (CSLD)/bronchiectasis?

Study design and methods: Our multicenter, double-blind, superiority, randomized controlled trial enrolled children from three Australian respiratory departments between June 2018 and December 2020. Children/adolescents aged <19 years with CSLD/bronchiectasis were randomized to receive a personalized BAMP (intervention) or standard care (controls). The primary outcome was the annual rate

of acute non-scheduled doctor visits for respiratory exacerbations, post-randomization. Secondary outcomes were annualized rate of acute exacerbations, cough-specific quality-of-life (PC-QoL-8) scores and proportion receiving timely annual influenza vaccination.

Results: Of 207 children enrolled, 194 were included in the known-case intention-to-treat analysis (BAMP n=99, controls n=95). There was no significant difference in the annualized rates of non-scheduled respiratory-related doctor visits (median BAMP=2 [IQR 0-4], control=2 [IQR 0-4)], incident rate ratio (IRR)=0.98 [95%CI 0.71, 1.35]). However, in the sensitivity analysis limited to pre-COVID-19 data (BAMP n=42, controls n=44), there was a reduction in non-scheduled respiratory-related doctor-related visits in the BAMP group, IRR0.63 (95%CI 0.38, 1.04, p=0.07). In the intention-to-treat analysis, the BAMP group were significantly more likely than controls to receive timely annual influenza vaccination (74/103 vs 58/102 respectively; OR=2.03 [95%CI 1.13, 3.65, p=0.017]).

Interpretation: Among children/adolescents with CSLD/bronchiectasis, using a BAMP improved timely influenza vaccination uptake but did not significantly reduce non-scheduled doctor visits. However, our results were likely influenced by the COVID-19 pandemic and data pre-COVID-19 pandemic shows a clear trend toward efficacy of the BAMP with a 37% reduction in unscheduled doctor visits. In addition, consumer feedback was strongly positive as to the BAMP's usefulness and practicality.

Clinical trial registration: The trial was registered with the Australian and New Zealand Clinical Trials Register ACTRN12618000604202.

Keywords: action management plan; bronchiectasis; children; randomized controlled trial; respiratory infections.

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

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Am J Respir Crit Care Med

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Upper Airway Microbiome, Mucociliary Function, and Clinical Outcomes in Bronchiectasis: Data from the EMBARC-BRIDGE Study

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Abstract

Rationale: Infection is a key disease driver in bronchiectasis, and the upper airway microbiome has been known to shape the lower airway microbiome.

Objectives: To evaluate the relationship between the upper airway microbiome, mucociliary function, and clinical outcomes in bronchiectasis.

Methods: Nasopharyngeal swabs were collected from 344 bronchiectasis patients enrolled across five European centers. A total of 104 patients had nasopharyngeal samples obtained at the 1-year follow-up. Microbiome composition was assessed according to BSI and severe exacerbations. The α- and β-diversity were measured using the Chao1 and Bray-Curtis indices, respectively. Random forest analysis was performed. Dysbiosis was defined as >10% relative abundance of pathogenic taxa comprising *Pseudomonas, Haemophilus*, and *Staphylococcus*.

Measurements and main results: Of the 344 patients, 200 (58.1%) were female (median age, 68 years; interquartile range, 59-75 years). α-diversity significantly differed according to disease severity (*P*=0.002), and β-diversity analysis revealed distinct microbiome profiles associated with disease severity and severe exacerbation (PERMANOVA, *P*=0.021 and 0.001, respectively). Random forest analysis identified *Pseudomonas* as being associated with severe bronchiectasis (BSI≥9) and severe exacerbations. The genus-level relative taxon abundance of *Pseudomonas* was well correlated with *Pseudomonas aeruginosa* growth in the sputum culture. Patients with nasopharyngeal dysbiosis had more severe respiratory symptoms, showed epithelial disruption on nasal epithelial biopsy, and experienced more severe exacerbation over a 1-year follow-up period than those in the non-dysbiosis group. The microbiome profiles were relatively stable between baseline and 1-year follow-up (*P*=0.95).

Conclusion: The upper airway microbiome is associated with disease severity and severe exacerbation of bronchiectasis.

Keywords: bronchiectasis; dysbiosis; infection; microbiome; precision medicine.

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Chest

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Pediatric bronchiectasis action management plan to improve clinical outcomes: An RCT

Schutz KI [1], Chang Ab [2], Versteegh LA [3], Yerkovich St [4], Morris Ps [5], Laird P [6], Schultz A [7], Marchant Jm [2], McCallum Gb [8]

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Clinical trial registration: The trial was registered with the Australian and New Zealand Clinical Trials Register ACTRN12618000604202.

Keywords: action management plan; bronchiectasis; children; randomized controlled trial; respiratory infections.

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Evaluation and management of hemoptysis

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- DOI: 10.1097/01.JAA.0000000000000252

Abstract

Hemoptysis, defined as the expectoration of blood originating from the lower respiratory tract, is a clinical symptom with a wide differential diagnosis that ranges from benign to life-threatening causes. Common causes vary by geographic region and care setting, with respiratory infections, malignancy, bronchiectasis, and chronic obstructive pulmonary disease being predominant in resource-rich countries and tuberculosis remaining the leading cause in resource-limited areas. Though most cases are mild and self-limited, hemoptysis can be a life-threatening medical emergency; these cases are associated with a mortality exceeding 50%, primarily due to asphyxia. Management strategies are informed by severity, with outpatient care appropriate for stable patients with non-life-threatening hemoptysis and intensive interventions-such as bronchial artery embolization or surgical resection-reserved for those with high-risk features or life-threatening hemoptysis. This article provides an evidence-based approach to hemoptysis evaluation and management, emphasizing the importance of early risk stratification, identification of underlying causes, and timely intervention. By integrating a structured diagnostic and therapeutic approach, clinicians can improve outcomes and reduce the risk of recurrence and complications.

Keywords: bronchial artery embolization; differential diagnosis; hemoptysis; life-threatening hemoptysis; management; non-life-threatening hemoptysis.

- 16 references

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Curr Opin Pulm Med

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Bronchiectasis evaluation 2025: pediatric and adult perspectives

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Affiliations Expand

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- **DOI: 10.1097/MCP.0000000000001217**

Abstract

Purpose of review: There is a significant overlap between the diagnostic evaluation for adult and pediatric patients with bronchiectasis; however, also important age-specific unique considerations. This review focuses on these specific considerations.

Recent findings: Bronchiectasis refers to the radiographic evidence of dilation of distal and proximal bronchi secondary to chronic infection and inflammation. Bronchiectasis can be suspected on plain chest radiograph but is confirmed and detailed through computed tomography (CT) imaging. Several different measures and descriptions of the radiographic findings of bronchiectasis exist, but the most common is a bronchial diameter equal to or greater than an adjacent blood vessel. Consideration for the presence of bronchiectasis begins with recognition of clinical symptoms of suppurative lung disease including persistent sputum producing cough and recurrent respiratory infections. Bronchiectasis etiologies include inherited forms, such as cystic fibrosis and primary ciliary dyskinesia, as well as secondary forms including chronic aspiration as well as certain infections, and immunodeficiency. Up to 40% remain idiopathic even after a comprehensive evaluation.

Summary: It is important to start a bronchiectasis evaluation with a broad differential, but secondary testing should focus on etiologies specific to the patient. A thoughtful combination of testing is often required to arrive at an etiology. Patients with bronchiectasis require ongoing monitoring including longitudinal follow-up of respiratory cultures, lung function testing, and repeat CT imaging.

Keywords: bronchiectasis; evaluation; suppurative lung disease.