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

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J Am Heart Assoc

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. 2025 Mar 21:e038403.

doi: 10.1161/JAHA.124.038403. Online ahead of print.

[Long-Term Outcomes of Peripheral Artery Disease in Veterans: Analysis of the Peripheral Artery Disease Long-Term Survival Study \(PEARLS\)](#)

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Affiliations Expand

- PMID: 40118806
- DOI: [10.1161/JAHA.124.038403](https://doi.org/10.1161/JAHA.124.038403)

Abstract

Background: Contemporary research in peripheral artery disease (PAD) remains limited due to lack of a national registry and low accuracy of diagnosis codes to identify patients with PAD.

Methods: Leveraging a novel natural language processing system that identifies PAD with high accuracy using ankle-brachial index and toe-brachial index values, we created a registry of 103 748 patients with new-onset PAD in the Veterans Health Administration. Study end points include mortality, cardiovascular events (hospitalization for acute myocardial infarction or stroke) and limb events (hospitalization for critical limb ischemia or major amputation) and were identified using Veterans Affairs and non-Veterans Affairs encounters.

Results: The mean age was 70.6 years; 97.3% were male, and 18.5% self-identified as Black. The mean ankle-brachial index value was 0.78 (SD: 0.26) and the mean toe-brachial index value was 0.51 (SD: 0.19). A majority of patients were current (27.1%) or former (30.0%) smokers. Prevalence of hypertension (86.6%), heart failure (22.7%), diabetes (54.8%), chronic kidney disease (23.6%), and chronic obstructive pulmonary disease (35.4%) was high. At 1 year, 9.4% of patients had died. The 1-year incidence of cardiovascular events was 5.6 per 100 patient-years and limb events was 7.0 per 100 patient-years.

Conclusions: We have successfully launched a registry of >100 000 patients with a new diagnosis of PAD in the Veterans Health Administration, the largest integrated health system in the United States. The incidence of death and clinical events in our cohort is high. Ongoing studies will yield important insights regarding improving care and outcomes in this high-risk group.

Keywords: natural language processing; peripheral artery disease; survival; veterans.

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Lancet

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. 2025 Mar 18:S0140-6736(24)02840-X.

doi: 10.1016/S0140-6736(24)02840-X. Online ahead of print.

[Global, regional, and national burden of household air pollution, 1990-2021: a systematic analysis for the Global Burden of Disease Study 2021](#)

[GBD 2021 HAP Collaborators](#)

Collaborators Expand

- PMID: 40118081
- DOI: [10.1016/S0140-6736\(24\)02840-X](https://doi.org/10.1016/S0140-6736(24)02840-X)

Abstract

Background: Despite a substantial reduction in the use of solid fuels for cooking worldwide, exposure to household air pollution (HAP) remains a leading global risk factor, contributing considerably to the burden of disease. We present a comprehensive analysis of spatial patterns and temporal trends in exposure and attributable disease from 1990 to 2021, featuring substantial methodological updates compared with previous iterations of the Global Burden of Diseases, Injuries, and Risk Factors Study, including improved exposure estimations accounting for specific fuel types.

Methods: We estimated HAP exposure and trends and attributable burden for cataract, chronic obstructive pulmonary disease, ischaemic heart disease, lower respiratory infections, tracheal cancer, bronchus cancer, lung cancer, stroke, type 2 diabetes, and causes mediated via adverse reproductive outcomes for 204 countries and territories from 1990 to 2021. We first estimated the mean fuel type-specific concentrations (in $\mu\text{g}/\text{m}^3$) of fine particulate matter (PM_{2.5}) pollution to which individuals using solid fuels for cooking were exposed, categorised by fuel type, location, year, age, and sex. Using a systematic review of the epidemiological literature and a newly developed meta-regression tool (meta-regression: Bayesian, regularised, trimmed), we derived disease-specific, non-parametric exposure-response curves to estimate relative risk as a function of PM_{2.5} concentration. We combined our exposure estimates and relative risks to estimate population attributable fractions and attributable burden for each cause by sex, age, location, and year.

Findings: In 2021, 2.67 billion (95% uncertainty interval [UI] 2.63-2.71) people, 33.8% (95% UI 33.2-34.3) of the global population, were exposed to HAP from all sources at a mean concentration of 84.2 $\mu\text{g}/\text{m}^3$. Although these figures show a notable reduction in the percentage of the global population exposed in 1990 (56.7%, 56.4-57.1), in absolute terms, there has been only a decline of 0.35 billion (10%) from the 3.02 billion people exposed to HAP in 1990. In 2021, 111 million (95% UI 75.1-164) global disability-adjusted life-years (DALYs) were attributable to HAP, accounting for 3.9% (95% UI 2.6-5.7) of all DALYs. The rate of global, HAP-attributable DALYs in 2021 was 1500.3 (95% UI 1028.4-2195.6) age-standardised DALYs per 100 000 population, a decline of 63.8% since 1990, when HAP-attributable DALYs comprised 4147.7 (3101.4-5104.6) age-standardised DALYs per 100 000 population. HAP-attributable burden remained highest in sub-Saharan Africa and south Asia, with 4044.1 (3103.4-5219.7) and 3213.5 (2165.4-4409.4) age-standardised DALYs per 100 000 population, respectively. The rate of HAP-attributable DALYs was higher for males (1530.5, 1023.4-2263.6) than for females (1318.5, 866.1-1977.2). Approximately one-third of the HAP-attributable burden (518.1, 410.1-641.7) was mediated via short gestation and low birthweight. Decomposition of trends and drivers behind changes in the HAP-attributable burden highlighted that declines in exposures were counteracted by population growth in most regions of the world, especially sub-Saharan Africa.

Interpretation: Although the burden attributable to HAP has decreased considerably, HAP remains a substantial risk factor, especially in sub-Saharan Africa and south Asia. Our comprehensive estimates of HAP exposure and attributable burden offer a robust and reliable resource for health policy makers and practitioners to precisely target and tailor health interventions. Given the persistent and substantial impact of HAP in many regions and countries, it is imperative to accelerate efforts to transition under-resourced communities to cleaner household energy sources. Such initiatives are crucial for mitigating health risks and promoting sustainable development, ultimately improving the quality of life and health outcomes for millions of people.

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Conflict of interest statement

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BMJ Glob Health

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[Integrating tobacco cessation in chronic respiratory disease care: a comprehensive approach to reducing the global burden](#)

[Jing Han](#)¹, [Yulan Qu](#)², [Elif Dagli](#)³, [Lars-Åke Söderlund](#)⁴, [Louise Restrick](#)⁵, [Moss Uromtah](#)⁶, [Sian Williams](#)⁷, [Surabhi Joshi](#)⁸, [Darush-Attar Zadeh](#)⁷, [David Cl Lam](#)⁹, [Kerstin Schotte](#)¹⁰, [Yuanlin Song](#)², [Sarah Rylance](#)¹¹

Affiliations Expand

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No abstract available

Keywords: Chronic obstructive pulmonary disease; Global Health; Health policy; Prevention strategies; Tobacco.

Conflict of interest statement

Competing interests: None declared.

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Respirology

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. 2025 Mar 21.

doi: 10.1111/resp.70027. Online ahead of print.

[Limitations of Self-Reported Data in Evaluating COPD Phenotypes and Cardiovascular Risk](#)

[Ibrahim Nagmeldin Hassan¹](#)

Affiliations Expand

- PMID: 40114520
- DOI: [10.1111/resp.70027](#)

No abstract available

Keywords: COPD phenotypes; cardiovascular disease; methodological limitations; self-reported data.

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Thorax

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. 2025 Mar 20:thorax-2023-221063.

doi: 10.1136/thorax-2023-221063. Online ahead of print.

Effects of long-term oxygen therapy on acute exacerbation and hospital burden: the national DISCOVERY study

Yet Hong Khor^{1,2,3,4}, Andreas Palm⁵, Alyson W Wong^{6,7}, Sabina A Guler⁸, Filip Björklund⁹, Zainab Ahmadi⁹, Josefin Sundh¹⁰, Christopher J Ryerson^{6,7}, Magnus Ekström⁹

Affiliations Expand

- PMID: 40113248
- DOI: [10.1136/thorax-2023-221063](https://doi.org/10.1136/thorax-2023-221063)

Abstract

Background: Long-term oxygen therapy (LTOT) improves survival in patients with chronic severe resting hypoxaemia, but effects on hospitalisation are unknown. This study evaluated the potential impact of starting LTOT on acute exacerbation and hospital burden in patients with chronic obstructive pulmonary disease (COPD), interstitial lung disease (ILD) and pulmonary hypertension (PH).

Methods: Longitudinal analysis of consecutive patients in the population-based Swedish DISCOVERY cohort who started LTOT between 2000 and 2018 with a follow-up duration ≥ 3 months. Total and hospitalised acute exacerbations of the underlying disease, all-cause hospitalisations, and all-cause outpatient visits were annualised and compared between the year before and after LTOT initiation for each disease cohort, and by hypercapnic status in patients with COPD.

Results: Patients with COPD (n=10 134) had significant reduction in annualised rates of total and hospitalised acute exacerbations, as well as all-cause hospitalisations, following LTOT initiation, with increment in those with ILD (n=2507) and PH (n=850). All-cause outpatient visits increased across all cohorts following LTOT initiation. Similar findings were observed in patients with hypercapnic and non-hypercapnic COPD. Sensitivity analyses of patients with 12 months of follow-up showed reduced acute exacerbations and all-cause hospitalisations in the ILD and PH cohorts.

Conclusion: LTOT is associated with reduced rates of both total and hospitalised acute exacerbations and all-cause hospitalisations in patients with COPD, as well as patients with ILD and PH with 12 months of follow-up. There is increased all-cause outpatient visits in all disease groups following LTOT initiation.

Keywords: COPD Exacerbations; Hypoxemia; Idiopathic pulmonary fibrosis; Interstitial Fibrosis; Long Term Oxygen Therapy (LTOT); Primary Pulmonary Hypertension.

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Conflict of interest statement

Competing interests: YHK reports grants from NHMRC Investigator Grant during the conduct of the study, and non-financial support from Air Liquide Healthcare outside the submitted work. AP reports personal fees from ResMed, outside the submitted work. AWW reports personal fees from Boehringer Ingelheim and AstraZeneca, outside the submitted work. SAG reports funding and personal fees from Boehringer Ingelheim, Janssen, MSD and Gebro, outside the submitted work. CJR reports grants and personal fees from Boehringer Ingelheim, grants and personal fees from Hoffmann-La Roche, personal fees from Veracyte, personal fees from Pliant Therapeutics, personal fees from Astra Zeneca, personal fees from Cipla Ltd, grants from VIDA diagnostics and personal fees from Trevi Therapeutics, outside the submitted work. FB, ZA, JS and ME have nothing to disclose.

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Int J Infect Dis

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. 2025 Mar 18:107889.

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[Point-of-care testing reduces antibiotic prescribing in acute exacerbations of chronic obstructive pulmonary disease: a systematic review and meta-analysis](#)

[Xiying Li](#)¹, [Shengyue Qiu](#)¹, [Chaojie Liu](#)², [Manzhi Zhao](#)³, [Xinyi Yang](#)¹, [Haohai Xia](#)¹, [Ruonan Wang](#)¹, [Shanquan Chen](#)⁴, [Jie Chen](#)⁵, [Jinkun Zheng](#)⁶, [Gordon Liu](#)⁷, [Shifang Yang](#)³, [Lianping Yang](#)⁸, [Christopher C Butler](#)⁹

Affiliations Expand

- PMID: 40113161
- DOI: [10.1016/j.ijid.2025.107889](#)

Abstract

Background: Challenges in identifying the causes of acute exacerbations of chronic obstructive pulmonary disease (AECOPD) have led to overuse of antibiotics. The advantages of point-of-care testing (POCT) may help to identify pathogens and use antibiotics more appropriately.

Methods: We conducted a systematic review to evaluate the effect of POCT to guide antibiotic prescriptions for AECOPD. Adhering to a protocol (CRD42024555847), we searched eligible studies. The outcomes included antibiotic-related and clinical outcomes. We evaluated the risk of bias and performed meta-analyses with subgroup based on the type and testing timing of POCT.

Results: A total of 18 studies evaluating 4,346 AECOPD patients were included. Overall, POCT significantly reduced the number of AECOPD patients given antibiotic prescriptions by 16% ($p < 0.001$). Additionally, antibiotic treatment was reduced by 1.19 days ($p = 0.04$). There was no detrimental impact on clinical outcomes, such as the length of hospital stay ($p = 0.19$). Our results proved robust to sensitivity analyses.

Conclusions: We offered reasonable evidence for using POCT to reduce antibiotic exposure for AECOPD without adversely affecting clinical outcomes. As diagnostic techniques become increasingly important in combating antimicrobial resistance, the use of POCT should be encouraged.

Keywords: C-reactive protein; acute exacerbations of COPD; antibiotics; point-of-care testing; procalcitonin.

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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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Respir Med

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[Exploring the Pathophysiology of Anemia in COPD: Insights from Chest CT and Longitudinal Clinical Data](#)

[Aya Takizawa](#)¹, [Takashi Shimada](#)¹, [Shotaro Chubachi](#)², [Tetsuya Arai](#)¹, [Akira Miyakawa](#)¹, [Hideto Iizuka](#)¹, [Shiro Otake](#)¹, [Kaori Sakurai](#)¹, [Naoya Tanabe](#)³, [Yoshitake Yamada](#)⁴, [Masahiro Jinzaki](#)⁴, [Hidetoshi Nakamura](#)⁵, [Koichiro Asano](#)⁶, [Koichi Fukunaga](#)¹

Affiliations Expand

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- DOI: [10.1016/j.rmed.2025.108046](https://doi.org/10.1016/j.rmed.2025.108046)

Abstract

Background: Although anemia has been associated with chronic obstructive pulmonary disease (COPD) severity, the underlying risk factors, such as chest imaging indicators, remain poorly understood. In this study, we aimed to investigate the relationship between anemia and clinical features, including pulmonary and extrapulmonary indicators on chest computed tomography (CT), and to clarify the pathophysiology of anemia in COPD.

Methods: A total of 400 patients with COPD were prospectively followed for 3 years. Anemia was defined as hemoglobin <13 g/dl in males and <12 g/dl in females. Patients were categorized into the anemia and non-anemia groups, and their clinical characteristics were compared.

Results: The anemia group exhibited lower percentage of predicted forced expiratory volume in 1 second (%FEV₁) and body mass index (BMI) measurements, worse COPD assessment test (CAT) scores, and more frequent exacerbations. Imaging revealed more severe emphysema, lower cross-sectional areas of the pectoralis and erector spinae muscles, decreased subcutaneous fat, and more severe coronary artery calcification in this group. Additionally, echocardiography demonstrated a higher prevalence of pulmonary hypertension and reduced left ventricular ejection fraction in patients with anemia. Three-year longitudinal data analysis further showed that declining hemoglobin levels correlated with the worsening of nutritional status, a deterioration in bone mineral density (BMD), and an increase in CAT scores.

Conclusion: Anemia in COPD is a multifactorial comorbidity resulting in emphysema, decreased fat and muscle mass, and reduced BMD.

Keywords: COPD; anemia; body composition; cardiac comorbidities; osteoporosis.

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Conflict of interest statement

Declaration of Competing Interest The authors declare that they have no competing interests.

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Ann Med

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. 2025 Dec;57(1):2482864.

doi: 10.1080/07853890.2025.2482864. Epub 2025 Mar 20.

[Regarding 'childhood respiratory risk profiles associate with lung function and COPD among the old population'](#)

[Xiaoyan Hu](#)¹, [Peng Sun](#)¹

Affiliations Expand

- PMID: 40111419
- DOI: [10.1080/07853890.2025.2482864](https://doi.org/10.1080/07853890.2025.2482864)

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BMC Psychol

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. 2025 Mar 19;13(1):273.

doi: 10.1186/s40359-025-02516-3.

Construction and evaluation of nomogram for risk prediction of cognitive impairment in chronic obstructive pulmonary disease comorbidity

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Affiliations Expand

- PMID: 40108743
- PMCID: [PMC11921626](#)
- DOI: [10.1186/s40359-025-02516-3](#)

Abstract

Objectives: Chronic Obstructive Pulmonary Disease (COPD) remains a serious public health problem globally, and the mortality rate for older COPD patients with cognitive impairment is almost three times that of older patients with cognitive impairment or COPD. The aim of this study was to construct a nomogram prediction model for the risk of comorbid cognitive impairment in COPD patients and to evaluate its clinical application. It helps to detect cognitive impairment in COPD patients at an early stage and give them effective interventions in time, so as to delay the progression of COPD patients and improve their prognosis.

Methods: In this study, patients with COPD hospitalized at the Affiliated Hospital of North China University of Science and Technology were evaluated for cognitive function using the Montreal Cognitive Assessment (MoCA) scale after stabilization of acute exacerbations. Participants were stratified into two groups: a case group (with cognitive impairment) and a control group (without cognitive impairment), based on predefined MoCA cutoff scores (< 26 scores). Based on the basic characteristics of the patients and the laboratory indexes after stabilization of acute exacerbations, we conducted statistical analyses, screened out the risk factors and established the Nomogram Prediction Model by using the R software, and finally, we evaluated the clinical value of the model through the calculation of ROC curves for sensitivity, specificity and kappa value. Finally, the sensitivity, specificity and Kappa value were calculated by ROC curve to evaluate the clinical value of the model.

Results: After statistical analysis, C-reactive protein (CRP) and homocysteine (Hcy) were found to be the risk factors for combined cognitive impairment in COPD patients, and the Nomogram prediction model was constructed by combining CRP and Hcy and plotted the ROC curve, and it was found that its model finally screened

the critical value of the total score of 62.55, and the area under the ROC curve of the model was 0.870, and the sensitivity was 84.7%, and the specificity was 80.4%, indicating that it has a high degree of consistency with the actual results, which indicated that the consistency between the prediction results and the actual results was better, and it had a higher clinical application value.

Conclusions: CRP and Hcy are closely associated with comorbid cognitive impairment in COPD patients after stabilization of acute exacerbations, and increased levels of CRP and Hcy are associated with an increased risk of comorbid cognitive impairment in COPD patients. Combining both CRP and Hcy to create a nomogram model for predicting comorbid cognitive impairment in patients with COPD has good predictive ability.

Keywords: Chronic obstructive pulmonary disease; Cognitive impairment; Nomogram.

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Conflict of interest statement

Declarations. Ethics approval and consent to participate: The study was approved by the Ethics Committee of the North China University of Science and Technology Affiliated Hospital under approval number 20221108012. Consent for publication: Not applicable. Competing interests: The authors declare no competing interests.

- [64 references](#)
- [6 figures](#)

Supplementary info

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Respirology

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. 2025 Mar 19.

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[Turning Limitations Into Insights: The Path Forward for COPD and Cardiovascular Risk Research](#)

[Paula Rodriguez-Miguelez](#)^{1,2}, [Youngdeok Kim](#)¹

Affiliations Expand

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No abstract available

Keywords: COPD; COPD phenotype; cardiovascular diseases.

Supplementary info

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Review

Eur Respir Rev

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doi: 10.1183/16000617.0183-2024. Print 2025 Jan.

[Risk factors for drug-resistant pathogens in community-acquired pneumonia: systematic review and meta-analysis](#)

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Affiliations Expand

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- PMCID: [PMC11920891](#)
- DOI: [10.1183/16000617.0183-2024](#)

Abstract

Introduction: Community-acquired pneumonia (CAP) is a leading cause of death worldwide. Reducing inappropriate and excessive use of extended-spectrum antibiotics is essential for treating CAP effectively. Evaluating the risk of drug-resistant pathogens (DRPs) is crucial for determining initial antibiotic therapy in clinical settings.

Methods: This systematic review and meta-analysis assessed the risk factors for DRPs in patients with CAP. CAP-DRPs were defined as pathogens resistant to commonly used antibiotics for CAP, including nonpseudomonal β -lactams such as ceftriaxone or sulbactam-ampicillin, macrolides and respiratory fluoroquinolones. The studies included were divided into two cohorts, namely an all-patient cohort, comprising both culture-positive and culture-negative patients, and a culture-positive pneumonia cohort, comprising patients with identified causative pathogens. The primary objective of this study was to evaluate the risk factors for CAP-DRPs in the all-patient cohort.

Results: 24 articles were included with 11 categorised into the all-patient cohort. The meta-analysis identified 11 significant risk factors for CAP-DRPs, namely prior DRP infection/colonisation, tracheostomy, severe respiratory failure requiring early induction of mechanical ventilation, prior use of antibiotics, chronic lung disease, COPD, wound care, neurological disorders, prior hospitalisation, nursing home residence and low activities of daily living.

Conclusion: To our knowledge, this is the first systematic review focused on CAP-DRP. Unlike previous reviews, the all-patient and culture-positive pneumonia cohorts were analysed separately. Findings from the all-patient cohort are particularly relevant for guiding initial antimicrobial selection in clinical practice. Furthermore, the abovementioned factors should be considered when developing prediction models for CAP-DRPs.

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Conflict of interest statement

Conflict of interest: N. Nakagawa, M. Katsurada, Y. Fukuda, S. Noguchi, N. Horita and M. Miki have nothing to disclose. H. Tsukada reports payment or honoraria for lectures, presentations, manuscript writing or educational events from MSD Ltd.,

Kyorin Pharma Ltd., and Meiji Sika Ltd. K. Senda has nothing to disclose. Y. Shindo reports grants from Japan Society for the Promotion of Science; payment or honoraria for lectures, presentations, manuscript writing or educational events from KYORIN Pharmaceutical Co., Ltd., AstraZeneca K.K., Nippon Boehringer Ingelheim Co., Ltd., Gilead Sciences Inc., MSD K.K., GlaxoSmithKline plc., Insmmed, Inc. and Asahi Kasei Pharma Co., Ltd.; and participation on a data safety monitoring board or advisory board with GlaxoSmithKline Biologicals SA. H. Mukae reports grants from Taiho Pharmaceutical Co., Ltd., Kyorin Pharmaceutical Co., Ltd., Taisho Pharma Co., Ltd., and Meiji Seika Pharma Co., Ltd.; payment or honoraria for lectures, presentations, manuscript writing or educational events from Pfizer Inc., MSD Co., Ltd., Nippon Boehringer Ingelheim Co., Ltd., Novartis Pharma K.K., Insmmed Incorporated, Gilead Sciences Inc., SHIONOGI Co., Ltd., AstraZeneca K.K., Kyorin Pharmaceutical Co., Ltd., Asahi Kasei Pharma Corporation and Chugai Pharmaceutical Co., Ltd.; and payment for expert testimony from Pfizer Inc., MSD Co., Ltd., Kyorin Pharmaceutical Co., Ltd., Asahi Kasei Pharma Corporation, Nippon Boehringer Ingelheim Co., Ltd., Insmmed Incorporated, Gilead Sciences Inc., and SHIONOGI Co., Ltd.

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Curr Opin Pulm Med

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. 2025 Mar 19.

doi: 10.1097/MCP.0000000000001159. Online ahead of print.

[Type 2 inflammation, a common denominator in chronic airway disease?](#)

[Michaela Schedel](#)^{1,2}, [Victoria Heimerl](#)¹, [Christian Taube](#)³

Affiliations Expand

- PMID: 40104899
- DOI: [10.1097/MCP.0000000000001159](https://doi.org/10.1097/MCP.0000000000001159)

Abstract

Purpose of review: This review addresses the growing understanding that a specific subset of patients with a respiratory disease, including asthma, chronic obstructive pulmonary disease (COPD), or bronchiectasis may have one thing in common: type 2 inflammation. In the era of personalized medicine, we need to refine clinical markers combined with molecular and cellular endotyping to improve patient outcomes.

Recent findings: Recent literature reveals that type 2 markers such as blood eosinophils, fractional exhaled nitric oxide (FeNO), and immunoglobulin E (IgE), can provide valuable insights into disease progression, exacerbation risk, and treatment response, but their stability remains to be investigated. Treating asthma and COPD patients with biologics to target IL-4/IL-13, IL-5, and alarmins have shown potential, although efficacy varied. In bronchiectasis, a subset of patients with type 2 inflammation may benefit from corticosteroid therapy, despite broader concerns regarding its use.

Summary: This underscores the importance of improved disease endotyping to better characterize patients who may benefit from targeted therapies. In clinical practice, personalized treatment based on inflammatory profiles has been shown to improve outcomes in heterogeneous lung diseases. Future research needs to focus on validating reliable biomarkers and optimizing clinical trial designs to advance therapeutic strategies in respiratory diseases.

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Breathe (Sheff)

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. 2025 Mar 18;21(1):240242.

doi: 10.1183/20734735.0242-2024. eCollection 2025 Jan.

Inhaled treprostinil in group 3 pulmonary hypertension associated with lung disease: results of the INCREASE and PERFECT studies

Sarah Cullivan¹, Leon Genecand^{2,3}, Natalia El-Merhie⁴, Alison MacKenzie^{5,6}, Mona Lichtblau^{7,8}

Affiliations Expand

- PMID: 40104254
- PMCID: [PMC11915125](#)
- DOI: [10.1183/20734735.0242-2024](#)

Abstract

Group 3 pulmonary hypertension (PH) associated with lung disease is a common cause of PH and is associated with substantial morbidity and mortality. Multiple studies of pulmonary arterial hypertension (PAH) therapies in this population have demonstrated conflicting results regarding their safety and efficacy, and therefore the optimum treatment for this group is unknown. The INCREASE and PERFECT randomised, double-blind, placebo-controlled trials attempted to address this unmet need by exploring the role of inhaled treprostinil (iTRE) in PH associated with interstitial lung disease (PH-ILD) and PH associated with COPD (PH-COPD), respectively. In the INCREASE and PERFECT studies individuals were randomised to placebo or iTRE, which was administered *via* an ultrasonic, pulsed-delivery nebuliser to a maximum dose of 72 µg, four times a day. The INCREASE study randomised 326 subjects with PH-ILD over a 16-week period and met its primary endpoint of change in 6-min walk distance, with a treatment effect of +31.12 m (p<0.001). Reduced disease progression events and increased forced vital capacity were also reported in the treatment arm in a *post hoc* analysis. By contrast, the PERFECT study was stopped prematurely by the data and safety monitoring committee due to evidence that iTRE increased serious adverse events in subjects with PH-COPD. This journal club provides an overview of these important trials and highlights pertinent unanswered questions in this field.

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Conflict of interest statement

Conflict of interest: S. Cullivan has no conflicts of interest in relation to this article. L. Genecand reports travel and speaker grants from MSD and Johnson & Johnson, outside of the submitted work. N. El-Merhie has no conflicts of interest in relation to this article. A. MacKenzie has no conflicts of interest in relation to this article. M.

Lichtblau reports travel and speaker grants from MSD, Johnson & Johnson and Orpha Swiss, outside the submitted work.

- [43 references](#)
- [1 figure](#)

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Editorial

Thorax

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. 2025 Mar 18:thorax-2025-223054.

doi: 10.1136/thorax-2025-223054. Online ahead of print.

[Complex coexistence of COPD and cardiovascular disease](#)

[Rita Pavasini](#)¹, [Gianluca Campo](#)²

Affiliations Expand

- PMID: 40101945
- DOI: [10.1136/thorax-2025-223054](#)

No abstract available

Keywords: Pulmonary Disease, Chronic Obstructive.

Conflict of interest statement

Competing interests: None declared.

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BMJ Open Respir Res

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. 2025 Mar 17;12(1):e002808.

doi: 10.1136/bmjresp-2024-002808.

[Sex differences in asthma and COPD hospital admission, readmission and mortality](#)

[Hannah Whittaker¹](#), [Alexander Adamson²](#), [Philip Stone²](#), [Precious Olubori³](#), [James Calvert^{4,5}](#), [James Dodd^{6,7}](#), [Ian Sinha^{5,8}](#), [Katherine Hickman⁹](#), [Sally Singh¹⁰](#), [Jennifer K Quint¹¹](#)

Affiliations Expand

- PMID: 40097201
- DOI: [10.1136/bmjresp-2024-002808](https://doi.org/10.1136/bmjresp-2024-002808)

Free article

Abstract

Background: Asthma and chronic obstructive pulmonary disease (COPD) outcomes vary by sex. We investigated whether males and females with asthma or COPD are managed differently in-hospital when admitted for an exacerbation.

Methods: Data from the National Asthma and COPD Audit Programme were used to determine three cohorts of people hospitalised for an exacerbation: (1) adults with asthma, (2) children and young people (CYP) with asthma, and (3) adults with COPD. Outcomes included the following in-hospital interventional measures: spirometry recording, respiratory specialist review, respiratory medication administration and discharge bundle recording. Linked hospital data were used to determine 30-day and 90-day readmissions and Office for National Statistics data for 90-day mortality.

Random effects logistic regression was used to investigate the association between sex and in-hospital outcomes, readmission and mortality.

Results: 16 370 adults with asthma, 7156 CYP with asthma and 28 354 adults with COPD were included. Female adults with asthma had higher odds of being seen by a respiratory specialist (aOR 0.1.13, 1.02-1.26) and higher odds of readmission within 30 and 90 days (aOR 1.22, 1.10-1.37, aOR 1.34, 1.23-1.46) compared with males. Female adults with COPD had higher odds of being seen by a respiratory specialist, (aOR 1.10,1.02-1.19), being administered non-invasive ventilation (aOR 1.18, 1.09-1.29), and receiving a discharge bundle (aOR 1.07, 1.00-1.14), and lower odds of readmission within 90 days (aOR 0.95, 0.90-1.01), or mortality within 90 days (aOR 0.88, 0.81-0.96). Lastly, female CYP had higher odds of steroids administered within 1 hour (aOR 1.13, 1.00-1.28) and higher 30-day and 90-day readmission compared with males (aOR 1.21, 1.00-1.44 and 1.17, 1.03-1.34).

Interpretation: Sex differences in in-hospital care exist in adults COPD, which may impact readmissions and mortality; however, little to no sex differences in in-hospital care were seen in people with asthma yet females were more likely to be readmitted to hospital.

Keywords: Asthma Epidemiology; COPD epidemiology.

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Conflict of interest statement

Competing interests: HW reports grants from BRC and HDR UK, outside the submitted work. AA and PS previously completed analyses for NACAP, no other disclosures relevant for this work. JC is the adult asthma audit clinical lead. JD is the NRAP Adult Asthma clinical lead and is supported by the National Institute for Health and Care Research Bristol Biomedical Research Centre. The views expressed are those of the author(s) and not necessarily those of the NIHR or the Department of Health and Social Care. IS is the paediatric asthma audit clinical lead. SS is supported by the National Institute for Health and Care Research (NIHR) Leicester Biomedical Research Centre (BRC). SS is a National Institute for Health Research (NIHR) Senior Investigator. JKQ was analysis lead for NACAP, no other disclosures relevant for this work. PO and KH have no conflicts of interest.

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Clinical Trial

J Clin Invest

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. 2025 Mar 17;135(6):e186889.

doi: 10.1172/JCI186889.

[Cellular and molecular features of asthma mucus plugs provide clues about their formation and persistence](#)

[Maude A Liegeois¹, Aileen Hsieh^{2,3}, May Al-Fouadi^{2,3}, Annabelle R Charbit¹, Chen Xi Yang^{2,3}, Tillie-Louise Hackett^{2,3}, John V Fahy^{1,4}](#)

Affiliations Expand

- PMID: 40091838
- PMCID: [PMC11910225](#)
- DOI: [10.1172/JCI186889](#)

Abstract

BACKGROUNDMucus plugs form in acute asthma and persist in chronic disease. Although eosinophils are implicated in mechanisms of mucus pathology, many mechanistic details about mucus plug formation and persistence in asthma are unknown.**METHODS**Using histology and spatial, single-cell proteomics, we characterized mucus-plugged airways from nontransplantable donor lungs of 14 patients with asthma (9 with fatal asthma and 5 with nonfatal asthma) and individuals acting as controls (10 with chronic obstructive pulmonary disease and 14 free of lung disease). Additionally, we used an airway epithelial cell-eosinophil (AEC-eosinophil) coculture model to explore how AEC mucus affects eosinophil degranulation.**RESULTS**Asthma mucus plugs were tethered to airways showing infiltration with innate lymphoid type 2 cells and hyperplasia of smooth muscle cells and MUC5AC-expressing goblet cells. Asthma mucus plugs were infiltrated with immune cells that were mostly dual positive for eosinophil peroxidase (EPX) and neutrophil elastase, suggesting that neutrophils internalize EPX from degranulating eosinophils. Indeed, eosinophils exposed to mucus from IL-13-activated AECs underwent CD11b- and glycan-dependent cytolytic degranulation. Dual-positive granulocytes varied in frequency in mucus plugs. Whereas paucigranulocytic plugs were MUC5AC rich, granulocytic plugs had a mix of MUC5AC, MUC5B, and

extracellular DNA traps. Paucigranulocytic plugs occurred more frequently in (acute) fatal asthma and granulocytic plugs predominated in (chronic) nonfatal asthma. CONCLUSION Together, our data suggest that mucin-rich mucus plugs in fatal asthma form because of acute goblet cell degranulation in remodeled airways and that granulocytic mucus plugs in chronic asthma persist because of a sustaining niche characterized by epithelial cell-mucin-granulocyte cross-talk. FUNDING NIH grants HL080414, HL107202, and AI077439.

Keywords: Asthma; Immunology; Pulmonology.

Conflict of interest statement

Conflict of interest: JVF is an inventor on patents for thiol-saccharides as novel mucolytic drugs (US9,856,283, US10,526,359, US11,021,506).

- [47 references](#)
- [8 figures](#)

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Review

Sci Total Environ

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. 2025 Mar 20:970:179052.

doi: 10.1016/j.scitotenv.2025.179052. Epub 2025 Mar 7.

[Heat exposure and respiratory diseases health outcomes: An umbrella review](#)

[Zhenggang Zhu](#)¹, [Binbin Ji](#)², [Jun Tian](#)³, [Ping Yin](#)⁴

Affiliations Expand

- PMID: 40056553
- DOI: [10.1016/j.scitotenv.2025.179052](https://doi.org/10.1016/j.scitotenv.2025.179052)

Abstract

Introduction: Heat exposure and heatwaves are becoming more frequent and prolonged due to global warming. Heat exposure poses a significant potential risk for respiratory diseases. However, a comprehensive synthesis of existing evidence on the health impacts of heat exposure on respiratory diseases is lacking. This review aims to address this knowledge gap.

Methods: The PubMed, Scopus, Embase, and Web of Science databases were searched for reviews examining the impact of heat exposure on respiratory-related mortality and morbidity, as well as on respiratory diseases such as asthma, pneumonia, COPD, acute bronchiolitis, and acute respiratory infections. The final search was conducted in July 2024. The quality of evidence for each health outcome category was assessed using a modified GRADE framework.

Results: A total of 28 reviews were included. There is strong evidence linking heat exposure to increased mortality in respiratory diseases. However, the associations between heat exposure and respiratory morbidity are less robust. Asthma is the most studied condition and has the most consistent evidence supporting its association with heat exposure. For other respiratory diseases, the evidence remains inconclusive.

Conclusion: This review strengthens the evidence that heat exposure increases the risk of respiratory diseases globally. Future research should focus on low-income countries, specific respiratory diseases, and the integration of multi-dimensional data to develop evidence-based prevention and adaptation strategies.

Keywords: Climate change; Heat exposure; Morbidity; Mortality; Respiratory diseases.

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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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Editorial

Thorax

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. 2025 Mar 18;80(4):191-192.

doi: 10.1136/thorax-2024-222734.

[Targeting daytime normocapnia with nocturnal NIV in chronic hypercapnic COPD: the new paradigm?](#)

[Sarah Bettina Stanzel](#)¹, [Wolfram Windisch](#)²

Affiliations Expand

- PMID: 39939168
- DOI: [10.1136/thorax-2024-222734](https://doi.org/10.1136/thorax-2024-222734)

No abstract available

Keywords: Non invasive ventilation; Pulmonary Disease, Chronic Obstructive; Respiratory Muscles.

Conflict of interest statement

Competing interests: The Cologne study group (SBS, WW) received open research grants from Löwenstein Medical/Germany and GCE group/UK and by the Innovation Fund for Health Services Research (01VSF1905) of the German Federal Joint Committee. SBS received travel grants from companies dealing with mechanical ventilation products.

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Editorial

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. 2025 Mar 18;80(4):193-194.

doi: 10.1136/thorax-2024-222805.

[Home-based pulmonary rehabilitation during outpatient-managed acute COPD exacerbation: the latest new PR model?](#)

[Carolyn L Rochester](#)^{1 2}

Affiliations Expand

- PMID: 39929714
- DOI: [10.1136/thorax-2024-222805](#)

No abstract available

Keywords: COPD Exacerbations; Exercise; Pulmonary Rehabilitation.

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Editorial

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. 2025 Mar 18;80(4):197-201.

doi: 10.1136/thorax-2024-222335.

[Is NEWS2 the optimal evidence-based surveillance tool for all respiratory patients or does it just represent the beginning of an iterative development process?](#)

[Dominick Shaw¹, Andrew W Fogarty²](#)

Affiliations Expand

- PMID: 39922707
- DOI: [10.1136/thorax-2024-222335](#)

Abstract

Medical practice is built on the foundations of evidence-based medicine. Hence, the more common the clinical intervention, the more comprehensive the evidence on which that intervention should be based. Although the widespread adoption of a national early warning score in the UK has led to improvements in the delivery of care, it should be considered as providing a foundation that can be refined and developed, and there is still a need for critical reflection and evaluation of early warning scores, particularly for individuals with chronic respiratory disease, in order to optimise patient monitoring, predict deterioration and guide intervention.

Keywords: COPD Exacerbations; Hypoxia; Respiratory Measurement.

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Conflict of interest statement

Competing interests: None declared.

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Editorial

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. 2025 Mar 18;80(4):189-190.

doi: 10.1136/thorax-2024-222680.

[Pulmonary rehabilitation: one size does not fit all](#)

[Narelle S Cox](#)^{1,2}, [Anne E Holland](#)^{3,2,4}

Affiliations Expand

- PMID: 39900490
- DOI: [10.1136/thorax-2024-222680](#)

No abstract available

Keywords: Exercise; Pulmonary Disease, Chronic Obstructive; Pulmonary Rehabilitation.

Conflict of interest statement

Competing interests: None declared.

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. 2025 Mar 18;80(4):202-208.

doi: 10.1136/thorax-2024-221899.

[Clinical benefit of chronic non-invasive ventilation in severe stable COPD: a matter of persistent hypercapnia improvement](#)

[Tim Raveling^{1,2}, Renzo Boersma^{3,2}, Peter J Wijkstra^{3,2}, Marieke L Duiverman^{3,2}](#)

Affiliations Expand

- PMID: 39746814
- DOI: [10.1136/thorax-2024-221899](#)

Abstract

Purpose: In patients with chronic obstructive pulmonary disease (COPD) treated with chronic non-invasive ventilation (NIV), the relation between improvements in nocturnal transcutaneous partial pressure of CO₂ (PtcCO₂) and daytime arterial partial pressure of CO₂ (PaCO₂) remains uncertain. Also, to what extent improvements in nocturnal PtcCO₂ result in better health-related quality of life (HRQL), exercise capacity, lung function and survival has not been investigated.

Patients and methods: Patients with COPD who were initiated on chronic NIV were prospectively followed for 6 months. Daytime PaCO₂ and nocturnal PtcCO₂ were measured before NIV initiation. NIV targeted normocapnia (PaCO₂/mean PtcCO₂<6.0 kPa) or to reduce baseline values >20%. HRQL was measured with the Severe Respiratory Insufficiency questionnaire (SRI) and exercise capacity with the 6-min walk test (6MWT). Patients were divided into three groups: group 1: neither PtcCO₂ nor PaCO₂ reductions reached the target; group 2: both PtcCO₂ and PaCO₂ targets were reached; group 3: only PtcCO₂ target was reached.

Results: 177 participants were included with both transcutaneous and daytime gas exchange data. In total, 66% reached nocturnal gas exchange targets. However, in only 17%, this also resulted in substantial daytime PaCO₂ reduction (group 2). Compared with group 1, these patients had higher baseline PtcCO₂ (7.4±0.7 vs 8.2±1.9 kPa, p=0.012) and better NIV usage (6.2±2.8 vs 8.3±2.4 hours, p=0.010). Despite comparable NIV settings, the forced expiratory volume in 1 s and 6MWT improved

only in group 2, and only these participants reached a clinically relevant improvement on the SRI and experienced improved survival.

Conclusion: Patients with COPD who can maintain improved ventilation by nocturnal NIV during daytime spontaneous breathing are most likely to experience relevant benefits on HRQL, exercise capacity, lung function and survival.

Keywords: COPD epidemiology; Emphysema; Non invasive ventilation; Sleep.

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Conflict of interest statement

Competing interests: PJW reports grants from Resmed and Philips, consulting fees from Philips and is treasurer for the European Respiratory Society. MLD reports grants from Resmed, Philips, Lowenstein, Vivisol, Sencure and Fisher&Paykel, and payments from Chiesi and Breas Medical. The other authors have nothing to disclose.

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Randomized Controlled Trial

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. 2025 Mar 18;80(4):209-217.

doi: 10.1136/thorax-2024-221803.

[Smartphone application-based pulmonary rehabilitation in COPD: a multicentre randomised controlled trial](#)

[Rainer Gloeckl](#)^{1,2}, [Marc Spielmanns](#)^{3,4}, [Asta Stankeviciene](#)⁵, [Anne Plidschun](#)⁵, [Daniela Kroll](#)^{6,2}, [Inga Jarosch](#)^{6,2}, [Tessa Schneeberger](#)^{6,2}, [Bernhard Ulm](#)⁷, [Claus F Vogelmeier](#)⁸, [Andreas Rembert Koczulla](#)^{6,2,9}

Affiliations Expand

- PMID: 39706685
- DOI: [10.1136/thorax-2024-221803](https://doi.org/10.1136/thorax-2024-221803)

Free article

Abstract

Background: Pulmonary rehabilitation (PR) is an essential element of chronic obstructive pulmonary disease (COPD) management. However, access to conventional face-to-face PR programmes is limited.

Methods: This multicentre, randomised controlled trial recruited patients with COPD from 18 sites in Germany and Switzerland, aiming to evaluate the impact of 12 weeks of a mobile app (intervention group; IVG) on quality of life, measured by COPD Assessment Test (CAT), and exercise capacity, assessed by 1-minute-sit-to-stand-test (1MSTST), compared with a control group (CTG) receiving 'enhanced standard-of-care'.

Results: 278 patients were included in the study with a median age of 65 years (IQR 60-70) and forced expiratory volume in 1 s 48% predicted (IQR 37-60). In the intention-to-treat analysis at week 12, CAT improved from baseline by median -4 points versus -3 points in the IVG versus CTG groups, respectively (difference: 0 points (95% CI: -1, 2); p=0.7); 1MSTST improved by 1 vs 2 repetitions, respectively (difference: 1 repetition (95% CI: 0, 2); p=0.12). In a subset of the IVG, with patients grouped by application adherence (≥ 3 days/week for $\geq 75\%$ of the weeks), adherent users (40.4%) improved 1MSTST versus non-adherent users by median 2 repetitions (95% CI: 1, 3]; p=0.006. Application use did not raise any safety concerns.

Conclusions: Application-based PR improved outcomes in COPD compared with baseline, and adherent users improved exercise capacity more compared with non-adherent users. Although not statistically significant compared with enhanced standard-of-care, this study may support the use of this application for COPD management and addresses the healthcare challenge of access to PR interventions.

Trial registration number: DRKS 00024390.

Keywords: Chronic Obstructive Pulmonary Disease; Emphysema; Exercise; Pulmonary Rehabilitation.

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Conflict of interest statement

Competing interests: RG has received speaker fees from AstraZeneca, Chiesi and GlaxoSmithKline and has attended advisory boards from AstraZeneca and Chiesi. MS

has nothing to disclose. AS and AP are employees of Kaia Health Software (Munich, Germany) and hold a Virtual Options Program from Kaia Health Software. DK has nothing to disclose. IJ has received speakers fee from CSL Behring. TS has nothing to disclose. BU received payment from Kaia Health Software for statistical analysis of this manuscript. CFV has received institutional grants from the German Ministry of Education and Science (BMBF), AstraZeneca, Boehringer Ingelheim, Chiesi, CSL Behring, GlaxoSmithKline, Grifols and Novartis. Consulting fees from Aerogen, AstraZeneca, Boehringer Ingelheim, CSL Behring, Chiesi, GlaxoSmithKline, Inmed, Menarini, Novartis, Nuaira, Sanofi. Speakers fees from Aerogen, AstraZeneca, Boehringer Ingelheim, CSL Behring, Chiesi, GlaxoSmithKline, Inmed, Menarini, Novartis, Nuaira and Sanofi. ARK has received institutional grants from the Bavarian Ministry of Health. Consulting fees from AstraZeneca, Boehringer Ingelheim, CSL Behring, Chiesi, GlaxoSmithKline, Menarini, Pfizer, PulmonX, and Sanofi. Speakers fees from AstraZeneca, Boehringer Ingelheim, CSL Behring, Chiesi, GlaxoSmithKline, Menarini and Sanofi.

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Randomized Controlled Trial

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. 2025 Mar 18;80(4):218-226.

doi: 10.1136/thorax-2024-221760.

[Short-term effects of home-based pulmonary rehabilitation during outpatient-managed exacerbations of COPD: a randomised controlled trial](#)

[Ana Machado](#)^{1,2,3,4,5}, [Cíntia Dias](#)^{1,2}, [Cátia Paixão](#)^{1,2,4}, [António Pedro Gonçalves](#)⁶, [Chris Burtin](#)^{3,5}, [Alda Marques](#)^{7,2}

Affiliations Expand

- PMID: 39689939
- DOI: [10.1136/thorax-2024-221760](https://doi.org/10.1136/thorax-2024-221760)

Abstract

Background: Uncertainty exists about the beneficial effects of delivering pulmonary rehabilitation (PR) during exacerbations of chronic obstructive pulmonary disease (ECOPD). This study explored the short-term effects and self-reported impact of a home-based PR programme for people with outpatient-managed ECOPD.

Methods: We conducted a mixed-methods randomised controlled trial in people with outpatient-managed ECOPD. Participants were randomly assigned to the control (CG, ie, usual care) or experimental (EG, ie, usual care and 3-week home-based PR) group within 48 hours of the diagnosis (baseline). Assessments were performed at baseline and after 3 weeks (post). The COPD assessment test (CAT) was the primary outcome. Secondary outcomes included measures of symptoms and functional capacity. After PR, interviews were conducted. Analyses were performed using (non-)parametric mixed analysis of variance, deductive thematic analysis and narrative integration through joint displays.

Results: Fifty participants with outpatient-managed ECOPD (78% men, 70±11 years, forced expiratory volume in one second 47.4±16.4% pred) were included. Significant greater improvements in the EG compared with the CG were found for the CAT (EG Δ -12.5±7.2 vs CG Δ -5.9±7.2, $p=0.002$) and 12 of 13 other secondary outcome measures. A positive self-perceived impact of PR was found on symptoms, control of daily life, health, mental status and empowerment. No adverse events were reported.

Conclusions: A 3-week home-based PR programme is safe, meaningful and more effective than just standard medication in improving symptoms, functional capacity and health status, outcomes often associated with poor prognosis. This highlights the role of PR in improving the recovery process during outpatient-managed ECOPD and might contribute to a better prognosis in these individuals.

Trial registration: [NCT03751670](https://www.clinicaltrials.gov/ct2/show/study/NCT03751670).

Keywords: COPD Exacerbations; Pulmonary Rehabilitation.

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Conflict of interest statement

Competing interests: None declared.

Supplementary info

Publication types, MeSH terms, Associated data Expand

Full text links

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

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J Transl Int Med

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. 2025 Mar 19;13(1):33-47.

doi: 10.1515/jtim-2025-0005. eCollection 2025 Feb.

[Senescent cells as a target for anti-aging interventions: From senolytics to immune therapies](#)

[Tianlu Esther Fu](#)¹, [Zhongjun Zhou](#)²

Affiliations Expand

- PMID: 40115034
- PMCID: [PMC11921816](#)
- DOI: [10.1515/jtim-2025-0005](#)

Abstract

Aging and age-related diseases are major drivers of multimorbidity and mortality worldwide. Cellular senescence is a hallmark of aging. The accumulation of senescent cells is causally associated with pathogenesis of various age-associated disorders. Due to their promise for alleviating age-related disorders and extending healthspan, therapeutic strategies targeting senescent cells (senotherapies) as a means to combat aging have received much attention over the past decade. Among the conventionally used approaches, one is the usage of small-molecule compounds to specifically exhibit cytotoxicity toward senescent cells or inhibit deleterious effects of the senescence-associated secretory phenotype (SASP). Alternatively, there are immunotherapies directed at surface antigens specifically upregulated in senescent cells (seno-antigens), including chimeric antigen receptor (CAR) therapies and senolytic vaccines. This review gives an update of the current status in the discovery and development of senolytic therapies, and their translational progress from preclinical to clinical trials. We highlight the current challenges faced by senotherapeutic development in the context of senescence

heterogeneity, with the aim of offering novel perspectives for future anti-aging interventions aimed at enhancing healthy longevity.

Keywords: age-related diseases; cellular senescence; immune therapy; seno-antigens; small molecules.

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Conflict of interest statement

Conflict of Interest The authors declare no competing interest.

- [104 references](#)
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Review

J Multimorb Comorb

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. 2025 Mar 18:15:26335565251326309.

doi: 10.1177/26335565251326309. eCollection 2025 Jan-Dec.

[Descriptions of advanced multimorbidity: A scoping review with content analysis](#)

[Sarah P Bowers](#)¹, [Polly Black](#)¹, [Lewis McCheyne](#)², [Darcy Wilson](#)³, [Rose S Penfold](#)^{4,5}, [Liam Stapleton](#)⁶, [Pam Channer](#)⁷, [Sarah E E Mills](#)^{1,2}, [Linda Williams](#)⁸, [Frances Quirk](#)^{1,2}, [Jo Bowden](#)^{1,2}

Affiliations Expand

- PMID: 40110541
- PMCID: [PMC11920996](#)
- DOI: [10.1177/26335565251326309](#)

Abstract

Introduction: Multimorbidity is associated with adverse clinical outcomes, including increased symptom burden and healthcare utilisation, particularly towards the end of life. Despite this, there is no accepted method to identify the point at which individuals with deteriorating health due to long-term conditions are nearing the end of life or might benefit from a palliative care approach - conceptualised as 'Advanced Multimorbidity'. This scoping review explored how Advanced Multimorbidity is described and operationalised within the literature.

Methods: Multiple electronic databases and Grey Literature sources were searched following scoping review frameworks. Two reviewers independently performed screening and data extraction. Content analysis was used to examine the different descriptions of Advanced Multimorbidity. Stakeholder consultations were undertaken with clinicians, academics and public participants. Patient and public involvement was separately integrated throughout this review from conceptualisation, design and reporting.

Results: Forty-four different descriptions of Advanced Multimorbidity were identified from 38 publications. These varied in terms of the clinical conditions and descriptors used. Eighteen descriptions relied on a single indicator to identify Advanced Multimorbidity; 24 used a multidimensional approach. Stakeholder consultations highlighted the need for descriptions that are user-friendly and actionable.

Conclusion: The lack of a standardised definition of Advanced Multimorbidity risks variance in clinical and research practice, potentially affecting patient care. A consensus on defining Advanced Multimorbidity would enable better identification of patients who could benefit from a palliative care approach, ensuring more consistent and person-centred care, as well as supporting research and policy development.

Keywords: Multimorbidity; ageing; end of life; palliative care; scoping review.

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Conflict of interest statement

The author(s) declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: SPB is a current Editorial Fellow with the Journal of Multimorbidity & Comorbidity. SPB, PB and RSP are all fellows on the Multimorbidity Doctoral Training Programme for Health Professionals, which is supported by the Wellcome Trust (223499/Z/21/Z).

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Heart Lung Circ

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. 2025 Mar 18:S1443-9506(25)00169-6.

doi: [10.1016/j.hlc.2025.01.012](https://doi.org/10.1016/j.hlc.2025.01.012). Online ahead of print.

[An Expert Opinion on the Management of Frailty in Heart Failure from the Australian Cardiovascular Alliance National Taskforce](#)

[Julee McDonagh](#)¹, [Caleb Ferguson](#)², [Sarah N Hilmer](#)³, [Ruth E Hubbard](#)⁴, [Richard I Lindley](#)⁵, [Andrea Driscoll](#)⁶, [Andrew Maiorana](#)⁷, [Lindsay Wu](#)⁸, [John J Atherton](#)⁹, [Beata V Bajorek](#)¹⁰, [Bridie Carr](#)¹¹, [Kim Delbaere](#)¹², [Elsa Dent](#)¹³, [Mai H Duong](#)¹⁴, [Louise D Hickman](#)¹⁵, [Ingrid Hopper](#)¹⁶, [Quan Huynh](#)¹⁷, [Sunita R Jha](#)¹⁸, [Anthony Keech](#)¹⁹, [Marc Sim](#)²⁰, [Gursharan K Singh](#)²¹, [Anthony Villani](#)²², [Catherine Shang](#)²³, [Meng Hsu](#)²³, [Jamie Vandenberg](#)²⁴, [Patricia M Davidson](#)¹⁵, [Peter S Macdonald](#)²⁵

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- PMID: 40107957
- DOI: [10.1016/j.hlc.2025.01.012](https://doi.org/10.1016/j.hlc.2025.01.012)

Abstract

Approximately 50% of all adults with heart failure (HF) are classified as frail. Frailty is a clinical state of 'accelerated ageing' that complicates management and results in adverse health outcomes. Despite recommendations for frailty assessment in HF guidelines, its implementation into routine clinical practice has been slow. Further, evidence to inform models of care and pharmacological treatment for individuals with HF who are classified as frail is lacking. The complexity of management underscores the importance of tailoring models of care that can improve the focus on frailty through multidisciplinary care teams. Frailty can be reduced in some cases through the comprehensive geriatric assessment model of care, integrating treatment pillars such as exercise, nutrition, social engagement and support networks, and optimised medication use. A national agenda for action on frailty in the context of HF is needed to advance policy, practice, education, and research improve health outcomes for individuals affected. In November 2023 the Australian Cardiovascular Alliance (ACvA) facilitated a national workshop on frailty and HF with key experts. This has led to the development of a frailty and HF national taskforce with the aim to address major priorities and unmet needs. This statement is first step for the taskforce in implementing a national agenda for the management of frailty in HF. Here we outline key considerations for policy, practice, education, and research in Australia.

Keywords: Frailty; Heart failure; Multidisciplinary care; Multimorbidity.

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Conflict of interest statement

Declaration of Competing Interests C.F., K.D. and J.M. receive National Health and Medical Research Council (NHMRC), Australia Investigator fellowship funding.

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Nephrol Dial Transplant

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. 2025 Mar 19:gfaf057.

doi: 10.1093/ndt/gfaf057. Online ahead of print.

[ABCDE to identify and prevent chronic kidney disease: a call to action](#)

[Charles J Ferro](#)¹, [Christoph Wanner](#)², [Valerie Luyckx](#)³, [Kate Stevens](#)⁴, [Sofia Cerqueira](#)⁵, [Rasha Darwish](#)⁶, [Beatriz Fernandez Fernandez](#)⁷, [David Fiel](#)⁸, [Rumen Filev](#)⁹, [Manfred Grieger](#)¹⁰, [Antonia Lopez](#)¹¹, [Merike Luman](#)¹², [Jolanta Malyszko](#)¹³, [Milena Krasimirova Nikolova-Vlahova](#)¹⁴, [Fiita Romero](#)¹⁵, [Chrysanthi Skalioti](#)¹⁶, [Carla Alexandra Ribeiro Dos Santos Araújo](#)¹⁷, [Ieva Ziedina](#)¹⁸, [Daniel Gallego](#)¹⁹, [Alberto Ortiz](#)⁷, [Rosier Torra](#)²⁰, [Raymond Vanholder](#)²¹

Affiliations Expand

- PMID: 40107862
- DOI: [10.1093/ndt/gfaf057](#)

Abstract

Kidney disease is a global health priority affecting over 850 million people worldwide. This number is projected to increase over the coming decades given the increasing prevalence of diabetes, hypertension and obesity, and the aging population. Chronic kidney disease can reduce both life-expectancy and quality of life and is intricately linked with cardiac and metabolic health - the cardio-kidney-metabolic multimorbidity syndrome. With early recognition of risk, chronic kidney disease can be prevented and with timely case-finding, early diagnosis and early intervention, its progression can be halted or slowed. The European Renal Association has established the Strong Kidneys Taskforce with the main purpose of creating awareness about the importance of kidney health for individual and population health. In collaboration with the European Kidney Health Alliance and the European Kidney Patients Federation, the ABCDE campaign will empower communities and individuals to remind their healthcare providers to assess their risk of kidney disease. ABCDE asks 5 simple questions about health status that only the healthcare system can provide: A) Do I have Albumin in my urine? B) What is my Blood pressure? C) What is my Cholesterol? D) Do I have Diabetes? E) What is my current kidney function (Estimated glomerular filtration rate)? This advocacy text aims to inform individuals, communities and front-line health care workers that capturing the risk of kidney, cardiac and metabolic health is simple, makes sense, is logical, and will save lives. Although making meaningful change will take time and involve major personal and societal changes the first step really is as easy as ABCDE!

Keywords: albuminuria; chronic kidney disease; diagnosis; mortality; prevention.

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Multicenter Study

BMJ Open

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. 2025 Mar 18;15(3):e094351.

doi: 10.1136/bmjopen-2024-094351.

[Exploring patient engagement in atrial fibrillation with multimorbidity: impact on quality of life, medication adherence and healthcare perceptions-a multicountry cross-sectional study](#)

[Caterina Bosio¹, Dilara Usta², Donato Leo^{3,4}, Caterina Trevisan^{5,6,7}, Deirdre Lane^{3,8,9}, Guendalina Graffigna¹; AFFIRMO Project Consortium](#)

Collaborators, Affiliations Expand

- PMID: 40107700
- DOI: [10.1136/bmjopen-2024-094351](#)

Free article

Abstract

Objective: To examine patient engagement (PE) levels of atrial fibrillation (AF) patients with multimorbidity, to identify distinct personas based on sociodemographic and clinical characteristics, as well as engagement levels, and to compare PE in disease management with health-related quality of life, medication adherence, and perceptions of care quality.

Design: A cross-sectional survey.

Setting: Data were collected through an online survey platform between 31 May 2022 and 31 January 2023 from five European countries (Denmark, Italy, Romania, Spain and the UK).

Participants: The study involved 659 AF patients older than 18 years who were diagnosed with one or more concomitant chronic health conditions.

Primary and secondary outcome measures: The survey focused on identifying the needs and quality performance indicators (QPIs) of patients. Emotional engagement was evaluated using the Patient Health Engagement Scale (PHE-s), and cognitive-behavioural engagement was assessed using the Altarum Consumer Engagement Measure (ACE). Engagement scores of each measure were grouped as high or low and compared by age group, sex, level of education and country of recruitment, health-related quality of life, medication adherence and perception of care quality using χ^2 and Mann–Whitney U tests ($p < 0.05$).

Results: Among the 659 AF patients (70.9±10.2 years, 52.8% female), 428 (65%) were categorised as having high emotional PE levels based on PHE-s and were significantly more likely to be <75 years old and male, have a secondary level of education or above, and have <3 comorbidities ($p < 0.05$). Regarding the ACE scores, 369 (56%) were classified as having high cognitive-behavioural PE levels and were more likely to be <65 years old, reside in Northern Europe, have degree-level education or higher, and have <3 comorbidities ($p < 0.05$). Additionally, participants with high emotional PE demonstrated better quality of life, medication adherence and perceptions of quality of care, whereas those with higher levels of cognitive-behavioural PE had better quality of life and perceptions of quality of care.

Conclusions: From a clinical perspective, the findings highlight the need for a personalised approach sensitive to the expectations and needs of AF patients. The present research suggests that implementing sociodemographic and clinical profiling for AF patients could facilitate the formulation of improved care strategies.

Keywords: Medication Adherence; Multimorbidity; Patient Reported Outcome Measures; Patient-Centered Care; Quality of Life.

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Conflict of interest statement

Competing interests: CB declares that she received a research grant from the European Union's Horizon 2020 Program (project number 899871). DU declares that she received a research grant from the European Union's Horizon 2022 Program (project number 101095470). DL declares that she has received investigatorinitiated educational grants from BMS and Pfizer; has been a speaker for Bayer, Boehringer Ingelheim, and BMS/Pfizer; and has consulted for BMS and Boehringer Ingelheim, all outside the submitted work. GG received research grants from Chiesi, Alexion, Lundbeck; Sanofi and she has been a speaker for Sanofi, Roche Diabetes Care, Merck Serono, all outside the submitted work. DGL and CT have no conflicts of interest to declare.

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PLoS One

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. 2025 Mar 18;20(3):e0319200.

doi: 10.1371/journal.pone.0319200. eCollection 2025.

[Clusters and associations of adverse neonatal events with adult risk of multimorbidity: A secondary analysis of birth cohort data](#)

[Jeeva John](#)¹, [Seb Stannard](#)¹, [Simon D S Fraser](#)¹, [Ann Berrington](#)², [Nisreen A Alwan](#)^{1,3,4}

Affiliations Expand

- PMID: 40100914
- PMCID: [PMC11918344](#)
- DOI: [10.1371/journal.pone.0319200](#)

Abstract

Objective: To investigate associations between clustered adverse neonatal events and later-life multimorbidity.

Design: Secondary analysis of birth cohort data.

Setting: Prospective birth cohort study of individuals born in Britain in one week of 1970.

Population: Respondents provided data at birth (n = 17,196), age 34 (n = 11,261), age 38 (n = 9,665), age 42 (n = 9,840), and age 46 (n = 8,580).

Methods: Mixed components analysis determined included factors, 'Birthweight'; 'Neonatal cyanosis'; 'Neonatal cerebral signs'; 'Neonatal illnesses'; 'Neonatal breathing difficulties'; and 'Prolonged duration to establishment of respiratory rate at birth', within the composite adverse neonatal event score. Log-binomial regression quantified the unadjusted and covariate-adjusted (paternal employment status and social class; maternal smoking status; maternal age; parity; cohort

member smoking status and Body Mass Index) associations between the adverse neonatal event score and risk of multimorbidity in adulthood.

Outcome measures: Multimorbidity at each adult data sweep, defined as the presence of two or more Long-Term Conditions (LTCs).

Results: 13.7% of respondents experienced one or more adverse neonatal event(s) at birth. The percentage reporting multimorbidity increased steadily from 14.6% at age 34 to 25.5% at age 46. A significant association was only observed at the 38 years sweep; those who had experienced two or more adverse neonatal events had a 41.0% (95% CI: 1.05 - 1.88) increased risk of multimorbidity, compared to those who had not suffered any adverse neonatal events at birth. This association was maintained following adjustment for parental confounders and adult smoking status.

Conclusions: Adverse neonatal events at birth may be independently associated with the development of midlife multimorbidity. Programmes and policies aimed at tackling the growing public health burden of multimorbidity may also need to consider interventions to reduce adverse neonatal events at birth.

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Conflict of interest statement

The authors have declared that no competing interests exist.

- [66 references](#)
- [1 figure](#)

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Randomized Controlled Trial

BMC Complement Med Ther

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. 2025 Mar 17;25(1):107.

doi: 10.1186/s12906-025-04838-6.

[Acceptability and feasibility of online delivery of chair-based yoga for older adults with multimorbidity - lessons from a process evaluation of the gentle years yoga trial](#)

[Lesley Ward](#)¹, [Laura Bissell](#)², [Jenny Howsam](#)², [Garry A Tew](#)³, [Laura Wiley](#)⁴, [Fiona Rose](#)⁴, [Camila Sofía](#)⁴, [Maturana Palacios](#)⁴, [Tim Rapley](#)⁵

Affiliations Expand

- PMID: 40098115
- PMCID: [PMC11912673](#)
- DOI: [10.1186/s12906-025-04838-6](#)

Abstract

Background: Yoga is a safe, effective, and popular practice among older adults, and amenable to online delivery. The Gentle Years Yoga randomised controlled trial compared the impact of a chair-based yoga programme to usual care on the health-related quality of life of older adults with multimorbidity. This embedded, longitudinal process evaluation qualitatively explored experiences and acceptability of online delivery of the trial intervention.

Methods: A subset of trial participants randomised to receive the 12-week online yoga programme, together with the trial yoga teachers, were purposively recruited to semi-structured interviews. Individual interviews were conducted via Zoom or telephone, audio-recorded, independently transcribed, and thematically analysed. Online observations were conducted of one class delivered by each teacher.

Results: Eighteen yoga participants (66-91 years; 2-8 chronic health conditions) and nine teachers were interviewed once (N = 12) or twice (N = 15) from October 2020 to April 2022. Five themes predominated, common to both groups. (1) Accessibility. Reduced communication and engagement inherent to online delivery were mostly outweighed by its removal of access barriers and provision of anonymity and distraction-free environment. (2) Technology issues. While digital literacy was variable and a barrier for some, simplified access procedures and basic audiovisual instruction optimised class engagement. (3) Delivery adaptations. Key facilitation techniques included simple, repetitive instructions, increased demonstration, personalised communication, and visibility-enhancing clothing. (4) Safety. Concerns were minimal, and mostly related to restricted visual and positional information inherent to face-to-face classes. (5) Implications and implementations.

Online delivery was considered viable and potentially appealing for anyone experiencing issues accessing face-to-face classes outside the home. Potential solutions to online attendance barriers included equipment loan schemes and digital learning courses using existing community-based infrastructures.

Conclusions: Online chair-based yoga classes were feasible and acceptable to participants and teachers, and preferable to face-to-face delivery by some. IT issues were minimal, and mainly resolvable through simple access processes and educational information. Accessibility advantages suggest online yoga may be suitable for a broad demographic, independent of age or health status. Establishing connections with existing health and community-based organisations presents a potential pathway for developing an equipment loan scheme to improve accessibility for those with financial access barriers.

Trial registration: ISRCTN ISRCTN13567538. Registered 18 March 2019.

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Conflict of interest statement

Declarations. Ethics approval and consent to participate: This trial received ethical approval from the National Research Ethics Committee North East – York (24/04/2019; 19/NE/0072) and was designed and conducted in accordance with the Declaration of Helsinki. All participants provided their written informed consent to participate in the study. Consent for publication: Not applicable. Competing interests: LB and JH co-created the British Wheel of Yoga Gentle Years Yoga programme. LB is a trustee-director of British Wheel of Yoga Qualifications (BWYQ), a separate company/registered charity that operates as an Ofqual-recognised awarding organisation for multiple training centres. JH is the BWYQ operations coordinator in charge of the awarding organisation’s External Quality Assurance Department.

- [53 references](#)

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Arch Public Health

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. 2025 Mar 18;83(1):71.

doi: 10.1186/s13690-025-01562-y.

[Association between physical activity and multimorbidity: a population-based cohort study](#)

[Chuan Mou](#) ^{#1}, [Zhihua Wang](#) ^{2,3}, [Zhifei Ke](#) ¹

Affiliations Expand

- PMID: 40098053
- PMCID: [PMC11916932](#)
- DOI: [10.1186/s13690-025-01562-y](#)

Abstract

Background: Physical activity has been widely recognized for its important role in preventing cardiovascular and other chronic diseases. While population studies worldwide have established clear associations between physical activity and multimorbidity, these relationships in the Chinese population remain underexplored.

Methods: This study utilized the China Health and Retirement Longitudinal Study (CHARLS) database to classify physical activity levels based on metabolic equivalents (MET). Physical activity was measured using self-reported questionnaires based on the International Physical Activity Questionnaire (IPAQ). The analysis focused on the relationship between low, moderate, and high physical activity levels and various chronic diseases, as well as the co-occurrence of multiple diseases. Multivariable logistic regression models were employed to assess the association between different activity levels and the risk of chronic diseases, while stratified analyses explored the impact of demographic factors on these associations. Additionally, a restricted cubic spline (RCS) model was applied to investigate potential nonlinear relationships between total MET and chronic disease risks.

Results: The final cohort included 6,244 participants with a total of 19,498 observations across five waves (2011-2020). The results showed that compared to low activity levels, moderate and high levels of physical activity reduced the risk of cardiovascular diseases and respiratory diseases, with a nonlinear dose-response relationship. High levels of physical activity also significantly lowered the risk of multimorbidity, particularly the coexistence of five or more chronic diseases (OR = 0.58, 95% CI: 0.46, 0.74, P < 0.01). However, high levels of activity were linked to higher risks of arthritis and kidney diseases. Stratified analyses revealed that

demographic factors influenced the association between physical activity and disease risk.

Conclusion: Moderate and high levels of physical activity provide significant protection against cardiovascular and respiratory diseases and effectively reduce the risk of multimorbidity. However, the increased risk of certain metabolic and joint diseases with higher activity levels warrants further attention. Future research should clarify the impact of physical activity on different populations and chronic diseases, with randomized controlled trials needed to verify causality.

Keywords: Aging; Cardiovascular diseases; Chronic diseases; Exercise; Metabolic diseases.

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Conflict of interest statement

Declarations. Ethics approval and consent to participate: This study was performed in line with the principles of the Declaration of Helsinki and all participants signed informed consents before participation. Approval was granted by the Ethical Review Committee at Peking University (IRB00001052-11015). Informed consent was obtained from all individual participants enrolled in the study. Consent for publication: The authors give consent for publication of this paper in Archives of Public Health. Competing interests: The authors declare no competing interests.

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- [4 figures](#)

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Review

BMC Public Health

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. 2025 Mar 17;25(1):1027.

doi: 10.1186/s12889-025-22169-6.

[Scoping review of the use of multimorbidity variables in cardiovascular disease risk prediction](#)

[Emma Church](#)¹, [Katrina Poppe](#)², [Susan Wells](#)²

Affiliations Expand

- PMID: 40097958
- PMCID: [PMC11912685](#)
- DOI: [10.1186/s12889-025-22169-6](#)

Abstract

Background: Cardiovascular disease (CVD) is a leading cause of morbidity and mortality globally. Many countries use pooled cohort equations or similar risk prediction models to assess atherosclerotic CVD risk to guide preventive measures. There is evidence that clinical CVD risk prediction equations are less accurate for adults with higher levels of multimorbidity (the co-occurrence of multiple long-term conditions). Operating within a single disease paradigm may not be appropriate for adults with multimorbidity who may be at higher risk of both CVD and non-CVD death. This scoping review was conducted to gather evidence on the inclusion of multimorbidity measures in CVD risk models to assess their methodology and identify evidence gaps in the literature.

Methods: The review covers literature from 1 January 2012 to 23 September 2022, using the Arksey and O'Malley framework. We searched MEDLINE, Embase, and Cochrane databases published during this period and followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) reporting guidelines.

Results: This review identified fourteen studies reporting multivariable prognostic CVD models that included a multimorbidity variable. Of these, four studies specifically looked at the added benefit of a multimorbidity variable in a CVD risk model. Only one of these studies was conducted in a primary prevention cohort (i.e., people were free of CVD at baseline). This scoping review revealed several primary evidence gaps, notably the limited literature on the topic, the model performance in ethnic subpopulations, and the comparative assessment of alternative multimorbidity variables beyond the Charlson Comorbidity Index.

Conclusions: Few studies have assessed the impact of incorporating multimorbidity indices in primary and secondary prevention cohorts. Future research is needed to evaluate the incremental value of multimorbidity indices in cardiovascular disease risk prediction models to inform risk stratification and management strategies in people with multimorbidity.

Keywords: CVD risk; Cardiovascular diseases; Charlson comorbidity index; Comorbidity; Multimorbidity; Population health; Risk prediction.

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Conflict of interest statement

Declarations. Ethics approval and consent to participate: Research ethics approval is not needed for this scoping review because the study did not include human or animal participants. Consent for publication: Not applicable. Competing interests: The authors declare no competing interests.

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- [1 figure](#)

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Chin Med J (Engl)

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. 2025 Mar 18.

doi: [10.1097/CM9.0000000000003565](https://doi.org/10.1097/CM9.0000000000003565). Online ahead of print.

[Adiposity, circulating metabolic markers, and risk of cardiometabolic multimorbidity](#)

[Si Cheng](#)¹, [Zhiqing Zeng](#)¹, [Jun Lv](#)^{1,2,3}, [Cangqing Yu](#)^{1,2,3}, [Dianjianyi Sun](#)^{1,2,3}, [Pei Pei](#)², [Ling Yang](#)⁴, [Yiping Chen](#)⁴, [Huaidong Du](#)⁴, [Li Gao](#)⁵, [Xiaoming Yang](#)⁴, [Daniel Avery](#)⁴, [Junshi Chen](#)⁶, [Zhengming Chen](#)⁴, [Liming Li](#)^{1,2,3}, [Yuanjie Pang](#)^{1,2,3}; [China Kadoorie Biobank Collaborative Group](#)

Affiliations Expand

- PMID: 40097372
- DOI: [10.1097/CM9.0000000000003565](https://doi.org/10.1097/CM9.0000000000003565)

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Eur J Heart Fail

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. 2025 Mar 17.

doi: 10.1002/ejhf.3642. Online ahead of print.

[How to handle polypharmacy in heart failure. A clinical consensus statement of the Heart Failure Association of the ESC](#)

[Davide Stolfo](#) ^{# 1 2}, [Massimo Iacoviello](#) ^{# 3}, [Ovidiu Chioncel](#) ^{4 5}, [Markus S Anker](#) ^{6 7}, [Antoni Bayes-Genis](#) ⁸, [Frieder Braunschweig](#) ⁹, [Antonio Cannata](#) ^{10 11}, [Seif El Hadidi](#) ¹², [Gerasimos Filippatos](#) ¹³, [Pardeep Jhund](#) ¹⁴, [Alexandre Mebazaa](#) ^{15 16}, [Brenda Moura](#) ¹⁷, [Massimo Piepoli](#) ^{18 19}, [Robin Ray](#) ²⁰, [Arsen D Ristic](#) ^{21 22}, [Petar Seferovic](#) ²³, [Maggie Simpson](#) ²⁴, [Hadi Skouri](#) ²⁵, [Carlo Gabriele Tocchetti](#) ²⁶, [Sophie Van Linthout](#) ^{27 28}, [Cristiana Vitale](#) ²⁹, [Maurizio Volterrani](#) ^{29 30}, [Kalliopi Keramida](#) ³¹, [Sven Wassmann](#) ³², [Basil S Lewis](#) ³³, [Marco Metra](#) ³⁴, [Giuseppe M C Rosano](#) ^{# 35 36}, [Gianluigi Savarese](#) ^{# 1}

Affiliations Expand

- PMID: 40091554
- DOI: [10.1002/ejhf.3642](#)

Abstract

The multiplicity of coexisting comorbidities affecting patients with heart failure (HF), together with the availability of multiple treatments improving prognosis in HF with reduced ejection fraction, has led to an increase in the number of prescribed medications to each patient. Polypharmacy is defined as the regular use of multiple medications, and over the last years has become an emerging aspect of HF care,

particularly in older and frailer patients who are more frequently on multiple treatments, and are therefore more likely exposed to tolerability issues, drug-drug interactions and practical difficulties in management. Polypharmacy negatively affects adherence to treatment, and is associated with a higher risk of adverse drug reactions, impaired quality of life, more hospitalizations and worse prognosis. It is important to adopt and implement strategies for the management of polypharmacy from other medical disciplines, including medication reconciliation, therapeutic revision and treatment prioritization. It is also essential to develop new HF-specific strategies, with the primary goal of avoiding the use of redundant treatments, minimizing adverse drug reactions and interactions, and finally improving adherence. This clinical consensus statement document from the Heart Failure Association of the European Society of Cardiology proposes a rationale, pragmatic and multidisciplinary approach to drug prescription in the current era of multimorbidity and 'multi-medication' in HF.

Keywords: Adherence; Comorbidities; Heart failure; Polypharmacy.

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Review

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. 2025 Mar 16:e13910.

doi: 10.1111/obr.13910. Online ahead of print.

[The effect of dietary weight-loss interventions on the inflammatory markers interleukin-6 and TNF-alpha in adults with obesity: A systematic review and meta-analysis of randomized controlled clinical trials](#)

[Cate Bulmer](#)¹, [Alison Avenell](#)¹

Affiliations Expand

- PMID: 40090867
- DOI: [10.1111/obr.13910](https://doi.org/10.1111/obr.13910)

Abstract

Background: A chronic inflammatory state characterizes a wide range of diseases for which obesity is a risk factor. Weight loss could reduce levels of circulating inflammatory markers potentially reducing the incidence of associated diseases and improving response to treatment. However, dietary weight loss studies have reported inconsistent effects on serum inflammatory makers and the long-term effects are unknown.

Objective: To systematically review randomized controlled trials and analyze any differences in serum interleukin-6 and tumor necrosis factor-alpha between adults with obesity achieving weight loss through dietary intervention compared to those receiving none or standard care.

Methods: Studies were identified by searching databases from 1966 to November 2024. Randomized controlled trials with at least 12 months' follow-up were included in this systematic review and meta-analysis with an assessment of Cochrane risk of bias version 1.

Results: Twelve eligible studies were included. No trials reported a significant effect of weight loss on circulating tumor necrosis factor-alpha, whilst studies achieving greater than 5% weight loss significantly reduced circulating interleukin-6 in adults with obesity.

Conclusion: Weight loss interventions achieving and maintaining greater than 5% weight loss appear to be required to reduce circulating interleukin-6 levels in adults with obesity.

Keywords: diet; inflammation; inflammatory markers; multimorbidity; obesity; weight loss.

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- [57 references](#)

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BMJ Evid Based Med

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. 2025 Mar 21;30(2):124-126.

doi: 10.1136/bmjebm-2024-112907.

[Strengthening transparency in randomised trials related to multimorbidity: key points and recommendations to guide reporting](#)

[Zijun Wang](#)^{1,2}, [Jako S Burgers](#)³, [Ruitai Shao](#)⁴, [Zhaoxiang Bian](#)⁵, [Chen Wang](#)⁴, [Yaolong Chen](#)⁶, [Janne Estill](#)^{1,2}

Affiliations Expand

- PMID: 38839262
- DOI: [10.1136/bmjebm-2024-112907](https://doi.org/10.1136/bmjebm-2024-112907)

No abstract available

Conflict of interest statement

Competing interests: None declared.

Full text links



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

1

Review

J Allergy Clin Immunol

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. 2025 Mar 19:S0091-6749(25)00306-9.

doi: 10.1016/j.jaci.2025.03.008. Online ahead of print.

[Unraveling the Heterogeneity of Asthma: Decoding Subtypes of Asthma](#)

[Anne L Fuhlbrigge](#)¹, [Sunita Sharma](#)²

Affiliations Expand

- PMID: 40118392
- DOI: [10.1016/j.jaci.2025.03.008](#)

Abstract

Asthma is a heterogeneous disease with diverse underlying mechanisms contributing to disease susceptibility and progression. Asthma endotypes and phenotypes have emerged as critical frameworks to help understand the variation in disease presentation and response to therapies. Phenotypes are the observable characteristics or traits of an organism that are produced by the interaction of the genotype and the environment. Asthma endotypes are distinct subsets of asthma that are characterized by specific biological pathways, including differences in inflammatory pathways, genetic predisposition, and immune response. Identifying asthma endotypes and the associated clinical phenotypes are pivotal for the development of personalized treatment strategies, as it enables clinicians to select more effective therapies based on specific biological mechanisms. This review explores asthma endotypes and their associated phenotypes and the ongoing effort to refine diagnostic tools and therapeutic personalized approaches, aiming to improve outcomes for patients with asthma.

Keywords: Asthma; T2 high; biologics; endotype; heterogeneity; non-T2; phenotype; precision medicine; treatment response.

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J Allergy Clin Immunol Pract

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. 2025 Mar 19:S2213-2198(25)00260-0.

doi: 10.1016/j.jaip.2025.03.013. Online ahead of print.

[Long-term effectiveness of a digital inhaler on medication adherence and clinical outcomes in adult asthma patients in primary care: the cluster randomised controlled ACCEPTANCE trial](#)

[Susanne J van de Hei¹, Liselot N van den Berg², Charlotte C Poot², Yoran H Gerritsma³, Eline Meijer², Bertine M J Flokstra-de Blok³, Maarten J Postma⁴, Job F M van Boven⁵, Niels H Chavannes², Janwillem W H Kocks⁶](#)

Affiliations Expand

- PMID: 40118212
- DOI: [10.1016/j.jaip.2025.03.013](https://doi.org/10.1016/j.jaip.2025.03.013)

Abstract

Background: Digital inhalers can support medication adherence and asthma control in the short-term. Yet, long-term benefits are unknown.

Objective: To investigate the clinical effects, usability, and cost-effectiveness of a digital inhaler.

Methods: Open-label cluster randomised controlled trial of twelve months in Dutch primary care. Adults with suboptimal controlled asthma and non-adherence were eligible. General practices were randomly allocated to either intervention or control, stratified by practice size. Intervention and control patients received an electronic monitoring device attached to their budesonide/formoterol Symbicort® Turbuhaler® maintenance inhaler. Intervention patients used a smartphone application for data insights and reminders. Control patients' inhaler usage was passively monitored. Primary outcome was 1-year medication adherence. Secondary outcomes included asthma control, quality of life, usability and cost-effectiveness.

Results: Between June 27, 2019 and September 30, 2022, 136 clusters containing 164 participants were randomised (82 participants across 68 clusters in both groups). Estimated marginal means (EMM) for medication adherence were 71.4% (95%CI:67.1-75.4) and 59.9% (95%CI:55.0-64.7) in the intervention and control group, respectively. Medication adherence was higher in the intervention group at week 2 (OR:2.19, 95%CI:1.63-2.95). The difference in medication adherence between groups

declined over time ($p < 0.0001$); no significant difference was found at study end (OR:1.23, 95%CI:0.91-1.66). Overall, ACQ-5 scores were significantly better ($p = 0.0056$) in the intervention group (EMM:1.31, 95%CI:1.18-1.44) compared with control (EMM:1.56, 95%CI:1.44-1.68). Quality of life (Mini-AQLQ scores) differed not significantly between groups ($p = 0.0530$), however, the intervention group was almost three times more likely to reach the MCID for asthma-related quality of life (OR:2.73, 95%CI:1.02-7.54). Mean System Usability Score was 80.1 (SD:13.8). Cost per 0.5-point ACQ-5 decrease was €278.

Conclusion: Use of this digital inhaler led to significant improvements in medication adherence in the short-term and to sustained improved asthma control over twelve months.

Keywords: asthma; compliance; digital; digital inhaler; eHealth; general practice; medication adherence; primary care; smart inhaler.

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J Allergy Clin Immunol Pract

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. 2025 Mar 19:S2213-2198(25)00261-2.

doi: 10.1016/j.jaip.2025.03.014. Online ahead of print.

[Effect of dupilumab on respiratory outcomes in patients with severe chronic rhinosinusitis with nasal polyps and asthma](#)

[Makoto Hoshino](#)¹, [Tatsuhiko Harada](#)², [Junichi Ootawa](#)³, [Keiji Matsumoto](#)³, [Naoto Mochizuki](#)³, [Daiki Mochizuki](#)³

Affiliations Expand

- PMID: 40118213
- DOI: [10.1016/j.jaip.2025.03.014](https://doi.org/10.1016/j.jaip.2025.03.014)

No abstract available

Keywords: Asthma; Asthma control; Chronic rhinosinusitis with nasal polyp; Computed tomography; Dupilumab; Quality of life; Sinonasal symptom; Type 2 biomarker; United airways.

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J Asthma

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. 2025 Mar 21:1-22.

doi: 10.1080/02770903.2025.2483000. Online ahead of print.

[Severe Asthma Exacerbations Associated with Unconventional Natural Gas Development Activity in Area of Concentrated Development](#)

[Jeanine M Buchanich¹, Ada O Youk¹, Jennifer Fedor², Michael Lann², Nicholas R Tedesco², Evelyn O Talbott³, Maureen Lichtveld⁴, James P Fabisiak⁵, Sally Wenzel⁴](#)

Affiliations Expand

- PMID: 40116578
- DOI: [10.1080/02770903.2025.2483000](https://doi.org/10.1080/02770903.2025.2483000)

Abstract

Introduction: Residential proximity to unconventional natural gas development (UNGD) has been shown to be associated with asthma exacerbations, but there is limited evidence regarding whether exacerbations are associated with a particular distance or phase of well activity.

Objective: To study the impact of proximity to UNGD activity by well phase and buffer distance.

Methods: We included asthma patients 5-90 years old with a primary diagnosis of asthma and at least one order for medications prescribed for asthma residing in one of eight Southwestern Pennsylvania counties between 2011-2020. We matched events (severe exacerbation, emergency department visit, hospitalization) by age group, sex, and year to cohort members without an event of the same or greater severity. The primary exposure measure was an inverse distance-weighted index of UNGD activity up to 10 miles of a patient's residence. We fit a series of adjusted multilevel logistic regression models using tertiles of exposure activity by well phase and buffer distance.

Results: Our cohort consisted of 46,676 asthma patients. We found strong evidence for an increased risk specifically during the production phase for all buffer distances examined for all three event types, as based on consistent, statistically significantly elevated odds ratios. Elevations ranged from 2 to 8 times the baseline of no wells within 10 miles of the patient's residence.

Conclusion: This study provides evidence of increased risk of asthma events with the production phase. This should be considered in determining risk communication and assessment for these vulnerable populations, particularly during the production phase.

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Review

Physiol Res

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. 2025 Mar 21;74(1):19-29.

[Exploring the Asthma - Obesity Link Using Advanced Imaging Techniques](#)

[M Krivošová¹](#), [R Barošová](#), [E Lukáčová](#), [J Hanusrichterová](#), [N Nemcová](#), [M Kolomazník](#), [J Mokřý](#), [D Mokrá](#)

Affiliations Expand

- PMID: 40116547

Abstract

The global rise in obesity has emerged as a significant health concern, amplifying susceptibility to various diseases, including asthma. Epidemiological evidence demonstrates a higher prevalence of asthma among obese individuals, with obesity exacerbating asthma severity and control. This review aims to explore the interplay between asthma and obesity assessed by objective imaging methods and discusses the consistency between anthropometric and imaging methods. A literature search was conducted with the main keywords "asthma", "obesity", and "imaging techniques" using databases such as PubMed, Web of Sciences, and Scopus for the relevant articles published up to January 2024. The consistency between Body Mass Index (BMI), Waist Circumference (WC), and results from imaging techniques is uncertain. Unlike anthropometric methods, imaging methods provide us with the exact location of adipose tissue as well as fat and lean mass distinction, which can be further correlated with different airway parameters and respiratory system functions and dysfunctions. Studies indicate that the relationship between lung functions and obesity is more complex in females. Abdominal visceral fat is supposed to be the major asthma predictor already in the pediatric population. The connection between obesity and asthma is already evident in children and adolescents. Imaging methods can measure visceral and subcutaneous fat mass and both contribute to the association between obesity and lung functions. These methods are more accurate and reproducible but require more time and expertise. Key words Asthma, Obesity, Magnetic resonance imaging, Dual-energy, X-ray absorptiometry, Bioimpedance analysis.

Supplementary info

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Pulm Ther

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. 2025 Mar 20.

doi: 10.1007/s41030-025-00292-4. Online ahead of print.

[Physical Activity in Adults with Severe Asthma On-Treatment with Biological Therapies: A 1-Year Retrospective Analysis of Real-World Data](#)

[Caroline Reilly](#)¹, [Antonios Stavropoulos-Kalinoglou](#)¹, [Daniel Peckham](#)^{2,3}, [Ian J Clifton](#)^{2,3}, [Oliver J Price](#)^{4,5}

Affiliations Expand

- PMID: 40113642
- DOI: [10.1007/s41030-025-00292-4](#)

Abstract

Introduction: Asthma is a complex airways disease that affects over 350-million people worldwide. It is estimated that up to 10% of adults and 2.5% of children with asthma have severe disease, which is associated with reduced physical activity. The introduction of biological therapies has revolutionised the management of severe asthma; however, it remains to be determined whether this translates into improvements in physical activity status.

Method: This 1-year retrospective study evaluated step-based physical activity (via a smartphone pedometer) in adults with severe asthma (n = 20) and two matched sub-groups (n = 20 mild asthma and n = 20 healthy controls).

Results: The annual daily step count was significantly less in adults with severe asthma (4698 ± 1927) versus mild asthma (7239 ± 1815) (P = 0.009) and healthy controls (8252 ± 2115) (P = 0.001). No difference in physical activity was observed between those with mild asthma and healthy controls (P > 0.05).

Conclusion: Despite long-term treatment with biological therapies, physical activity remains significantly lower in adults with severe asthma. The development of personalised evidence-based interventions to promote physical activity in people with severe asthma remains a priority.

Keywords: Asthma; Biologics; Management; Physical activity; Treatment.

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Conflict of interest statement

Declarations. Conflict of Interest: Oliver J Price has received grants from Merck and AstraZeneca outside the submitted work. Ian J. Clifton has received honoraria from AstraZeneca, GSK, Chiesi and Infex Therapeutics. IJC has received grants from AstraZeneca outside the submitted work. Caroline Reilly, Daniel Peckham, Antonios Stavropoulos-Kalinoglou have no real or perceived conflict of interest in respect of this manuscript. **Ethical Approval:** Ethical approval was granted by the Health Research Authority and Health and Care Research Wales Committee (reference: 21/PR/0160).

- [18 references](#)

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J Allergy Clin Immunol Pract

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. 2025 Mar 18:S2213-2198(25)00259-4.

doi: 10.1016/j.jaip.2025.03.011. Online ahead of print.

[Concurrent Blood Eosinophils and FeNO as Biological Therapy Indicators in Severe Asthma: Findings from the PRISM study](#)

[Duong Duc Pham](#)¹, [Ji-Hyang Lee](#)¹, [Hyouk-Soo Kwon](#)¹, [Woo-Jung Song](#)¹, [You Sook Cho](#)¹, [Hyunkyong Kim](#)¹, [Jae-Woo Kwon](#)², [So-Young Park](#)³, [Sujeong Kim](#)⁴, [Gyu Young Hur](#)⁵, [Byung Keun Kim](#)⁶, [Young-Hee Nam](#)⁷, [Min-Suk Yang](#)⁸, [Mi-Yeong Kim](#)⁹, [Sae-Hoon Kim](#)¹⁰, [Byung-Jae Lee](#)¹¹, [Taehoon Lee](#)¹², [So Young Park](#)¹³, [Min-Hye Kim](#)¹⁴, [Young-Joo Cho](#)¹⁵, [ChanSun Park](#)¹⁶, [Jae-Woo Jung](#)¹⁷, [Han Ki Park](#)¹⁸, [Joo-Hee Kim](#)¹⁹, [Ji-Yong Moon](#)²⁰, [Pankaj Bhavsar](#)²¹, [Ian Adcock](#)²¹, [Kian Fan Chung](#)²¹, [Tae-Bum Kim](#)¹

Affiliations Expand

- PMID: 40113138
- DOI: [10.1016/j.jaip.2025.03.011](https://doi.org/10.1016/j.jaip.2025.03.011)

Abstract

Background: The combination of pre-treatment peripheral blood eosinophil count (BEC) and fractional exhaled nitric oxide (FeNO) levels for optimizing the therapeutic response of T2-biologics in patients with severe eosinophilic asthma (SEA) remains unclear.

Objective: We aimed to compare the longitudinal clinical outcome changes across subgroups stratified by the combination of high and low levels of BEC and FeNO.

Methods: Overall, 278 patients with SEA (anti-IL-5/IL-5R α users: n=82; anti-IL-4R α users: n=196) were stratified based on pre-treatment BEC and FeNO levels and

followed up for 6-12 months. Group differences in exacerbation rate, lung function, asthma control test (ACT), BEC, FeNO, and clinical remission over time were compared.

Results: Approximately 75% and 63% of patients presented with concurrent high BEC (≥ 300 cells/ μ L) and high FeNO (≥ 25 ppb) in the anti-IL-5/IL-5R α and anti-IL-4R α groups, respectively. Among anti-IL-5/IL-5R α users, no significant differences were observed among BEC-FeNO groups regarding exacerbation rates or clinical remission. Patients with concurrent high BEC and FeNO levels demonstrated more pronounced reductions in both markers and greater FEV1 and ACT score improvements compared to those with high FeNO but low BEC. In the anti-IL-4R α group, patients with low BEC and FeNO, and those with high BEC but low FeNO, exhibited a significantly lower likelihood of achieving clinical remission (OR [95% CI]: 0.08 [0.00-0.46] and 0.11 [0.01-0.63], respectively) and a slower rate of FEV1 improvement (all P for slope < 0.05) compared to those with concurrent high BEC and FeNO.

Conclusion: Concurrently elevated BEC and FeNO levels ensure optimal therapeutic response in SEA patients treated with T2-biologics.

Keywords: FeNO; biologics; blood eosinophil count; severe eosinophilic asthma.

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Review

Eur Respir Rev

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. 2025 Mar 19;34(175):240143.

doi: 10.1183/16000617.0143-2024. Print 2025 Jan.

[Remote monitoring in asthma: a systematic review](#)

[Giselle Mosnaim](#)¹, [Michelle Carrasquel](#)², [Tatum Ewing](#)², [Alba Berty](#)², [Madeline Snedden](#)²

Affiliations Expand

- PMID: 40107660
- PMCID: [PMC11920888](#)
- DOI: [10.1183/16000617.0143-2024](#)

Abstract

Background: Poor adherence to maintenance inhalers and incorrect maintenance and reliever inhaler technique are associated with poor asthma outcomes. Remote therapeutic monitoring and remote patient monitoring support asthma guideline recommendations to regularly review adherence and inhaler technique, with the ultimate goal to improve asthma outcomes.

Objective: This work systematically reviewed all clinical trials testing remote monitoring interventions on asthma outcomes.

Methods: A systematic search of PubMed, SCOPUS, Ovid, CINAHL and reference review databases was conducted from 1 January 2000 to 30 April 2024. Articles were included if the title or abstract included MeSH terms of "nebulizers and vaporizers" in combination with "digital", "remote", "electronic" or "smart inhaler" to identify interventional studies testing remote monitoring for asthma. We characterised populations, interventions, control groups, outcomes, timeframe and setting across studies.

Results: Of 2043 articles reviewed, 19 articles met the inclusion criteria (n=14 remote therapeutic monitoring; n=5 remote patient monitoring). While a wide range of outcomes were measured across studies, overall, the studies (n=19) that met the inclusion criteria demonstrated a slower decline in maintenance inhaler adherence (n=13), decreased reliever use (n=6) and improvements in asthma control (n=3). They did not demonstrate positive outcomes on asthma exacerbations and healthcare utilisation, but this may be due to study sample sizes, eligibility criteria and duration.

Conclusion: Remote monitoring demonstrates improvements in important intermediary asthma outcomes. Future studies with larger sample sizes, duration and requiring greater disease severity as eligibility criteria are warranted to evaluate their efficacy at decreasing asthma-related oral steroid use, emergency department visits, hospitalisations and costs.

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Conflict of interest statement

Conflict of interest: G. Mosnaim receives research grant support from Areteia, GlaxoSmithKline, Genentech, Incyte, Novartis, Sanofi-Regeneron and Teva; and

receives consulting, advisory board and/or speaking fees from Aptar, Chiesi, Genentech, Jasper, Novartis, Sanofi-Regeneron and Teva. The remaining authors have nothing to declare.

- [39 references](#)
- [1 figure](#)

Supplementary info

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Pediatr Emerg Care

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. 2025 Mar 19.

doi: 10.1097/PEC.0000000000003336. Online ahead of print.

[Predicting Future Acute Care Visit Risk in Kids With Asthma \(PARKA\): A Nested Cohort Study](#)

[Dhenuka Radhakrishnan](#)^{1 2 3}, [Patricia Li](#)^{4 5}, [Meltem Tuna](#)^{3 6}, [Madhura Thipse](#)¹, [Nick Barrowman](#)¹, [Vid Bijelic](#)¹, [Naveen Poonai](#)⁷, [Dominic Chalut](#)⁸, [Roger Zemek](#)^{1 2}, [Eric I Benchimol](#)^{3 9 10}, [Francine M Ducharme](#)^{8 11}

Affiliations Expand

- PMID: 40106367
- DOI: [10.1097/PEC.0000000000003336](#)

Abstract

Objectives: We aimed to develop a clinical risk score to predict future asthma acute care visits [emergency department (ED) visits or hospitalizations] within 1 year following a discharge from 1 of 2 tertiary care pediatric EDs in Ontario, Canada.

Methods: We assembled a nested Ontario cohort from the multicenter prospective DOORWAY cohort study and included children 1 to 17 years of age, with an ED visit for a moderate/severe asthma exacerbation. We linked this with provincial health administrative data. We used multivariable regression to derive and internally validate a practical clinical risk score to predict future asthma acute care visits.

Results: A total of 257 children [32% female, median age 3.0 years (IQR 1 to 7 y)] were included, and 58 experienced an asthma visit within the following year. These were best predicted by 4 factors: food allergy (OR 4.2, 95% CI: 1.2-14.9), family history of asthma (OR 0.5, 95% CI: 0.3-0.9), prior acute asthma medical visits (OR 2.8, 95% CI: 0.9-8.6), and prior emergency room visits for any respiratory diagnosis (OR 3.0, 95% CI: 1.4-6.4). A score of 0, 1, or 2 points was applied to each factor for up to a maximum of 6 points; the PARKA score has very good overall performance with a scaled Brier score of 0.11 on internal validation and good discrimination with an AUC of 0.72 (95% CI: 0.64-0.78).

Conclusions: The PARKA score predicts the risk of a future asthma acute care visit in a cohort of Ontario children with a moderate/severe asthma ED visit. Following external validation, this tool may aid ED clinicians in accurately targeting resource-intensive preventative interventions for at-risk children.

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Conflict of interest statement

Disclosure: The authors declare no conflict of interest.

- [45 references](#)

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Curr Opin Pediatr

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. 2025 Mar 19.

doi: 10.1097/MOP.0000000000001455. Online ahead of print.

[Respiratory syncytial virus vaccination: likely and less likely outcomes](#)

[Dvir Gatt](#)^{1,2}, [Guy Hazan](#)^{1,2}

Affiliations Expand

- PMID: 40105190
- DOI: [10.1097/MOP.0000000000001455](https://doi.org/10.1097/MOP.0000000000001455)

Abstract

Purpose of review: Respiratory syncytial virus (RSV) remains a leading cause of lower respiratory tract infections in infants, older adults, and high-risk populations. The recent approval of new RSV vaccines and monoclonal antibodies marks a turning point in RSV prevention. This review explores these advancements, their immediate and potential long-term effects, and the remaining challenges.

Recent findings: Several novel RSV prevention strategies have been approved, including maternal RSVPreF vaccines, infant-targeted monoclonal antibodies like Nirsevimab, and vaccines for older adults. These interventions significantly reduce RSV-related hospitalizations, ICU admissions, and mortality, particularly in high-risk groups. Early evidence also suggests benefits in reducing wheezing during infancy; however, long-term impacts on asthma development remain uncertain. Challenges such as vaccine hesitancy and limited access in low-resource settings remain pressing issues that require sustained focus.

Summary: RSV vaccines and monoclonal antibodies are expected to alter clinical management and public health by reducing severe disease burden and RSV transmission. Further research is needed to evaluate their long-term effects, including implications for asthma prevention and pediatric obstructive sleep apnea. Addressing access disparities and public acceptance will be critical for maximizing their global impact.

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Curr Opin Pulm Med

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. 2025 Mar 19.

doi: 10.1097/MCP.0000000000001166. Online ahead of print.

[Optimizing adherence to medication to improve outcomes in asthma](#)

[Pamela Rackow](#)¹, [Amelia Drennan](#)¹, [Hilary Pinnock](#)², [Alexandra L Dima](#)^{3 4 5}

Affiliations Expand

- PMID: 40105049
- DOI: [10.1097/MCP.0000000000001166](#)

Abstract

Purpose of review: Adherence to medication is essential for asthma control and reducing the risk of exacerbations. Research has accumulated in recent years on causes and consequences of adherence and effective interventions. This review highlights current advances in adherence research and their potential for clinical practice.

Findings: Optimizing adherence to medication can be achieved through interventions that identify individual barriers and train the care team in offering tailored support. Digital technologies that facilitate remote monitoring, patient-provider communication and care coordination are increasingly being integrated into asthma care.

Summary: Adherence determinants reported cover individual, social and health service-related factors. Age and attitudes toward adherence are crucial determinants. Patients' and caregivers' mental health is relevant for adherence and clinical outcomes, highlighting the importance of integrating this aspect into holistic asthma management. Single-site care arrangements are beneficial for adherence. Tailoring adherence interventions to individual needs, using brief questionnaires to assess barriers and recommending evidence-based strategies to address them, have been found useful and feasible across care settings. Digital technologies such as smart inhaler systems and telemedicine-enhanced care have been shown to be effective in randomized controlled trials, yet implementation research highlights challenges to sustaining support on the long-term.

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Editorial

Allergy

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. 2025 Mar 19.

doi: 10.1111/all.16527. Online ahead of print.

[Wildfires and Respiratory Allergy](#)

[Gennaro D'Amato](#)¹, [Ioana Agache](#)², [Kari Nadeau](#)³, [Vanitha Sampath](#)³, [Cezmi Akdis](#)⁴, [Isabella Annesi-Maesano](#)^{5,6}

Affiliations Expand

- PMID: 40105042
- DOI: [10.1111/all.16527](#)

No abstract available

Keywords: Los Angeles wildfires; airborne pollutants; wildfires and airways hyperreactivity; wildfires and airways inflammation; wildfires and asthma; wildfires and respiratory allergy.

- [9 references](#)

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Curr Opin Pulm Med

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. 2025 Mar 19.

doi: 10.1097/MCP.0000000000001159. Online ahead of print.

[Type 2 inflammation, a common denominator in chronic airway disease?](#)

[Michaela Schedel](#)^{1,2}, [Victoria Heimes](#)¹, [Christian Taube](#)³

Affiliations Expand

- PMID: 40104899
- DOI: [10.1097/MCP.0000000000001159](#)

Abstract

Purpose of review: This review addresses the growing understanding that a specific subset of patients with a respiratory disease, including asthma, chronic obstructive pulmonary disease (COPD), or bronchiectasis may have one thing in common: type 2 inflammation. In the era of personalized medicine, we need to refine clinical markers combined with molecular and cellular endotyping to improve patient outcomes.

Recent findings: Recent literature reveals that type 2 markers such as blood eosinophils, fractional exhaled nitric oxide (FeNO), and immunoglobulin E (IgE), can provide valuable insights into disease progression, exacerbation risk, and treatment response, but their stability remains to be investigated. Treating asthma and COPD patients with biologics to target IL-4/IL-13, IL-5, and alarmins have shown potential, although efficacy varied. In bronchiectasis, a subset of patients with type 2 inflammation may benefit from corticosteroid therapy, despite broader concerns regarding its use.

Summary: This underscores the importance of improved disease endotyping to better characterize patients who may benefit from targeted therapies. In clinical practice, personalized treatment based on inflammatory profiles has been shown to improve outcomes in heterogeneous lung diseases. Future research needs to focus on validating reliable biomarkers and optimizing clinical trial designs to advance therapeutic strategies in respiratory diseases.

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. 2025 Mar 18;15(1):9243.

doi: 10.1038/s41598-025-94270-0.

[Identification of hub genes between moderate to severe asthma and early lung adenocarcinoma through bioinformatics analysis](#)

[Jiaqian Xue](#)¹, [Qingwei Zhou](#)²

Affiliations Expand

- PMID: 40102503
- PMCID: [PMC11920247](#)
- DOI: [10.1038/s41598-025-94270-0](#)

Abstract

The objective of this study was to explore the genetic link between moderate to severe asthma and early-stage lung adenocarcinoma (LUAD) using bioinformatic methods. The Cancer Genome Atlas gene-expression profiles for early-stage LUAD and GSE76225 data set for moderate to severe asthma were selected for weighted gene co-expression network analysis, and intersected with the relevant module genes and selected hub genes; the relevant network of hub genes was then determined through a protein-protein interaction network. In addition, gene-set enrichment analysis and gene-set variation analysis (GSVA) were conducted on differentially expressed genes between normal and tumor groups. Gene ontology and Kyoto Encyclopedia of Genes and Genomes pathway-enrichment analyses were applied to detect hub gene-related biological functions. Receiver operating characteristic (ROC) curves were employed to confirm the diagnostic value of hub

genes. We identified four key genes, of which SFTPC exhibited relatively high value for areas under the ROC curves, indicating high diagnostic value for moderate to severe asthma. The clinical efficacy of SFTPC was thus consistent with GSVA results, indicating that moderate to severe asthma can inhibit the occurrence of early LUAD.

Keywords: Diagnostic value; Early-stage lung adenocarcinoma; Enrichment analysis; Moderate to severe asthma; Protein–protein interaction network; Weighted gene co-expression network analysis.

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Conflict of interest statement

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

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. 2025 Mar 17;13(3):e70148.

doi: 10.1002/rcr2.70148. eCollection 2025 Mar.

[Very Late Age-Onset Asthma: Mimic of Other Respiratory Diseases and Important Diagnosis Not to Be Missed](#)

[Hanson Siu](#)¹, [Allison Michaud](#)^{1,2}, [Philip G Bardin](#)¹

Affiliations [Expand](#)

- PMID: 40099028

- PMID: [PMC11913527](#)
- DOI: [10.1002/rcr2.70148](#)

Abstract

Asthma is often not recognised and is frequently not diagnosed and treated in older people. This may reflect the belief that the disease is unlikely to manifest late in this group. We report a patient who presented with a respiratory infection and persistent breathlessness after the age of 80. Asthma was not initially suspected, and other diagnoses were pursued. However, subsequent spirometry suggested late age-onset asthma that responded dramatically to appropriate treatment. This case provides a timely reminder for physicians to consider this diagnosis in older patients.

Keywords: asthma; breathlessness; elderly; late onset.

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Conflict of interest statement

P.G.B. is an Editorial Board member of *Respirology Case Reports* and a co-author of this article. He was excluded from all editorial decision-making related to the acceptance of this article for publication.

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BMJ Open Respir Res

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. 2025 Mar 17;12(1):e002808.

doi: 10.1136/bmjresp-2024-002808.

[Sex differences in asthma and COPD hospital admission, readmission and mortality](#)

[Hannah Whittaker](#)¹, [Alexander Adamson](#)², [Philip Stone](#)², [Precious Olubori](#)³, [James Calvert](#)^{4,5}, [James Dodd](#)^{6,7}, [Ian Sinha](#)^{5,8}, [Katherine Hickman](#)⁹, [Sally Singh](#)¹⁰, [Jennifer K Quint](#)¹¹

Affiliations Expand

- PMID: 40097201
- DOI: [10.1136/bmjresp-2024-002808](https://doi.org/10.1136/bmjresp-2024-002808)

Free article

Abstract

Background: Asthma and chronic obstructive pulmonary disease (COPD) outcomes vary by sex. We investigated whether males and females with asthma or COPD are managed differently in-hospital when admitted for an exacerbation.

Methods: Data from the National Asthma and COPD Audit Programme were used to determine three cohorts of people hospitalised for an exacerbation: (1) adults with asthma, (2) children and young people (CYP) with asthma, and (3) adults with COPD. Outcomes included the following in-hospital interventional measures: spirometry recording, respiratory specialist review, respiratory medication administration and discharge bundle recording. Linked hospital data were used to determine 30-day and 90-day readmissions and Office for National Statistics data for 90-day mortality. Random effects logistic regression was used to investigate the association between sex and in-hospital outcomes, readmission and mortality.

Results: 16 370 adults with asthma, 7156 CYP with asthma and 28 354 adults with COPD were included. Female adults with asthma had higher odds of being seen by a respiratory specialist (aOR 0.1.13, 1.02-1.26) and higher odds of readmission within 30 and 90 days (aOR 1.22, 1.10-1.37, aOR 1.34, 1.23-1.46) compared with males. Female adults with COPD had higher odds of being seen by a respiratory specialist, (aOR 1.10, 1.02-1.19), being administered non-invasive ventilation (aOR 1.18, 1.09-1.29), and receiving a discharge bundle (aOR 1.07, 1.00-1.14), and lower odds of readmission within 90 days (aOR 0.95, 0.90-1.01), or mortality within 90 days (aOR 0.88, 0.81-0.96). Lastly, female CYP had higher odds of steroids administered within 1 hour (aOR 1.13, 1.00-1.28) and higher 30-day and 90-day readmission compared with males (aOR 1.21, 1.00-1.44 and 1.17, 1.03-1.34).

Interpretation: Sex differences in in-hospital care exist in adults COPD, which may impact readmissions and mortality; however, little to no sex differences in in-hospital care were seen in people with asthma yet females were more likely to be readmitted to hospital.

Keywords: Asthma Epidemiology; COPD epidemiology.

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Conflict of interest statement

Competing interests: HW reports grants from BRC and HDR UK, outside the submitted work. AA and PS previously completed analyses for NACAP, no other disclosures relevant for this work. JC is the adult asthma audit clinical lead. JD is the NRAP Adult Asthma clinical lead and is supported by the National Institute for Health and Care Research Bristol Biomedical Research Centre. The views expressed are those of the author(s) and not necessarily those of the NIHR or the Department of Health and Social Care. IS is the paediatric asthma audit clinical lead. SS is supported by the National Institute for Health and Care Research (NIHR) Leicester Biomedical Research Centre (BRC). SS is a National Institute for Health Research (NIHR) Senior Investigator. JKQ was analysis lead for NACAP, no other disclosures relevant for this work. PO and KH have no conflicts of interest.

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Acad Emerg Med

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. 2025 Mar 17.

doi: 10.1111/acem.70006. Online ahead of print.

[Intravenous Magnesium: Prompt use for Asthma in Children Treated in the Emergency Department \(IMPACT-ED\), a pilot randomized trial](#)

[Michael D Johnson¹, Bashar S Shihabuddin², Bradley J Barney³, Mengtao Dai³, Toni Harbour¹, Yeojin Jung¹, Kameron N Clinton², Breanna Vance², Madison Reilly⁴, Joseph J Zorc⁴; IMPACT-ED Collaborators of the Pediatric Emergency Care Applied Research Network \(PECARN\)](#)

Affiliations Expand

- PMID: 40095736

- DOI: [10.1111/acem.70006](https://doi.org/10.1111/acem.70006)

Abstract

Background: Asthma is the most common chronic illness of childhood and a leading cause of hospitalization and health care costs for children. Intravenous magnesium sulfate (IVMg) may help severely ill children avoid hospitalization when added to standard treatment in an emergency department (ED), but this has not been adequately evaluated in a large trial. We conducted a pilot trial to test procedures and gather information to plan a large multicenter trial.

Methods: Children 2-17 years old with severe acute asthma were randomized in a multicenter, double-blind, controlled trial of placebo (saline, 1 mL/kg, max 40 mL), low-dose IVMg (50 mg/kg, max 2 g), or high-dose IVMg (75 mg/kg, max 3 g) in addition to standard asthma therapy at the EDs of three tertiary pediatric hospitals between September 2022 and May 2023. We assessed the feasibility of delivering study drug within 90 min of treatment (defined as the start of the first inhaled albuterol) and monitoring for hypotension and obtained blood samples for pharmacologic analysis. Our target enrollment was one participant per site per week (90 total).

Results: A total of 52 patients were randomized, and 49 received study drug. Median (Q1, Q3) participant age was 6.3 (4.6, 9.6) years and 35 (67.3%) were male. Among 52 randomized participants, study drug was delivered within 90 min to 34 (65.4%), 486/542 (89.7%) anticipated blood pressure measurements were within time frames, 138/156 (88.5%) anticipated blood samples were obtained, and 38 (73.1%) were hospitalized. Hypotension was measured within 2 h of study drug administration in 2/18 (11.1%) who received placebo and 2/31 (6.5%) who received IVMg.

Conclusions: Most anticipated blood pressure measurements and blood samples were obtained. Hypotension occurred at rates similar to previous reports. Lower-than-expected enrollment (related to low patient volumes) and timely delivery of study drug will require consideration for a larger trial.

Keywords: asthma; child; emergency service; feasibility studies; hospitalization; hypotension; magnesium; multicenter studies; randomized controlled trials.

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Review

Drugs

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. 2025 Mar 17.

doi: [10.1007/s40265-025-02151-7](https://doi.org/10.1007/s40265-025-02151-7). Online ahead of print.

[Stapokibart: First Approval](#)

[Matt Shirley](#)¹

Affiliations Expand

- PMID: 40095376
- DOI: [10.1007/s40265-025-02151-7](https://doi.org/10.1007/s40265-025-02151-7)

Abstract

Stapokibart (Kangyueda[®]; [®]) is a humanised IgG4 monoclonal antibody targeted against the interleukin (IL)-4 receptor alpha subunit (IL-4R α). By binding IL-4R α , stapokibart blocks the binding by (and subsequent signalling of) IL-4 and IL-13, two type 2 cytokines. Stapokibart is being developed by KeyMed Biosciences for the treatment of atopic dermatitis and other type 2 inflammatory diseases. In September 2024, stapokibart received its first approval, in China, for use in the treatment of moderate-to-severe atopic dermatitis in adults whose disease is poorly controlled by, or not suitable for, topical medications. Subsequently, stapokibart additionally received approval in China for use in the treatment of chronic rhinosinusitis with nasal polyps (December 2024) and for the treatment of seasonal allergic rhinitis (February 2025). Stapokibart is also under clinical evaluation for use in the treatment of moderate-to-severe asthma and chronic obstructive pulmonary disease, and prurigo nodularis. This article summarises the milestones in the development of stapokibart leading to this first approval for moderate-to-severe atopic dermatitis.

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Conflict of interest statement

Declarations. Funding: The preparation of this review was not supported by any external funding. **Authorship and Conflict of Interest:** During the peer review process the manufacturer of the agent under review was offered an opportunity to comment on the article. Changes resulting from any comments received were made by the author on the basis of scientific completeness and accuracy. Matt Shirley is a salaried employee of Adis International Ltd/Springer Nature, and declares no relevant conflicts of interest. All authors contributed to this article and are responsible for its content. **Ethics Approval, Consent to Participate, Consent to Publish, Availability of Data and Material, Code Availability:** Not applicable.

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JAMA Pediatr

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. 2025 Mar 17:e250010.

doi: 10.1001/jamapediatrics.2025.0010. Online ahead of print.

[Tailored Adherence Incentives for Childhood Asthma Medications: A Randomized Clinical Trial](#)

[Chén C Kenyon](#)^{1,2,3}, [William O Quarshie](#)⁴, [Rui Xiao](#)³, [Mishaal Yazdani](#)¹, [Carina M Flaherty](#)⁵, [G Chandler Floyd](#)³, [Victoria A Miller](#)^{3,6}, [Tyra C Bryant-Stephens](#)^{1,2,3}, [Joseph J Zorc](#)^{3,7}, [Chris Feudtner](#)^{2,3}

Affiliations Expand

- PMID: 40094638
- PMCID: PMC11915114 (available on 2026-03-17)

- DOI: [10.1001/jamapediatrics.2025.0010](https://doi.org/10.1001/jamapediatrics.2025.0010)

Abstract

Importance: Differential adherence to efficacious preventive medications is one potentially modifiable driver of racial disparities in childhood asthma outcomes.

Objective: To determine the effect of a financial incentive-enhanced intervention on adherence to inhaled asthma preventive medication in a high-risk, predominantly racially minoritized cohort of children with asthma.

Design, setting, and participants: This was a randomized clinical trial conducted from September 2019 through June 2022 at a large mid-Atlantic pediatric health system in the US. Children were eligible if they were between 5 and 12 years old, prescribed a preventive inhaler for daily use, and had at least 2 asthma exacerbations requiring systemic steroids in the preceding year. Data were analyzed from December 2022 to December 2024.

Intervention: Inhaled medication use was monitored using electronic inhaler sensors over a 7-month period. Families who completed a 1-month run-in interval were randomized to 1 of 3 arms for a 3-month experiment interval: (1) daily text message medication reminders, weekly adherence feedback, and gain-framed, financial incentives of up to \$1 per day (full intervention); (2) daily text message medication reminders and weekly adherence feedback (hybrid intervention); or (3) no reminders, feedback, or incentives (active control). Medication adherence monitoring then continued for a 3-month observation interval, where all arms reverted to active control conditions.

Main outcomes and measures: The primary outcome was adherence to inhaled maintenance medication during the experiment; secondary outcomes included adherence during the observation phase. The study was powered to detect a difference in average monthly adherence between the full intervention and active control condition.

Results: Of the 106 children randomized, 99 had at least 1 month of monitoring data (56 male [57%] and 43 female [43%]; mean [SD] age, 8.0 [2.3] years). Most participants (81 [82%]) identified as non-Hispanic Black and demographic and clinical characteristics were similar across study arms. During the experiment interval, participants receiving the full intervention had a 15-percentage point (95% CI, 2-29 percentage points) higher inhaled maintenance medication adherence compared with participants in the active control. There was no evidence of adherence differences in the observation interval.

Conclusion and relevance: While a financial incentive-enhanced mobile health intervention led to higher inhaled preventive medication adherence as compared with the active control group, there was no evidence for enduring effect after the intervention components ceased, consistent with other studies that include financial incentives to encourage behavior change.

Trial registration: ClinicalTrials.gov Identifier: [NCT03907410](https://clinicaltrials.gov/ct2/show/study/NCT03907410).

Conflict of interest statement

Conflict of Interest Disclosures: Dr Kenyon reported grants from the National Institutes of Health/National Heart, Lung, and Blood Institute (K23HL136842) during the conduct of the study. Dr Zorc reported grants from the National Institutes of Health/National Heart, Lung, and Blood Institute during the conduct of the study. No other disclosures were reported.

Comment in

- doi: 10.1001/jamapediatrics.2025.0020
- [45 references](#)

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Clinical Trial

J Clin Invest

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. 2025 Mar 17;135(6):e186889.

doi: 10.1172/JCI186889.

[Cellular and molecular features of asthma mucus plugs provide clues about their formation and persistence](#)

[Maude A Liegeois](#)¹, [Aileen Hsieh](#)^{2,3}, [May Al-Fouadi](#)^{2,3}, [Annabelle R Charbit](#)¹, [Chen Xi Yang](#)^{2,3}, [Tillie-Louise Hackett](#)^{2,3}, [John V Fahy](#)^{1,4}

Affiliations Expand

- PMID: 40091838

- PMID: [PMC11910225](#)
- DOI: [10.1172/JCI186889](#)

Abstract

BACKGROUNDMucus plugs form in acute asthma and persist in chronic disease. Although eosinophils are implicated in mechanisms of mucus pathology, many mechanistic details about mucus plug formation and persistence in asthma are unknown.**METHODS**Using histology and spatial, single-cell proteomics, we characterized mucus-plugged airways from nontransplantable donor lungs of 14 patients with asthma (9 with fatal asthma and 5 with nonfatal asthma) and individuals acting as controls (10 with chronic obstructive pulmonary disease and 14 free of lung disease). Additionally, we used an airway epithelial cell-eosinophil (AEC-eosinophil) coculture model to explore how AEC mucus affects eosinophil degranulation.**RESULTS**Asthma mucus plugs were tethered to airways showing infiltration with innate lymphoid type 2 cells and hyperplasia of smooth muscle cells and MUC5AC-expressing goblet cells. Asthma mucus plugs were infiltrated with immune cells that were mostly dual positive for eosinophil peroxidase (EPX) and neutrophil elastase, suggesting that neutrophils internalize EPX from degranulating eosinophils. Indeed, eosinophils exposed to mucus from IL-13-activated AECs underwent CD11b- and glycan-dependent cytolytic degranulation. Dual-positive granulocytes varied in frequency in mucus plugs. Whereas paucigranulocytic plugs were MUC5AC rich, granulocytic plugs had a mix of MUC5AC, MUC5B, and extracellular DNA traps. Paucigranulocytic plugs occurred more frequently in (acute) fatal asthma and granulocytic plugs predominated in (chronic) nonfatal asthma.**CONCLUSION**Together, our data suggest that mucin-rich mucus plugs in fatal asthma form because of acute goblet cell degranulation in remodeled airways and that granulocytic mucus plugs in chronic asthma persist because of a sustaining niche characterized by epithelial cell-mucin-granulocyte cross-talk.**FUNDING**NIH grants HL080414, HL107202, and AI077439.

Keywords: Asthma; Immunology; Pulmonology.

Conflict of interest statement

Conflict of interest: JVF is an inventor on patents for thiol-saccharides as novel mucolytic drugs (US9,856,283, US10,526,359, US11,021,506).

- [47 references](#)
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Supplementary info

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. 2025 Mar 16:eLocator23565.

doi: 10.1002/alr.23565. Online ahead of print.

[Are There Effective Methods to Reduce Exposure to House Dust Mite Allergens? A Meta-Analysis of Randomized Clinical Trials](#)

[Marharyta Sobczak](#)¹, [Krzysztof Kowal](#)², [Rafał Pawliczak](#)¹

Affiliations Expand

- PMID: 40089899
- DOI: [10.1002/alr.23565](#)

Abstract

Background: House dust mites (HDMs) are the most common cause of atopic sensitivities and allergic diseases worldwide. Therefore, we decided to conduct a meta-analysis of randomized clinical trials to evaluate the effect of different methods of HDM avoidance.

Methods: PubMed, Web of Science, and the Cochrane Central Register of Controlled Trials databases were searched to find articles of control-compared randomized clinical trials, which investigated the following analyzed outcomes: total amount of dust (g); Der1 (Der p1 plus Der f1) concentrations ($\mu\text{g/g}$); Der p1 concentrations ($\mu\text{g/g}$); Der p2 concentrations ($\mu\text{g/g}$); Der f1 concentrations ($\mu\text{g/g}$); measurements of peak expiratory flow (PEF) (L/min); respiratory, pulmonary, or nasal symptoms according to various scales, including visual analog scale; exacerbations; Asthma Control Questionnaire score measurements; and change in quality of life scales (overall change, activity change, symptom change, and emotional function change). The relative risk with 95% confidence interval (CI) and the mean difference or the standardized mean difference with 95% CI were calculated to compare the effect. A random effects model was used to calculate effect sizes.

Results: Our meta-analysis was based on 17 studies. We indicated the significant differences between interventional and control groups in total amount of dust (MD = -0.24 ; 95% CI [-0.37 ; -0.11]; $p < 0.001$; $I^2 = 57\%$) and Der1 (Der p1 plus Der f1)

concentrations (MD = -0.97; 95% CI [-1.81; -0.13]; p = 0.02; I² = 82%). However, they are not sufficient to improve diseases, such as asthma and allergic rhinitis, or to improve the quality of life of patients.

Conclusions: HDM allergen avoidance methods are effective in reducing dust and Der1 concentrations.

Keywords: allergy; avoidance; dust; house dust mite allergens; meta-analysis.

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- [40 references](#)

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J Asthma

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. 2025 Mar 17:1-10.

doi: 10.1080/02770903.2025.2478503. Online ahead of print.

[Association of short-term exposure to PM_{2.5} and its components with hospital admission for asthma in Shanghai: a time-stratified case-crossover study](#)

[Xuesong Zhou](#)¹, [Jia Qiu](#)², [Ning Kang](#)², [Jingwei Zhang](#)¹, [Yandan Xu](#)¹, [Jian Zhang](#)², [Xiuli Tang](#)², [Yinghao Yuchi](#)², [Mingjia Xu](#)¹, [Chongjian Wang](#)²

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- PMID: 40064519
- DOI: [10.1080/02770903.2025.2478503](#)

Abstract

Introduction: Associations between $PM_{2.5}$ and the risk of asthma admission have been established in previous researches. However, evidence about the specific impacts of $PM_{2.5}$ components on asthma-related hospitalizations across different populations and environments is limited and inconsistent. The purpose of this study was to examine the association between short-term exposure $PM_{2.5}$ and its components with asthma hospital admission.

Method: A total of 930 people hospitalized for asthma were included in the study in Shanghai between December 2018 and December 2022. Air pollution data were assigned to individuals based on their residential address using the Tracking Air Pollution (TAP) platform. A time-stratified case-crossover design and a conditional logistic regression model were used to estimate the risk of asthma admissions related to exposure to $PM_{2.5}$. We also conducted stratified analyzes by age, gender, and season.

Results: Each $10 \mu\text{g}/\text{m}^3$ increase in $PM_{2.5}$, BC, NO_3^- , NH_4^+ , SO_4^{2-} and OM at lag-5 day were associated with increased risk of asthma admission, with ORs of 1.04(1.00,1.08), 2.59(0.99,6.76), 1.17(1.02,1.33), 1.33(1.06,1.66), 1.28(1.05,1.55) and 1.16(0.98,1.37), respectively. Stratified analysis showed that $PM_{2.5}$ and its components had a more significant impact on the risk of asthma admission for women; individuals aged ≥ 65 years, and during cold seasons at lag-5 day. The results remained stable in the sensitivity analysis.

Conclusion: Short-term exposure to $PM_{2.5}$ and its components (NO_3^- , NH_4^+ , SO_4^{2-}) increases hospitalization risk in asthma patients, particularly among women, elder and those admitted during cold seasons. It provides new insight for reducing the asthma burden associated with particulate air pollution.

Keywords: $PM_{2.5}$; $PM_{2.5}$ components; asthma; case-crossover study.

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Editorial

Thorax

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. 2025 Mar 18;80(4):195-196.

doi: 10.1136/thorax-2024-222923.

[Preserved ratio impaired spirometry \(PRISm\): prognostic, preventable and treatable?](#)

[Guy G Brusselle](#)^{1,2}, [Sebastian G Riemann](#)²

Affiliations Expand

- PMID: 39978963
- DOI: [10.1136/thorax-2024-222923](#)

No abstract available

Keywords: Asthma; Clinical Epidemiology; Forced Expiratory Volume; Lung Physiology.

Conflict of interest statement

Competing interests: None declared.

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Observational Study

Postgrad Med J

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. 2025 Mar 16;101(1194):291-301.

doi: 10.1093/postmj/qgae147.

[Association between asthma and depression: results from the NHANES 2005-2018 and Mendelian randomization analysis](#)

[Yikun Guo](#)^{1,2}, [Jun Yan](#)³

Affiliations Expand

- PMID: 39471344
- DOI: [10.1093/postmj/qgae147](#)

Abstract

Objective: Asthma is a common respiratory disease that is believed to be associated with mental disorders. This study aims to assess the correlation and causal relationship between asthma and depression by combining observational and Mendelian randomization (MR) approaches.

Methods: We collected relevant data from the National Health and Nutrition Examination Survey (NHANES) and employed multivariable logistic regression to evaluate the correlation between asthma and depression. Additionally, a two-sample MR analysis was conducted using inverse variance-weighted (IVW) method, along with multiple sensitivity analyses.

Results: The observational study included a total of 23 648 participants, and the results showed that asthma patients had an increased risk of developing depression compared to non-asthma individuals (OR 1.26; 95% CI 1.04-1.57; $P < 0.01$). The IVW-MR results from two datasets indicated a potential causal relationship between asthma and depression (EBI dataset: OR 1.141; 95% CI 1.051-1.239; $P = 0.01$; UKB dataset: OR 1.009; 95% CI 1.005-1.013; $P < 0.01$). These findings suggest that asthma may be a risk factor for the onset of depression, increasing the risk of developing depression.

Conclusion: There is a significant correlation and potential causal relationship between asthma and depression, with asthma being a risk factor for the onset of depression. These findings warrant further research for validation and exploration of preventive and therapeutic measures for depression in asthma patients. Key messages What is already known on this topic-There are some potential associations between asthma and depression based on observational studies, but the results of observational studies are often biased. This study aims to further explore the relationship between asthma and depression through a combination of observational studies and Mendelian randomization (MR) analysis. What this study adds-The observational study results from the National Health and Nutrition Examination Survey database and MR analysis are consistent, indicating that after adjusting for multiple covariates and confounding factors, asthma increases the risk of depression and is a risk factor for depression, with similar results obtained at the genetic level. How this study might affect research, practice or policy-Asthma patients not only need active medication treatment, but also need timely psychological attention, and psychological treatment is more important to a certain extent.

Keywords: Mendelian randomization; NHANES; asthma; depression.

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

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Otolaryngol Pol

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. 2025 Mar 18;79(2):29-38.

doi: 10.5604/01.3001.0055.0005.

[Enhanced Therapeutic Options for Budesonide Nebulisation via Pulsating Nebuliser in Upper Respiratory Tract Diseases](#)

[Bolesław Samoliński](#)¹, [Konrad Furmańczyk](#)², [Andrzej Emeryk](#)³, [Tomasz R Sosnowski](#)⁴, [Paweł Bijoś](#)⁵

Affiliations Expand

- PMID: 40099510
- DOI: [10.5604/01.3001.0055.0005](#)

Free article

Abstract

Introduction: The primary treatment method for T2 immune response-related airway inflammations, such as eosinophilic inflammation, is topical glucocorticosteroid therapy. However, its effectiveness is limited by the challenge of drug penetration into the perinasal cavity. The introduction of a new generation of pulsating nebulizers has partially addressed this issue. Pulsating nebulizers (vibrating aerosol) enhance the penetration of nebulized medication into

the paranasal sinuses, thereby opening a new therapeutic option for the treatment of chronic sinusitis. Consequently, a new regulatory indication has been approved for the use of budesonide in chronic rhinosinusitis with nasal polyps.

Aim: The aim of the study was to compare the aerodynamic particle size distribution (APSD) of the dispersed suspensions of the test drug (TD) and the reference drug (RD) administered using the PARI SINUS2 nebulizer system, consisting of the PARI LC SPRINT SINUS nebulizer and the PARI SINUS2 compressor.

Material and methods: Comparison of the APSD of the dispersed suspensions of the TD and the RD administered using the PARI SINUS2 nebulizer system. Twelve nebulizations of each formulation were tested using six PARI SINUS2 nebulizer systems, with two repetitions per system. The methods were review of studies and own research. The APSD study was conducted using a next-generation impactor (NGI) and a laser diffraction spectrometer after nebulization of 2 mL suspensions of TD and RD via the PARI SINUS2 nebulizer system. Statistical analyses included descriptive statistics as well as 90% and 95% confidence intervals for the difference in means and the ratio of means of the examined parameters.

Results: The TD was well-suited to the nebulization procedure. Both formulations (TD and RD) exhibited significant variability in the aerosol droplet distribution at different levels of the NGI cascade impactor. In the case of TD, larger droplets were more easily generated, which promoted deposition of the drug at the upper levels of the impactor. The equivalence of the two forms of budesonide, RD and TD, in the treatment of chronic rhinosinusitis with nasal polyps using a pulsating nebulizer was demonstrated. These indications were acknowledged by the Office for Registration of Medicinal Products, Medical Devices and Biocidal Products (URPLW MiPB) and added to the Product Information of TD.

Conclusions: Both budesonide formulations were effective. Budesonide administered via vibrational nebulization is effective in the treatment of chronic rhinosinusitis with nasal polyps.

Keywords: bioequivalence of inhaled medications; budesonide; chronic rhinosinusitis; intranasal glucocorticosteroids; nasal polyps; pulsating nebulization.

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Review

Drugs

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. 2025 Mar 17.

doi: 10.1007/s40265-025-02151-7. Online ahead of print.

[Stapokibart: First Approval](#)

[Matt Shirley](#)¹

Affiliations Expand

- PMID: 40095376
- DOI: [10.1007/s40265-025-02151-7](https://doi.org/10.1007/s40265-025-02151-7)

Abstract

Stapokibart (Kangyueda[®]; [®]) is a humanised IgG4 monoclonal antibody targeted against the interleukin (IL)-4 receptor alpha subunit (IL-4R α). By binding IL-4R α , stapokibart blocks the binding by (and subsequent signalling of) IL-4 and IL-13, two type 2 cytokines. Stapokibart is being developed by KeyMed Biosciences for the treatment of atopic dermatitis and other type 2 inflammatory diseases. In September 2024, stapokibart received its first approval, in China, for use in the treatment of moderate-to-severe atopic dermatitis in adults whose disease is poorly controlled by, or not suitable for, topical medications. Subsequently, stapokibart additionally received approval in China for use in the treatment of chronic rhinosinusitis with nasal polyps (December 2024) and for the treatment of seasonal allergic rhinitis (February 2025). Stapokibart is also under clinical evaluation for use in the treatment of moderate-to-severe asthma and chronic obstructive pulmonary disease, and prurigo nodularis. This article summarises the milestones in the development of stapokibart leading to this first approval for moderate-to-severe atopic dermatitis.

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Conflict of interest statement

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responsible for its content. Ethics Approval, Consent to Participate, Consent to Publish, Availability of Data and Material, Code Availability: Not applicable.

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Int Forum Allergy Rhinol

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. 2025 Mar 16:eLocator23565.

doi: 10.1002/alr.23565. Online ahead of print.

[Are There Effective Methods to Reduce Exposure to House Dust Mite Allergens? A Meta-Analysis of Randomized Clinical Trials](#)

[Marharyta Sobczak](#)¹, [Krzysztof Kowal](#)², [Rafał Pawliczak](#)¹

Affiliations Expand

- PMID: 40089899
- DOI: [10.1002/alr.23565](#)

Abstract

Background: House dust mites (HDMs) are the most common cause of atopic sensitivities and allergic diseases worldwide. Therefore, we decided to conduct a meta-analysis of randomized clinical trials to evaluate the effect of different methods of HDM avoidance.

Methods: PubMed, Web of Science, and the Cochrane Central Register of Controlled Trials databases were searched to find articles of control-compared randomized clinical trials, which investigated the following analyzed outcomes: total amount of

dust (g); Der1 (Der p1 plus Der f1) concentrations ($\mu\text{g/g}$); Der p1 concentrations ($\mu\text{g/g}$); Der p2 concentrations ($\mu\text{g/g}$); Der f1 concentrations ($\mu\text{g/g}$); measurements of peak expiratory flow (PEF) (L/min); respiratory, pulmonary, or nasal symptoms according to various scales, including visual analog scale; exacerbations; Asthma Control Questionnaire score measurements; and change in quality of life scales (overall change, activity change, symptom change, and emotional function change). The relative risk with 95% confidence interval (CI) and the mean difference or the standardized mean difference with 95% CI were calculated to compare the effect. A random effects model was used to calculate effect sizes.

Results: Our meta-analysis was based on 17 studies. We indicated the significant differences between interventional and control groups in total amount of dust (MD = -0.24 ; 95% CI [-0.37 ; -0.11]; $p < 0.001$; $I^2 = 57\%$) and Der1 (Der p1 plus Der f1) concentrations (MD = -0.97 ; 95% CI [-1.81 ; -0.13]; $p = 0.02$; $I^2 = 82\%$). However, they are not sufficient to improve diseases, such as asthma and allergic rhinitis, or to improve the quality of life of patients.

Conclusions: HDM allergen avoidance methods are effective in reducing dust and Der1 concentrations.

Keywords: allergy; avoidance; dust; house dust mite allergens; meta-analysis.

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chronic cough

1

Laryngoscope

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. 2025 Mar 21.

doi: 10.1002/lary.32109. Online ahead of print.

[Practice Trends in Laryngology: Neuromodulators for Treatment of Chronic Cough](#)

[Christopher D Dwyer](#)¹, [Michael M Johns](#)², [Jennifer J Shin](#)¹, [Thomas L Carroll](#)¹

Affiliations Expand

- PMID: 40116593
- DOI: [10.1002/lary.32109](https://doi.org/10.1002/lary.32109)

Abstract

Objectives: Assess practice trends among laryngologists within the United States surrounding neuromodulator use for chronic cough treatment.

Methods: Anonymous 29-item survey comprised of a mixture of multiple choice, Likert scale, and free-text answers was electronically distributed to practicing laryngologists in the United States.

Results: Eighty-five laryngologists from 26 states responded. The majority (96.5%) prescribe neuromodulators for chronic cough and are the preferred first-line treatment for refractory explained chronic cough (37.8%) and unexplained chronic cough (50.6%). Gabapentin (97.6%), amitriptyline (91.5%), and tramadol (73.2%) are the most used. The preferred first-line drugs were also gabapentin (45.1%), amitriptyline (39.0%), and tramadol (11.0%). Most wait 3-6 months before making changes when a neuromodulator is successful, then wean to the lowest possible cough-controlling dose (68.3%) or taper off completely (24.4%). When a neuromodulator fails: 43.9% wean and try another neuromodulator; others shift to a superior laryngeal nerve (SLN) block (24.4%). When cough recurs almost immediately after weaning an effective neuromodulator, most will re-initiate it again (97.6% likely or highly likely). If the cough recurs in the future, typical practice includes reinitiating the same prior effective neuromodulator at its previously tolerated effective dose (40.5%) or re-titrating to the new effective dose needed (51.9%).

Conclusions: Laryngologists routinely prescribe neuromodulators for unexplained and refractory chronic cough. Gabapentin and amitriptyline are the preferred first-line agents, generally titrated to maximal effect, balancing against side effects. A low threshold to reinitiate previously effective neuromodulators exists when cough recurs. If an initial neuromodulator is unsuccessful, either a different neuromodulator or a SLN block is considered.

Keywords: chronic cough; laryngology; neurogenic cough; neuromodulators; practice trends.

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J Aerosol Med Pulm Drug Deliv

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. 2025 Mar 17.

doi: 10.1089/jamp.2024.0049. Online ahead of print.

[N-Acetylcysteine and Its Therapeutic Potential in an Animal Model of Allergic Asthma](#)

[Lukáš Smieško¹](#), [Jozef Mažerik¹](#), [Eduard Gondáš¹](#), [Matúš Dohál²](#), [Marta Jošková¹](#), [Martina Šutovská¹](#), [Soňa Fraňová¹](#)

Affiliations Expand

- PMID: 40094443
- DOI: [10.1089/jamp.2024.0049](https://doi.org/10.1089/jamp.2024.0049)

Abstract

Background: N-acetylcysteine (NAC) is a classical mucolytic agent that, in addition to its mucolytic activity, also exhibits antioxidant activity. This could be beneficial in treating chronic inflammatory airway diseases, including asthma. **Background:** We evaluated the ability of NAC to modulate airway defense mechanisms, airway reactivity, inflammation, and remodeling after 10 days of administration [20 and 60 mg/(kg-d)] in an experimental guinea pig model of allergic inflammation. **Methods:** The concentrations of inflammatory cytokines (interleukins: IL-4, IL-5, IL-10, IL-12, and IL-13), granulocyte macrophage-colony stimulating factor (GM-CSF), interferon-gamma (IFN- γ), and tumor necrosis factor-alpha (TNF- α) were measured in bronchoalveolar lavage fluid using a multiplex detection method. The concentration of remodeling marker transforming growth factor beta-1 (TGF- β 1) was measured in lung homogenates using enzyme-linked immunosorbent assay. **In vivo**, changes in specific airway resistance and number of cough efforts were determined. Tracheal smooth muscle reactivity was evaluated *in vitro*. Ciliary beat frequency (CBF) indicated mucociliary clearance. **Results:** A 10-day administration of NAC at a higher dosage led to a significant decrease in the regulatory cytokines

IL-4, IL-5, and GM-CSF. NAC, in both dosing schedules, decreased the levels of TGF- β 1. NAC at a higher dosage reduced the number of chemically induced cough reflexes and CBF. NAC did not affect airway hyperreactivity parameters. *Conclusion:* NAC is a multifactorial drug, and under our experimental conditions of allergic inflammation, it showed positive effects on the levels of regulatory cytokines and growth factors, which probably led to a reduction in the intensity of airway defense mechanisms.

Keywords: N-acetylcysteine; allergic airway hyperresponsiveness; allergic airway inflammation; allergic asthma.

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

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Respirol Case Rep

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. 2025 Mar 20;13(3):e70104.

doi: 10.1002/rcr2.70104. eCollection 2025 Mar.

[Aspergillus Bronchitis at Localised Mucus Plug in an Immunocompetent Patient](#)

[Kai Yamazaki](#)¹, [Yukihiro Horio](#)¹, [Kazuhito Hatanaka](#)², [Takashi Yaguchi](#)³, [Kozaburo Sadahiro](#)¹, [Kohei Umemoto](#)¹, [Shigeaki Hattori](#)¹, [Katsuyoshi Tomomatsu](#)¹, [Naoki Hayama](#)¹, [Yoko Ito](#)¹, [Tsuyoshi Oguma](#)¹, [Koichiro Asano](#)¹

Affiliations Expand

- PMID: 40114996
- PMCID: [PMC11925472](#)

- DOI: [10.1002/rcr2.70104](https://doi.org/10.1002/rcr2.70104)

Abstract

Aspergillus tracheobronchitis is a form of invasive aspergillosis that primarily occurs in immunocompromised patients. We report a case of Aspergillus bronchitis in an immunocompetent 55-year-old woman with a mucus plug at the site of localised bronchiectasis. The mucus plug gradually enlarged over 9 years, when the patient exhibited submissive haemoptysis. Bronchial artery embolization, followed by partial lung resection was performed. Pathological and mycological examinations led to the diagnosis of AT caused by *Aspergillus udagawae*.

Keywords: Aspergillus bronchitis; Aspergillus udagawae; bronchiectasis; hemoptysis; mucus plug.

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Conflict of interest statement

The authors declare no conflicts of interest.

- [5 references](#)
- [3 figures](#)

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Curr Opin Pulm Med

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. 2025 Mar 19.

doi: 10.1097/MCP.0000000000001159. Online ahead of print.

[Type 2 inflammation, a common denominator in chronic airway disease?](#)

[Michaela Schedel](#)^{1,2}, [Victoria Heime](#)¹, [Christian Taube](#)³

Affiliations Expand

- PMID: 40104899
- DOI: [10.1097/MCP.0000000000001159](https://doi.org/10.1097/MCP.0000000000001159)

Abstract

Purpose of review: This review addresses the growing understanding that a specific subset of patients with a respiratory disease, including asthma, chronic obstructive pulmonary disease (COPD), or bronchiectasis may have one thing in common: type 2 inflammation. In the era of personalized medicine, we need to refine clinical markers combined with molecular and cellular endotyping to improve patient outcomes.

Recent findings: Recent literature reveals that type 2 markers such as blood eosinophils, fractional exhaled nitric oxide (FeNO), and immunoglobulin E (IgE), can provide valuable insights into disease progression, exacerbation risk, and treatment response, but their stability remains to be investigated. Treating asthma and COPD patients with biologics to target IL-4/IL-13, IL-5, and alarmins have shown potential, although efficacy varied. In bronchiectasis, a subset of patients with type 2 inflammation may benefit from corticosteroid therapy, despite broader concerns regarding its use.

Summary: This underscores the importance of improved disease endotyping to better characterize patients who may benefit from targeted therapies. In clinical practice, personalized treatment based on inflammatory profiles has been shown to improve outcomes in heterogeneous lung diseases. Future research needs to focus on validating reliable biomarkers and optimizing clinical trial designs to advance therapeutic strategies in respiratory diseases.

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Observational Study

J Clin Immunol

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. 2025 Mar 17;45(1):82.

doi: 10.1007/s10875-025-01874-2.

[Diagnosis, Characteristics, and Outcome of Selective Anti-polysaccharide Antibody Deficiencies In A Retrospective Cohort of 55 Adult Patients](#)

[Nicolas Perrard](#)^{1 2 3 4}, [Sarah Stabler](#)^{5 6 7 8}, [Sébastien Sanges](#)^{9 10 6}, [Louis Terriou](#)^{9 10 6}, [Catherine Lamblin](#)¹¹, [Sacha Gaillard](#)¹², [Fanny Vuotto](#)^{6 7 8}, [Cécile Chenivresse](#)^{6 8 13}, [Geoffrey Mortuaire](#)^{6 14}, [Frédéric Batteux](#)^{15 16}, [Floriane Mirgot](#)^{5 6}, [Aurore Collet](#)^{10 5 6}, [Benjamin Lopez](#)¹⁷, [Sylvain Dubucquoi](#)^{10 5 6}, [Myriam Labalette](#)^{10 5 6}, [Eric Hachulla](#)^{9 10 6}, [David Launay](#)^{9 10 6}, [Guillaume Lefèvre](#)^{9 10 5 6}

Affiliations Expand

- PMID: 40097777
- PMCID: [PMC11914230](#)
- DOI: [10.1007/s10875-025-01874-2](#)

Abstract

Selective anti-polysaccharide antibody deficiency (SPAD) predisposes to encapsulated bacterial infections. The diagnosis is challenging, and literature reports are scarce in adult patients, we therefore aim to describe the demographics, infectious complications, therapeutic strategies, and outcome of adult patients. We conducted a multicenter observational study involving 55 adult patients with SPAD. The median [interquartile range, IQR] age was 45 [36-60] years at diagnosis of SPAD, and 75% of patients were female. Twenty-one patients (38%) had a history of allergic and/or inflammatory disease, mainly asthma (n = 12), and rheumatic diseases (n = 6). Twelve patients (22%) were diagnosed after a single severe infection and 43 (78%) in a context of recurrent benign and/or severe infections. In the latter, the median time from first infections to diagnosis was 74.5 [33-167] months. Diagnostic delay was significantly higher in patients presenting with bronchiectasis than in those without (122 months [33-219.5] vs 24 months [14.5-74.5], p = 0.0042). In 22 patients (40%) receiving immunoglobulin replacement therapy (IgRT), the mean (min-max) frequency of antibiotic courses decreased from 7.9 (2-18) to 0.7 (0-2) courses per year (p < 0.001) with a median follow-up period of 46 [27-73] months. Patients diagnosed after a single severe infection did not have any relapse during a median follow-up of 85 [80.5-104.5] months after diagnosis. Adult patients with SPAD have allergic or inflammatory disorders which could contribute to the diagnostic delay. IgRT is effective in preventing recurrent infections. Further studies are warranted to confirm if SPAD should be considered after a first unexplained severe bacterial infection.

Keywords: Asthma; Encapsulated bacterial infections; Immunoglobulin replacement therapy; Preventive antibiotherapy; Primary immunodeficiency; Selective anti-polysaccharide antibody deficiency; Specific antibody deficiency.

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Conflict of interest statement

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- [5 figures](#)

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