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

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BMJ Open Respir Res

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. 2024 Mar 9;11(1):e002142.

doi: 10.1136/bmjresp-2023-002142.

## [Predicting parameters of airway dynamics generated from inspiratory and expiratory plethysmographic airway loops, differentiating subtypes of chronic obstructive diseases](#)

[Richard Kraemer](#)<sup>1,2</sup>, [Hans-Jürgen Smith](#)<sup>3</sup>, [Juergen Reinstaedtler](#)<sup>4</sup>, [Sabina Gallati](#)<sup>5</sup>, [Heinrich Matthys](#)<sup>6</sup>

Affiliations expand

- PMID: 38460977

- DOI: [10.1136/bmjresp-2023-002142](https://doi.org/10.1136/bmjresp-2023-002142)

# Abstract

**Background:** The plethysmographic shift volume-flow loop ( $sR_{aw}$ -loop) measured during tidal breathing allows the determination of several lung function parameters such as the effective specific airway resistance ( $sR_{eff}$ ), calculated from the ratio of the integral of the resistive aerodynamic specific work of breathing ( $sWOB$ ) and the integral of the corresponding flow-volume loop. However, computing the inspiratory and expiratory areas of the  $sR_{aw}$ -loop separately permits the determination of further parameters of airway dynamics. Therefore, we aimed to define the discriminating diagnostic power of the inspiratory and expiratory  $sWOB$  ( $sWOB_{in}$ ,  $sWOB_{ex}$ ), as well as of the inspiratory and expiratory  $sR_{eff}$  ( $sR_{eff}^{IN}$  and  $sR_{eff}^{EX}$ ), for discriminating different functional phenotypes of chronic obstructive lung diseases.

**Methods:** Reference equations were obtained from measurement of different databases, incorporating 194 healthy subjects (35 children and 159 adults), and applied to a collective of 294 patients with chronic lung diseases (16 children with asthma, aged 6-16 years, and 278 adults, aged 17-92 years). For all measurements, the same type of plethysmograph was used (Jaeger Würzburg, Germany).

**Results:** By multilinear modelling, reference equations of  $sWOB_{in}$ ,  $sWOB_{ex}$ ,  $sR_{eff}^{IN}$  and  $sR_{eff}^{EX}$  were derived. Apart from anthropometric indices, additional parameters such as tidal volume ( $V_T$ ), the respiratory drive ( $P_{0.1}$ ), measured by means of a mouth occlusion pressure measurement 100 ms after inspiration and the mean inspiratory flow ( $V_T/T_i$ ) were found to be informative. The statistical approach to define reference equations for parameters of airway dynamics reveals the interrelationship between covariants of the actual breathing pattern and the control of breathing.

**Conclusions:** We discovered that  $sWOB_{in}$ ,  $sWOB_{ex}$ ,  $sR_{eff}^{IN}$  and  $sR_{eff}^{EX}$  are new discriminating target parameters, that differentiate much better between chronic obstructive diseases and their subtypes, especially between chronic obstructive pulmonary disease (COPD) and asthma-COPD overlap (ACO), thus strengthening the concept of precision medicine.

**Keywords:** Asthma; COPD Pathology; Equipment Evaluations; Lung Physiology; Respiratory Function Test.

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## Conflict of interest statement

Competing interests: None declared.

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BMJ Open Respir Res



. 2024 Mar 9;11(1):e001929.

doi: 10.1136/bmjresp-2023-001929.

# Inhaled corticosteroids and *Stenotrophomonas maltophilia* in outpatients with chronic obstructive pulmonary disease: a retrospective cohort study

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Affiliations expand

- PMID: 38460975
- DOI: [10.1136/bmjresp-2023-001929](https://doi.org/10.1136/bmjresp-2023-001929)

## Abstract

**Objectives:** Inhaled corticosteroids (ICS) are widely used in patients with chronic obstructive pulmonary disease (COPD). However, ICS are associated with an increased risk of adverse effects. We aimed to determine whether an association between a lower

respiratory tract culture with *Stenotrophomonas maltophilia* and increasing ICS dosing in patients with COPD exists.

**Design:** An observational cohort study of outpatients with COPD in Denmark between 2010 and 2018. ICS exposure was categorised into four groups based on average daily consumption 1 year prior to inclusion: no use, low ICS dose ( $\leq 400$   $\mu\text{g}$ ), moderate ICS dose (400–800  $\mu\text{g}$ ) and high ICS dose ( $> 800$   $\mu\text{g}$ ). Dose-response relationship was investigated by a multivariable Cox proportional hazards regression.

**Results:** Of the total 22 689 patients, 459 had lower respiratory tract cultures positive for *S. maltophilia*. The HR of *S. maltophilia* increased with increasing daily ICS dose: low ICS dose HR 2.6 (95% CI 1.6 to 4.0), moderate ICS dose HR 3.0 (95% CI 1.9 to 4.6) and high ICS dose HR 5.7 (95% CI 3.8 to 8.5).

**Conclusions:** We found that ICS was associated with a high, dose-dependent increased hazard of *S. maltophilia* in outpatients with COPD. High dose users had a nearly six times increased hazard compared with non-users of ICS. When appropriate, attempts at de-escalating ICS treatment should be made.

**Keywords:** COPD Pathology; COPD epidemiology; Pulmonary Disease, Chronic Obstructive.

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## Conflict of interest statement

Competing interests: Outside the submitted work, RBD has been on an advisory board for Pfizer. CSU has received grants from Sanofi, Boehringer Ingelheim, AstraZeneca and Novartis; consulting fees from Chiesi, Orion Pharma, AstraZeneca, GSK and TEVA; speaker fees from Orion Pharma, AstraZeneca and TEVA; and been on advisory boards for Novartis, Sanofi, Glaxo-Smith Kline, Chiesi, AstraZeneca and Boehringer Ingelheim.

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Respir Med



. 2024 Mar 7:107586.

doi: 10.1016/j.rmed.2024.107586. Online ahead of print.

# Chronic obstructive pulmonary disease and the airway microbiome: A review for clinicians

[Lingxin Luo](#)<sup>1</sup>, [Junli Tang](#)<sup>1</sup>, [Xianzhi Du](#)<sup>1</sup>, [Na Li](#)<sup>2</sup>

Affiliations expand

- PMID: 38460708
- DOI: [10.1016/j.rmed.2024.107586](https://doi.org/10.1016/j.rmed.2024.107586)

## Abstract

Chronic obstructive pulmonary disease (COPD) is a complex heterogeneous disease characterized by progressive airflow limitation and chronic inflammation. The progressive development and long-term repeated acute exacerbation of COPD make many patients still unable to control the deterioration of the disease after active treatment, and even eventually lead to death. An increasing number of studies have shown that the occurrence and development of COPD are closely related to the composition and changes of airway microbiome. This article reviews the interaction between COPD and airway microbiome, the potential mechanisms of interaction, and the treatment methods related to microbiome. We elaborated the internal correlation between airway microbiome and different stages of COPD, inflammatory endotypes, glucocorticoid and antibiotic treatment, analyze the pathophysiological mechanisms such as the "vicious cycle" hypothesis, abnormal inflammation-immune response of the host and the "natural selection" of COPD to airway microbiome, introduce the treatment of COPD related to microbiome and emphasize the predictive value of airway microbiome for the progression, exacerbation and prognosis of COPD, as well as the guiding role for clinical management of patients, in

order to provide a new perspective for exploring the pathogenesis of COPD, and also provide clues and guidance for finding new treatment targets.

**Keywords:** Chronic obstructive pulmonary disease; Dysbiosis; Infection; Inflammation; Pulmonary microbiome.

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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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BMC Pulm Med



. 2024 Mar 8;24(1):124.

doi: 10.1186/s12890-024-02903-3.

# [Exploring the association between ultra-processed foods and COPD: a case-control study](#)

[Zahra Salehi](#)<sup>1</sup>, [Hanieh Malmir](#)<sup>#2</sup>, [Batoul Ghosn](#)<sup>#1</sup>, [Shokouh Onvani](#)<sup>3,4</sup>, [Mohammad Emami Ardestani](#)<sup>5</sup>, [Awat Feizi](#)<sup>6</sup>, [Ahmad Esmailzadeh](#)<sup>2,4,7</sup>, [Leila Azadbakht](#)<sup>8,9,10,11</sup>

Affiliations expand

- PMID: 38459450
- PMCID: [PMC10924350](#)
- DOI: [10.1186/s12890-024-02903-3](#)

## Abstract

**Background:** While it is known that the overconsumption of ultra-processed foods (UPFs) is associated with a heightened risk of respiratory ailments, the specific effects of UPF intake on COPD remain unclear. This study was designed to explore the potential link between COPD and the consumption of UPFs among adult individuals in Iran.

**Methods:** In this hospital-based case-control study conducted at Alzahra University Hospital in Isfahan, Iran, we enrolled 84 patients newly diagnosed with COPD, along with 252 healthy controls matched for age and sex. COPD was defined based on the results of spirometry tests, specifically when the forced expiratory volume per second (FEV1) was less than 80% or the ratio of FEV1 to forced vital capacity (FVC) was less than 70%. To evaluate the dietary intake of the participants, we utilized a validated food frequency questionnaire (FFQ) consisting of 168 items. Additionally, we gathered data on potential confounding factors using a pre-tested questionnaire.

**Results:** The mean ages for the case and control groups were 57.07 and 55.05 years, respectively. Our study found no significant association between the intake of ultra-processed foods (UPFs) and the likelihood of COPD, with an odds ratio (OR: 0.78, 95% CI: 0.34-1.77). This lack of association persisted even after adjusting for factors such as energy intake, sex, and age (OR: 0.48; 95% CI: 0.19-1.21). Further controlling for potential confounders like body mass index (BMI), physical activity, and smoking status did not alter this finding (OR: 0.367; 95% CI: 0.123-1.1008, P = 0.074).

**Conclusions:** In our study, we observed no significant association between the intake of Ultra-Processed Foods (UPFs) and the odds of Chronic Obstructive Pulmonary Disease (COPD). This finding remained consistent even after adjusting for factors such as energy intake, sex, age, Body Mass Index (BMI), physical activity, and smoking status. Therefore, within the scope of our study, it appears that the consumption of UPFs does not significantly impact the likelihood of developing COPD. However, we recommend further

research to deepen our understanding of the intricate relationship between dietary habits and respiratory health.

**Keywords:** Case-control; Chronic obstructive pulmonary disease; Diet; Ultra-processed foods.

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## Conflict of interest statement

The authors declare no competing interests.

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Medicine (Baltimore)

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. 2024 Mar 8;103(10):e37309.

doi: 10.1097/MD.00000000000037309.

# Probiotics combined with Budesonide and Ipratropium bromide for chronic obstructive pulmonary disease: A retrospective analysis

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Affiliations expand

- PMID: 38457591
- PMCID: [PMC10919488](#)
- DOI: [10.1097/MD.00000000000037309](#)

## Abstract

To explore the effect of probiotics combined with budesonide and ipratropium bromide in the treatment of chronic obstructive pulmonary disease (COPD) on lung function and gut microbiota. This was a retrospective study of prospectively collected clinical data of 118 patients with COPD admitted to our hospital between January 2020 and December 2022. According to the treatment records, 59 patients received budesonide and ipratropium bromide (control group), and 59 patients received probiotics combined with budesonide and ipratropium bromide (observation group). The lung function, inflammatory factor levels, airway remodeling, and gut microbiota before and after treatment were compared between the 2 groups. After treatment, FVC, MMEF, PEF, and FEV1 in the 2 groups were higher than before treatment, and the values in the observation group were higher than those in the control group ( $P < .05$ ). After treatment, the serum levels of TNF- $\alpha$ , IL-6, and PCT in the 2 groups were lower than before treatment, and the levels in the observation group were lower than those in the control group ( $P < .05$ ). After treatment, the levels of serum MMP-9, VEGF, basic fibroblast growth factor, and NGF in the 2 groups were lower than before treatment, and the levels in the observation group were lower than those in the control group ( $P < .05$ ). After treatment, the levels of lactobacilli and bifidobacteria in the 2 groups increased compared to those before treatment, and the observation group had a higher level, while the levels of Enterobacteriaceae and Enterococcus were lower in the observation group than those before treatment ( $P < .05$ ). Based on budesonide and ipratropium bromide, probiotic treatment of COPD is more conducive to reducing the degree of inflammatory reactions, inhibiting airway remodeling, regulating the level of gut microbiota, and promoting the recovery of lung function.

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## Conflict of interest statement

The authors have no conflicts of interest to disclose.

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Medicine (Baltimore)

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. 2024 Mar 8;103(10):e37285.

doi: 10.1097/MD.00000000000037285.

# [Effect of postoperative exercise training on physical function and quality of life of lung cancer patients with chronic obstructive pulmonary disease: A randomized controlled trial](#)

[Zhonghua Yu](#)<sup>1,2</sup>, [Guosheng Xie](#)<sup>1</sup>, [Changlong Qin](#)<sup>3</sup>, [Hongchen He](#)<sup>1,2</sup>, [Quan Wei](#)<sup>1,2</sup>

Affiliations expand

- PMID: 38457572
- PMCID: [PMC10919482](#)
- DOI: [10.1097/MD.00000000000037285](#)

## Abstract

**Background:** Postoperative rehabilitation programs consisting of exercise training are considered effective for unselected lung cancer patients. However, whether postoperative

exercise is beneficial to lung cancer patients comorbid with chronic obstructive pulmonary disease remains unknown.

**Methods:** Eighty-four patients diagnosed with both lung cancer and chronic obstructive pulmonary disease were randomized into the exercise group and control group. Both groups were given standard postoperative rehabilitation for 1 week. After that, oxygen therapy (if needed) and nebulization were given to the control group, while patients in the exercise group started to participate in exercise programs on the basis of receiving oxygen therapy and nebulization as in the control group. The exercise programs consisted of 24 training sessions.

**Results:** In both groups, the functional status and the results of the pulmonary function test decreased from baseline to the endpoint. However, after surgery and the intervention program, both the maximal oxygen consumption in the cardiopulmonary exercise test and walking distance in the 6-minute walk test in the exercise group were significantly better than those in the control group [15.5 ( $\pm$ 1.4) mL/kg/min vs 13.1 ( $\pm$ 1.3) mL/kg/min,  $P = 0.016$ ; 437.4 ( $\pm$ 48.6) m vs 381.7 ( $\pm$ 40.5) m,  $P = 0.040$ ]. Force vital capacity and forced expiratory volume in the first second in the exercise group were better than those in the control group, but the differences were not statistically significant [1798.1 ( $\pm$ 298.9) mL vs 1664.0 ( $\pm$ 329.7) mL,  $P = 0.254$ ; 1155.7 ( $\pm$ 174.3) mL vs 967.4 ( $\pm$ 219.4) mL,  $P = 0.497$ ]. The decline in the standard score of the QLQ-C30 (V3.0) was smaller in the exercise group, but the difference did not meet a statistically significant level [61.7 ( $\pm$ 5.7) vs 58.4 ( $\pm$ 9.3),  $P = 0.318$ ].

**Conclusion:** This study demonstrates that a short-term postoperative exercise training program can facilitate the recovery of functional capacity in lung cancer patients with comorbidities of chronic obstructive pulmonary disease.

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## Conflict of interest statement

The authors have no conflicts of interest to disclose.

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Medicine (Baltimore)

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. 2024 Mar 8;103(10):e35773.

doi: 10.1097/MD.00000000000035773.

# [Risk factors for hospital-acquired pneumonia in hip fracture patients: A systematic review and meta-analysis](#)

[Wei Yao](#)<sup>1</sup>, [Xiaojia Sun](#)<sup>2</sup>, [Wanyun Tang](#)<sup>1</sup>, [Wei Wang](#)<sup>1</sup>, [Qiaomei Lv](#)<sup>3</sup>, [Wenbo Ding](#)<sup>1</sup>

Affiliations expand

- PMID: 38457536
- PMCID: [PMC10919500](#)
- DOI: [10.1097/MD.00000000000035773](#)

## Abstract

**Background:** This study aimed to comprehensively assess the prevalence and risk factors for Hospital-acquired pneumonia (HAP) in hip fracture patients by meta-analysis.

**Methods:** Systematically searched 4 English databases and 4 Chinese databases from inception until October 20, 2022. All studies involving risk factors of HAP in patients with hip fractures will be considered. Newcastle-Ottawa Scale was used to evaluate the quality of the included studies. The results were presented through Review Manager 5.4 with the pooled odds ratio (OR) and 95% confidence interval.

**Results:** Of 35 articles included in this study, the incidence of HAP was 8.9%. 43 risk factors for HAP were initially included, 23 were eventually involved in the meta-analysis, and 21

risk factors were significant. Among them, the 4 most frequently mentioned risk factors were as follows: Advanced age (OR 1.07, 95% CI 1.05-1.10), chronic obstructive pulmonary disease (COPD) (OR 3.44, 95% CI 2.83-4.19), time from injury to operation (OR 1.09, 95% CI 1.07-1.12), time from injury to operation  $\geq$  48 hours (OR 3.59, 95% CI 2.88-4.48), and hypoalbuminemia  $<$  3.5g/dL (OR 2.68, 95% CI 2.15-3.36).

**Discussion:** Hip fracture patients diagnosed with COPD have a 3.44 times higher risk of HAP compared to the general hip fracture patients. The risk of HAP also increases with age, with patients over 70 having a 2.34-fold higher risk and those over 80 having a 2.98-fold higher risk. These findings highlight the need for tailored preventive measures and timely interventions in vulnerable patient populations. Additionally, hip fracture patients who wait more than 48 hours for surgery have a 3.59-fold higher incidence of HAP. This emphasizes the importance of swift surgical intervention to minimize HAP risk. However, there are limitations to consider in this study, such as heterogeneity in selected studies, inclusion of only factors identified through multivariate logistic regression, and the focus on non-randomized controlled trial studies.

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## Conflict of interest statement

The authors have no conflicts of interest to disclose.

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[Published Erratum](#)

Palliat Med

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. 2024 Mar 8:2692163241237643.

doi: 10.1177/02692163241237643. Online ahead of print.

# Editor's note: "Effectiveness and safety of opioids on breathlessness and exercise endurance in patients with chronic obstructive pulmonary disease: A systematic review and meta-analysis of randomised controlled trials"

*No authors listed*

- PMID: 38456276
- DOI: [10.1177/02692163241237643](https://doi.org/10.1177/02692163241237643)

*No abstract available*

## Erratum for

- [Effectiveness and safety of opioids on breathlessness and exercise endurance in patients with chronic obstructive pulmonary disease: A systematic review and meta-analysis of randomised controlled trials.](#)  
Liu M, Xiao W, Du L, Yu Y, Chen X, Mao B, Fu J. *Palliat Med.* 2023 Oct;37(9):1365-1378. doi: 10.1177/02692163231194838. Epub 2023 Sep 14. PMID: 37710987 Review.

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Expert Rev Respir Med



. 2024 Mar 7:1-7.

doi: 10.1080/17476348.2024.2326512. Online ahead of print.

# Factors associated with anxiety and depression among patients with chronic obstructive pulmonary disease

[Anan S Jarab](#)<sup>1,2,3</sup>, [Walid A AlQerem](#)<sup>4</sup>, [Shrouq R Abu Heshmeh](#)<sup>1</sup>, [Yazid N Al Hamarneh](#)<sup>5</sup>, [Salah Aburuz](#)<sup>6</sup>, [Judith Eberhardt](#)<sup>7</sup>

Affiliations expand

- PMID: 38454777
- DOI: [10.1080/17476348.2024.2326512](https://doi.org/10.1080/17476348.2024.2326512)

## Abstract

**Objectives:** This study investigated factors associated with anxiety and depression in COPD outpatients.

**Methods:** A cross-sectional study of 702 COPD outpatients from two major Jordanian hospitals using the Hospital Anxiety and Depression Scale (HADS) was conducted.

**Results:** Significant associations were found with gender (Anxiety OR: 5.29, 95%CI: 2.38-11.74; Depression OR: 0.20, 95%CI: 0.08-0.51), disease severity (Anxiety OR: 2.97, 95%CI: 1.80-4.91; Depression OR: 15.95, 95%CI: 5.32-52.63), LABA use (Anxiety OR: 16.12, 95%CI: 8.26-32.26; Depression OR: 16.95, 95%CI: 8.33-34.48), medication count (Anxiety OR: 0.73, 95%CI: 0.59-0.90; Depression OR: 0.51, 95%CI: 0.40-0.64), mMRC score (Anxiety OR: 2.41, 95%CI: 1.81-3.22; Depression OR: 2.31, 95%CI: 1.76-3.03), and inhalation technique (Anxiety OR: 0.95, 95%CI: 0.93-0.97; Depression OR: 0.92, 95%CI: 0.90-0.95). Other factors associated with anxiety included high income, urban living, diabetes, hypertension, LAMA

use, and fewer COPD medications. Depression was also linked with heart disease, increased age, and longer disease duration.

**Conclusion:** The prevalence of anxiety and depression among COPD patients necessitates targeted interventions. Future research that recruits a more diverse sample in multiple sites and establishes the cause-effect relationship between the study predictors and outcome could provide a more robust conclusion on factors associated with anxiety and depression among COPD patients.

**Keywords:** Anxiety; COPD; depression; intervention; medication.

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NPJ Prim Care Respir Med

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. 2024 Mar 7;34(1):1.

doi: 10.1038/s41533-024-00361-2.

## [Medication adherence halves COPD patients' hospitalization risk - evidence from Swiss health insurance data](#)

[Anja Y Bischof](#)<sup>1</sup>, [Johannes Cordier](#)<sup>2</sup>, [Justus Vogel](#)<sup>2</sup>, [Alexander Geissler](#)<sup>2</sup>

Affiliations expand

- PMID: 38453930
- PMCID: [PMC10920735](#)

- DOI: [10.1038/s41533-024-00361-2](https://doi.org/10.1038/s41533-024-00361-2)

## Abstract

Medication adherence is vital for patients suffering from Chronic Obstructive Pulmonary Disease (COPD) to mitigate long-term consequences. The impact of poor medication adherence on inferior outcomes like exacerbations leading to hospital admissions is yet to be studied using real-world data. Using Swiss claims data from 2015-2020, we group patients into five categories according to their medication possession ratio. By employing a logistic regression, we quantify each category's average treatment effect of the medication possession ratio on hospitalized exacerbations. 13,557 COPD patients are included in the analysis. Patients with high medication adherence (daily medication reserve of 80% to 100%) are 51% less likely to incur exacerbation following a hospital stay than patients with the lowest medication adherence (daily medication reserve of 0% to 20%). The study shows that medication adherence varies strongly among Swiss COPD patients. Furthermore, high medication adherence immensely decreases the risk of hospitalized exacerbations.

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## Conflict of interest statement

All authors declare no financial or non-financial competing interests.

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Am J Respir Crit Care Med

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. 2024 Mar 7.

doi: 10.1164/rccm.202402-0314ED. Online ahead of print.

# [Bronchiectasis–COPD Overlap: A ROSE by Any Other Name?](#)

[David C LaFon](#)<sup>1</sup>, [Mark T Dransfield](#)<sup>2</sup>

Affiliations expand

- PMID: 38452226
- DOI: [10.1164/rccm.202402-0314ED](https://doi.org/10.1164/rccm.202402-0314ED)

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Rheumatology (Oxford)

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. 2024 Mar 6:keae137.

doi: 10.1093/rheumatology/keae137. Online ahead of print.

# [Bi-directional association of rheumatoid arthritis and chronic obstructive pulmonary disease: Linking](#)

# arthritis, inflammation, smoking, airways disease, and emphysema

[Julia A Ford](#)<sup>1</sup>, [Michael H Cho](#)<sup>2,3,4</sup>, [Jeffrey A Sparks](#)<sup>4,5</sup>

Affiliations expand

- PMID: 38450423
- DOI: [10.1093/rheumatology/keae137](https://doi.org/10.1093/rheumatology/keae137)

*No abstract available*

**Keywords:** chronic obstructive pulmonary disease; inflammation; rheumatoid arthritis; smoking.

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. 2024 Mar 6;14(1):e12348.

doi: 10.1002/pul2.12348. eCollection 2024 Jan.

## Pulmonary vascular pressure respiratory swings in COPD and ILD

# candidates for lung transplantation: Large but different

[Juan C Grignola](#)<sup>1,2</sup>, [Alvaro Calabuig](#)<sup>3</sup>, [Pedro Trujillo](#)<sup>2,4</sup>, [Carles Bravo](#)<sup>5,6</sup>, [Fernando Azpiroz](#)<sup>7,8,9</sup>, [Manuel López Messeguer](#)<sup>5,6</sup>, [Enric Domingo](#)<sup>3,10</sup>

Affiliations expand

- PMID: 38449519
- PMCID: [PMC10916420](#)
- DOI: [10.1002/pul2.12348](#)

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## Abstract

We analyzed the effect of respiratory swings on interpreting intravascular pulmonary vascular pressures (PVPs) in chronic obstructive pulmonary disease (COPD) and interstitial lung disease (ILD) candidates for lung transplantation (LTx) and the role of the alterations in pulmonary function tests on the dynamic respiratory variations. Twenty-eight consecutive patients were included. All patients underwent a complete hemodynamic study (right atrial, mean pulmonary arterial, and pulmonary arterial occlusion pressures [RAP, mPAP, and PAOP]-) and pulmonary function testing (force vital capacity [FVC], forced expiratory volume in the first second [FEV1], and residual volume [RV]). A subgroup of 10 patients underwent simultaneous esophageal pressure (PES). All hemodynamic parameters and PES were collected during apnea after an unforced expiration (ee) and during spontaneous breathing averaging five respiratory cycles (mrc). The respiratory swing (osc) was estimated as the difference between maximum-minimum values of pressures during the respiratory cycle. Intravascular RAP<sub>ee</sub>, mPAP<sub>ee</sub>, and PAOP<sub>ee</sub> were higher than mrc values ( $p < 0.05$ ), leading to 11% of pulmonary hypertension (PH) misdiagnosis and 37% of postcapillary PH misclassification. PAOP<sub>osc</sub> of COPD was higher than ILD patients and RAP<sub>osc</sub> ( $p < 0.05$ ). Only PAOP<sub>osc</sub> correlated with FVC, FEV1, and RV ( $p < 0.05$ ). ILD PES<sub>mrc</sub> was lower than COPD ( $p < 0.05$ ), and it was associated with a significantly higher transmural than intravascular RAP<sub>mrc</sub>, mPAP<sub>mrc</sub>, and PAOP<sub>mrc</sub>. PES<sub>mrc</sub> was significantly correlated with FVC. Transmural mPAP<sub>mrc</sub> and PAOP<sub>mrc</sub> readings determined around 20% of reclassification of the patients compared to ee measurements. Candidates for LTx showed large respiratory swings in PVP, which were correlated with pulmonary function alterations. mrc PVP would be more closely approximated to the true transmural PVP

leading to PH reclassification. Adjusting PVP for PES should be considered in COPD and ILD candidates of LTx with severe alterations in pulmonary functional tests and suspicion of a PESmrc far from 0. PES respiratory swings could be different in ILD to COPD patients.

**Keywords:** chronic lung disease; esophageal pressure; lung transplantation; pulmonary vascular pressure respiratory swing; transmural pulmonary vascular pressure.

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## Conflict of interest statement

The authors declare no conflict of interest.

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. 2024 Mar 6.

doi: 10.1038/s41576-024-00695-0. Online ahead of print.

# Genetics of chronic respiratory disease

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Affiliations expand

- PMID: 38448562
- DOI: [10.1038/s41576-024-00695-0](https://doi.org/10.1038/s41576-024-00695-0)

## Abstract

Chronic respiratory diseases, such as chronic obstructive pulmonary disease (COPD), asthma and interstitial lung diseases are frequently occurring disorders with a polygenic basis that account for a large global burden of morbidity and mortality. Recent large-scale genetic epidemiology studies have identified associations between genetic variation and individual respiratory diseases and linked specific genetic variants to quantitative traits related to lung function. These associations have improved our understanding of the genetic basis and mechanisms underlying common lung diseases. Moreover, examining the overlap between genetic associations of different respiratory conditions, along with evidence for gene-environment interactions, has yielded additional biological insights into affected molecular pathways. This genetic information could inform the assessment of respiratory disease risk and contribute to stratified treatment approaches.

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. 2024 Mar 6;19(3):e0298432.

# Exploring the causes of COPD misdiagnosis in primary care: A mixed methods study

[Ketan Patel](#)<sup>1</sup>, [Daniel J Smith](#)<sup>2</sup>, [Christopher C Huntley](#)<sup>1</sup>, [Sunita D Channa](#)<sup>3</sup>, [Anita Pye](#)<sup>3</sup>, [Andrew P Dickens](#)<sup>4</sup>, [Nicola Gale](#)<sup>5</sup>, [Alice M Turner](#)<sup>3</sup>

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- PMID: 38446828
- PMCID: [PMC10917297](#)
- DOI: [10.1371/journal.pone.0298432](#)

**Free PMC article**

## Abstract

**Background:** Within primary care there exists a cohort of patients misdiagnosed with Chronic Obstructive Pulmonary Disease (COPD). Misdiagnosis can have a detrimental impact on healthcare finances and patient health and so understanding the factors leading to misdiagnosis is crucial in order to reduce misdiagnosis in the future. The objective of this study is to understand and explore the perceived causes of COPD misdiagnosis in primary care.

**Methods:** A sequential mixed methods study, quantifying prevalence and features of patients misdiagnosed with COPD in primary care followed by a qualitative analysis to explore perceived causes of misdiagnosis. Quantitative data was collected for 206 patients identified as misdiagnosed with COPD within the INTEGR COPD study ([NCT03482700](#)). Qualitative data collected from 21 healthcare professionals involved in providing COPD care and 8 misdiagnosed patients who were recruited using a maximum variation purposive sampling.

**Results:** Misinterpretation of spirometry results was the prevailing factor leading to patients initially being misdiagnosed with COPD, affecting 59% of misdiagnosed patients in this cohort. Of the 99 patients who were investigated for their underlying diagnosis; 41% had normal spirometry and 40% had asthma. Further investigation through qualitative

methodology uncovered reluctance to challenge historical misdiagnoses and challenges in differential diagnosis as the underlying explanations for COPD misdiagnosis in this cohort.

**Conclusions:** Patients historically diagnosed with COPD without spirometric evidence are at risk of remaining labelled and treated for COPD despite non-obstructive respiratory physiology, leading to a persistent cohort of patients misdiagnosed with COPD in primary care. The lack of spirometry services during and after the COVID19 pandemic in primary care risks adding to the cohort of misdiagnosed patients. Support from respiratory specialists can potentially help to reduce the prevalence of COPD misdiagnosis in primary care.

**Trial registration:** [NCT03482700](#).

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## Conflict of interest statement

The authors have read the journal's policy and have the following competing interests: AMT and KP were supported financially in relation to this study through a non-commercial grant from AstraZeneca. AMT has received grants not in relation to this study from Chiesi, NIHR ARC & PSRC, CSL Behring and Grifols Biotherapeutics. DJS, CCH, SDC, AP, APD and NG declare no support from any organisation for the submitted work; no financial relationships with any organisations that might have an interest in the submitted work in the previous three years, and no other relationships or activities that could appear to have influenced the submitted work. This does not alter our adherence to PLOS ONE policies on sharing data and materials.

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. 2024 Mar 6.

doi: 10.1007/s41030-024-00255-1. Online ahead of print.

# Association between Increased Risk of Pneumonia with ICS in COPD: A Continuous Variable Analysis of Patient Factors from the IMPACT Study

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- PMID: 38446336
- DOI: [10.1007/s41030-024-00255-1](https://doi.org/10.1007/s41030-024-00255-1)

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## Abstract

**Introduction:** Despite the proven benefits of inhaled corticosteroid (ICS)-containing triple therapy for chronic obstructive pulmonary disease (COPD), clinicians limit patient exposure to ICS due to the risk of pneumonia. However, there are multiple factors associated with the risk of pneumonia in patients with COPD. This post hoc analysis of IMPACT trial data aims to set the risks associated with ICS into a context of specific patient-related factors that contribute to the risk of pneumonia.

**Methods:** The 52-week, double-blind IMPACT trial randomized patients with symptomatic COPD and  $\geq 1$  exacerbation in the prior year 2:2:1 to once-daily fluticasone furoate (FF)/umeclidinium (UMEC)/vilanterol (VI), FF/VI or UMEC/VI. Annual rate of on-treatment pneumonias in the intent-to-treat population associated with age, body mass index (BMI),

percent predicted forced expiratory volume in 1 s (FEV<sub>1</sub>) and blood eosinophil count (BEC) was evaluated.

**Results:** This analysis revealed that the annual rate of pneumonia showed the lowest risk at the age of 50 years. The 95% confidence intervals (CI) between ICS-containing and non-ICS containing treatments diverged in ages > 63 years, suggesting a significantly increased ICS-related risk in older patients. In contrast, the annual rate of pneumonia rose in both groups below BMI of 22.5 kg/m<sup>2</sup>, but above that, there was no relationship to pneumonia rate and no differential effect between the two groups. The relationship between BEC and pneumonia was flat up to > 300/μL cells with ICS-containing treatment and then rose. In contrast, the rate of pneumonia with non-ICS containing treatment appeared to increase at a lower level of BEC (~ 200/μL).

**Conclusions:** There was little evidence of a differential effect of older age, lower BMI, lower FEV<sub>1</sub> and BEC on the pneumonia rate between ICS-containing and non-ICS containing treatments. This analysis points to the need for a balanced approach to risk versus benefit in the use of ICS-containing treatments in COPD.

**Clinical trial registration:** IMPACT ClinicalTrials.gov number, [NCT02164513](https://clinicaltrials.gov/ct2/show/study/NCT02164513).

**Keywords:** COPD; ICS; IMPACT; Pneumonia risk; Post hoc analysis.

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. 2024 Mar 4;10(2):00749-2023.

doi: 10.1183/23120541.00749-2023. eCollection 2024 Mar.

# The relationship of fat and muscle measurements with emphysema and bronchial wall thickening in smokers

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- PMID: 38444665
- PMCID: [PMC10910310](#)
- DOI: [10.1183/23120541.00749-2023](#)

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## Abstract

**Introduction:** Differences in body composition in patients with COPD may have important prognostic value and may provide opportunities for patient-specific management. We investigated the relation of thoracic fat and muscle with computed tomography (CT)-measured emphysema and bronchial wall thickening.

**Methods:** Low-dose baseline chest CT scans from 1031 male lung cancer screening participants from one site were quantified for emphysema, bronchial wall thickening, subcutaneous fat, visceral fat and skeletal muscle. Body composition measurements were performed by segmenting the first slice above the aortic arch using Hounsfield unit thresholds with region growing and manual corrections. COPD presence and severity were evaluated with pre-bronchodilator spirometry testing.

**Results:** Participants had a median age of 61.5 years (58.6-65.6, 25th-75th percentile) and median number of 38.0 pack-years (28.0-49.5); 549 (53.2%) were current smokers. Overall, 396 (38.4%) had COPD (256 Global Initiative for Chronic Obstructive Lung Disease (GOLD)

1, 140 GOLD 2-3). Participants with COPD had less subcutaneous fat, visceral fat and skeletal muscle ( $p < 0.001$  for all). With increasing GOLD stages, subcutaneous ( $p = 0.005$ ) and visceral fat values ( $p = 0.004$ ) were higher, and skeletal muscle was lower ( $p = 0.004$ ). With increasing severity of CT-derived emphysema, subcutaneous fat, visceral fat and skeletal muscle values were lower ( $p < 0.001$  for all). With increasing CT-derived bronchial wall thickness, subcutaneous and visceral fat values were higher ( $p < 0.001$  for both), without difference in skeletal muscle. All statistical relationships remained when adjusted for age, pack-years and smoking status.

**Conclusion:** COPD presence and emphysema severity are associated with smaller amounts of thoracic fat and muscle, whereas bronchial wall thickening is associated with fat accumulation.

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## Conflict of interest statement

Conflict of interest: S.A.O. Bunk has no conflict of interest to declare. Conflict of interest: J. Ipema has no conflict of interest to declare. Conflict of interest: G. Sidorenkov has no conflict of interest to declare. Conflict of interest: E. Bennink has no conflict of interest to declare. Conflict of interest: R. Vliegenthart declares receiving funding from the Dutch Cancer Foundation, Dutch Research Council and Dutch Heart Foundation, and institutional research grants from Siemens Healthineers. Conflict of interest: Pim A. de Jong has no conflict of interest to declare. Conflict of interest: E. Pompe declares she received fees from Thirona BV outside the submitted work and is an associate editor of this journal. Conflict of interest: J-P. Charbonnier declares he is a shareholder of Thirona BV. Conflict of interest: B.H.D. Luijk has no conflict of interest to declare. Conflict of interest: J. Aerts reports advisory board and speakers fees from MSD, BMS, Novocure, Astra-Zeneca, Amphera and Eli Lilly, and is a stock owner in Amphera. Conflict of interest: H.J.M. Groen has no conflict of interest to declare. Conflict of interest: F.A.A. Mohamed Hoesein has no conflict of interest to declare.

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. 2024 Mar 4;10(2):00010-2024.

doi: 10.1183/23120541.00010-2024. eCollection 2024 Mar.

# Development and evaluation of a tool to optimise inhaler selection prior to hospital discharge following an exacerbation of COPD

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Affiliations expand

- PMID: 38444664
- PMCID: [PMC10910267](#)
- DOI: [10.1183/23120541.00010-2024](#)

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## Abstract

**Introduction:** Rates of mortality and re-admission after a hospitalised exacerbation of COPD are high and resistant to change. COPD guidelines do not give practical advice about the optimal selection of inhaled drugs and device in this situation. We hypothesised that a failure to optimise inhaled drug and drug delivery prior to discharge from hospital after an exacerbation would be associated with a modifiable increased risk of re-admission and death. We designed a study to 1) develop a practical inhaler selection tool to use at the point of hospital discharge and 2) implement this tool to understand the potential

impact on modifying inhaler prescriptions, clinical outcomes, acceptability to clinicians and patients, and the feasibility of delivering a definitive trial to demonstrate potential benefit.

**Methods:** We iteratively developed an inhaler selection tool for use prior to discharge following a hospitalised exacerbation of COPD using surveys with multiprofessional clinicians and a focus group of people living with COPD. We surveyed clinicians to understand their views on the minimum clinically important difference (MCID) for death and re-admission following a hospitalised exacerbation of COPD. We conducted a mixed-methods implementation feasibility study using the tool at discharge, and collated 30- and 90-day follow-up data including death and re-admissions. Additionally, we observed the tool being used and interviewed clinicians and patients about use of the tool in this setting.

**Results:** We completed the design of an inhaler selection tool through two rounds of consultations with 94 multiprofessional clinicians, and a focus group of four expert patients. Regarding MCIDs, there was majority consensus for the following reductions from baseline being the MCID: 30-day readmissions 5-10%, 90-day readmissions 10-20%, 30-day mortality 5-10% and 90-day mortality 5-10%. 118 patients were assessed for eligibility and 26 had the tool applied. A change in inhaled medication was recommended in nine (35%) out of 26. Re-admission or death at 30 days was seen in 33% of the switch group and 35% of the no-switch group. Re-admission or death at 90 days was seen in 56% of the switch group and 41% of the no-switch group. Satisfaction with inhalers was generally high, and switching was associated with a small increase in the Feeling of Satisfaction with Inhaler questionnaire of 3 out of 50 points. Delivery of a definitive study would be challenging.

**Conclusion:** We completed a mixed-methods study to design and implement a tool to aid optimisation of inhaled pharmacotherapy prior to discharge following a hospitalised exacerbation of COPD. This was not associated with fewer re-admissions, but was well received and one-third of people were eligible for a change in inhalers.

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## Conflict of interest statement

Conflict of interest: A. De Soyza declares research grants in support of investigator and investigator-initiated trials from Sanofi-Aventis, Lilly, Boehringer Ingelheim and AstraZeneca; consulting fees from AstraZeneca, Insmmed, Sanofi, Bayer, GSK, Boehringer Ingelheim and Zambon; speakers' fees from AstraZeneca, Insmmed, Sanofi, Bayer, GSK, Boehringer Ingelheim and Zambon; and advisory board membership for AstraZeneca, Insmmed, Sanofi, Bayer, GSK, Boehringer Ingelheim and Zambon, all in the 36 months prior to manuscript submission. Conflict of interest: M. Dobson declares NIHR Research for Patient Benefit co-applicant funding to their institution in relation to the present work. Conflict of interest: C. Echevarria declares research grants from GlaxoSmithKline and NIHR, in the 36 months prior to manuscript submission. Conflict of interest: G. Martin declares

NIHR Research for Patient Benefit co-applicant funding to their institution in relation to the present work. Conflict of interest: R.G. Mendes declares payment for participation in scientific events from Fundação de Apoio à Pesquisa do Estado de São Paulo. Conflict of interest: E. Sapey declares NIHR Research for Patient Benefit co-applicant funding to their institution in relation to the present work. Conflict of interest: J.R. Hurst declares funding for a PhD studentship from AstraZeneca; consulting fees to them and their institution from AstraZeneca and GlaxoSmithKline; payment or honoraria to themselves for lectures, presentations, speakers' bureaus, manuscript writing or educational events from AstraZeneca, Boehringer Ingelheim, Chiesi, Sanofi and Takeda; support in kind for attending meetings from AstraZeneca; payment to them and their institution for participation on an Advisory Board for AstraZeneca; and donation of oximeters from Nonin, all in the 36 months prior to manuscript submission. Conflict of interest: All other authors declare no competing interests.

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. 2024 Mar 4;10(2):00695-2023.

doi: 10.1183/23120541.00695-2023. eCollection 2024 Mar.

## [Centrilobular emphysema and airway dysanapsis: factors associated with low respiratory function in younger smokers](#)

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- PMID: 38444662
- PMCID: [PMC10910308](#)
- DOI: [10.1183/23120541.00695-2023](#)

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## Abstract

**Background:** Low respiratory function in young adulthood is one of the important factors in the trajectory leading to the future development of COPD, but its morphological characteristics are not well characterised.

**Methods:** We retrospectively enrolled 172 subjects aged 40-49 years with  $\geq 10$  pack-years smoking history who underwent lung cancer screening by computed tomography (CT) and spirometry at two Japanese hospitals. Emphysema was visually assessed according to the Fleischner Society guidelines and classified into two types: centrilobular emphysema (CLE) and paraseptal emphysema (PSE). Airway dysanapsis was assessed with the airway/lung ratio (ALR), which was calculated by the geometric mean of the lumen diameters of the 14 branching segments divided by the cube root of total lung volume on a CT scan.

**Results:** Among the subjects, CLE and PSE were observed in 20.9% and 30.8%, respectively. The mean ALR was 0.04 and did not differ between those with and without each type of emphysema. Multivariable regression analysis models adjusted for age, sex, body mass index and smoking status indicated that CLE and a low ALR were independently associated with lower forced expiratory volume in 1 s ( $FEV_1$ )/forced vital capacity (estimate -1.64 (95% CI -2.68- -0.60) and 6.73 (95% CI 4.24-9.24), respectively) and  $FEV_1$  % pred (estimate -2.81 (95% CI -5.10- -0.52) and 10.9 (95% CI 5.36-16.4), respectively).

**Conclusions:** CLE and airway dysanapsis on CT were independently associated with low respiratory function in younger smokers.

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# Conflict of interest statement

Conflict of interest: T. Oguma reports lecture fees from Kyowa Kirin, AstraZeneca, Kyorin Pharmaceutical, GlaxoSmithKline, Sanofi and Boehringer Ingelheim. S. Sato reports grants or contracts from Nippon Boehringer Ingelheim, FujiFilm, Philips Japan, Fukuda Denshi, Fukuda Lifetec Keiji and ResMed. The other authors report no relevant conflicts of interest.

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. 2024 Mar 4;10(2):00673-2023.

doi: 10.1183/23120541.00673-2023. eCollection 2024 Mar.

## [Real-world walking cadence in people with COPD](#)

[Laura Delgado-Ortiz](#)<sup>1,2,3</sup>, [Saverio Ranciati](#)<sup>4</sup>, [Ane Arbillaga-Etxarri](#)<sup>5</sup>, [Eva Balcells](#)<sup>2,6,7,8</sup>, [Joren Buekers](#)<sup>1,2,3</sup>, [Heleen Demeyer](#)<sup>9,10</sup>, [Anja Frei](#)<sup>11</sup>, [Elena Gimeno-Santos](#)<sup>1,7,12</sup>, [Nicholas S Hopkinson](#)<sup>13</sup>, [Corina de Jong](#)<sup>14</sup>, [Niklas Karlsson](#)<sup>15</sup>, [Zafeiris Louvaris](#)<sup>9</sup>, [Luca Palmerini](#)<sup>16</sup>, [Michael I Polkey](#)<sup>13,17</sup>, [Milo A Puhan](#)<sup>11</sup>, [Roberto A Rabinovich](#)<sup>18</sup>, [Diego A Rodríguez Chiaradia](#)<sup>6,7,8</sup>, [Robert Rodriguez-Roisin](#)<sup>7,19</sup>, [Pere Toran-Montserrat](#)<sup>20,21</sup>, [Ioannis Vogiatzis](#)<sup>22</sup>, [Henrik Watz](#)<sup>23</sup>, [Thierry Troosters](#)<sup>9</sup>, [Judith Garcia-Aymerich](#)<sup>1,2,3</sup>

Affiliations expand

- PMID: 38444656

- PMID: [PMC10910309](#)
- DOI: [10.1183/23120541.00673-2023](#)

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## Abstract

**Introduction:** The clinical validity of real-world walking cadence in people with COPD is unsettled. Our objective was to assess the levels, variability and association with clinically relevant COPD characteristics and outcomes of real-world walking cadence.

**Methods:** We assessed walking cadence (steps per minute during walking bouts longer than 10 s) from 7 days' accelerometer data in 593 individuals with COPD from five European countries, and clinical and functional characteristics from validated questionnaires and standardised tests. Severe exacerbations during a 12-month follow-up were recorded from patient reports and medical registries.

**Results:** Participants were mostly male (80%) and had mean±sd age of 68±8 years, post-bronchodilator forced expiratory volume in 1 s (FEV<sub>1</sub>) of 57±19% predicted and walked 6880±3926 steps·day<sup>-1</sup>. Mean walking cadence was 88±9 steps·min<sup>-1</sup>, followed a normal distribution and was highly stable within-person (intraclass correlation coefficient 0.92, 95% CI 0.90-0.93). After adjusting for age, sex, height and number of walking bouts in fractional polynomial or linear regressions, walking cadence was positively associated with FEV<sub>1</sub>, 6-min walk distance, physical activity (steps·day<sup>-1</sup>, time in moderate-to-vigorous physical activity, vector magnitude units, walking time, intensity during locomotion), physical activity experience and health-related quality of life and negatively associated with breathlessness and depression (all p<0.05). These associations remained after further adjustment for daily steps. In negative binomial regression adjusted for multiple confounders, walking cadence related to lower number of severe exacerbations during follow-up (incidence rate ratio 0.94 per step·min<sup>-1</sup>, 95% CI 0.91-0.99, p=0.009).

**Conclusions:** Higher real-world walking cadence is associated with better COPD status and lower severe exacerbations risk, which makes it attractive as a future prognostic marker and clinical outcome.

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## Conflict of interest statement

Conflict of interest: N. Karlsson reports owning stock in AstraZeneca, of which they are an employee; discourse made outside the submitted work. Conflict of interest: L. Palmerini reports being the co-founder of mHealth Technologies srl and owns shares of mHealth Technologies srl; disclosures made outside the submitted work. Conflict of interest: M.I. Polkey reports receiving consulting fees from Philips Respironics, outside the submitted work. Conflict of interest: D.A. Rodríguez Chiaradia reports grants or contracts from Janssen and Ferrer; consulting fees from Ferrer; payments for lectures, presentations, speakers bureaus, manuscript writing or educational events from Ferrer and Janssen; support for attending meetings and/or travel from Ferrer, MSD and Janssen; and participation on a Data Safety Monitoring Board or Advisory Board for Janssen, all outside the submitted work. Conflict of interest: R. Rodriguez-Roisin reports grants or contracts from Chiesi and Beyond Air NO, outside the submitted work. Conflict of interest: I. Vogiatzis is an associate editor of this journal. Conflict of interest: T. Troosters reports grants or contracts from Mobilise-D IHI funding, outside the submitted work. Conflict of interest: The remaining authors have nothing to disclose.

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. 2024 Mar 5;24(1):116.

doi: 10.1186/s12890-024-02911-3.

## [Contribution of small airway inflammation to the development of COPD](#)

[Li Li](#) <sup>#1</sup>, [Ying Gong](#) <sup>#1</sup>, [Dongni Hou](#) <sup>#1</sup>, [Yijun Song](#) <sup>#1</sup>, [Jing Bi](#) <sup>#1</sup>, [Miao Li](#) <sup>#1</sup>, [Junjie Han](#) <sup>#1</sup>, [Yuanlin Song](#) <sup>2</sup>, [Jun She](#) <sup>3</sup>

Affiliations expand

- PMID: 38443860
- PMCID: [PMC10916214](#)
- DOI: [10.1186/s12890-024-02911-3](#)

**Free PMC article**

## Abstract

**Background:** Little attention has been paid to the pathophysiological changes in the natural history of chronic obstructive pulmonary disease (COPD). The destructions of the small airways were visualized on thoracic micro-computed tomography scan. We investigated whether small airway inflammation (SAI) was the risk for the development of COPD.

**Methods:** A total of 1062 patients were enrolled and analyzed in the study. The partitioned airway inflammation was determined by exhaled nitric oxide (NO) of F<sub>n</sub>NO, FeNO<sub>50</sub>, FeNO<sub>200</sub>, and calculated CaNO<sub>dual</sub>. Both FeNO<sub>200</sub> and CaNO<sub>dual</sub> were compared to detect the promising predictor for peripheral airway/alveolar inflammation in COPD. The correlation between exhaled NO and white cell classification was evaluated to determine the inflammation type during the development of COPD.

**Results:** Exhaled NO levels (F<sub>n</sub>NO, FeNO<sub>50</sub>, FeNO<sub>200</sub>, and CaNO<sub>dual</sub>) were the highest in the COPD group compared with all other groups. Furthermore, compared with controls, exhaled NO levels (FeNO<sub>50</sub>, FeNO<sub>200</sub>, and CaNO<sub>dual</sub>) were also significantly higher in the emphysema, chronic bronchitis, and smoking groups. FeNO<sub>200</sub> was found to be a promising predictor for peripheral airway/alveolar inflammation (area under the curve [AUC] of the receiver operating characteristic [ROC] curve, area under the curve [AUC] = 0.841) compared with CaNO<sub>dual</sub> (AUC ROC = 0.707) in COPD. FeNO<sub>200</sub> was the main risk factor (adjusted odds ratio, 2.191; 95% CI, 1.797-2.671; p = 0.002) for the development of COPD. The blood eosinophil and basophil levels were correlated with FeNO<sub>50</sub> and FeNO<sub>200</sub>.

**Conclusion:** The complete airway inflammations were shown in COPD, whereas SAI was the main risk factor for the development of COPD, which might relate to eosinophil and basophil levels.

**Keywords:** Chronic obstructive pulmonary disease; FeNO200; Peripheral airways; Small airway inflammation.

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## Conflict of interest statement

The authors report no conflicts of interest.

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

SUPPLEMENTARY INFO

MeSH terms, Substances, Grants and funding [expand](#)

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BMC Pulm Med

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. 2024 Mar 5;24(1):113.

doi: 10.1186/s12890-024-02927-9.

# [Opportunistic screening for COPD among socially marginalized patients](#)

[Nina Brünés](#) <sup>#1</sup>, [Mette Bendtz Lindstroem](#) <sup>#2</sup>, [Charlotte Suppli Ulrik](#) <sup>3,4</sup>, [Ove Andersen](#) <sup>5,6,4</sup>, [Marianne Lisby](#) <sup>7,8</sup>, [Nina Skavlan Godtfredsen](#) <sup>3,4</sup>, [Tina Leth Hansen](#) <sup>1</sup>, [Charlotta Pisinger](#) <sup>9,10</sup>, [Vibeke Graven](#) <sup>11,12</sup>, [Kristoffer Marsaa](#) <sup>#13</sup>, [Laura Hohwü Thomsen](#) <sup>#3</sup>

Affiliations [expand](#)

- PMID: 38443835
- PMCID: [PMC10916054](#)
- DOI: [10.1186/s12890-024-02927-9](#)

**Free PMC article**

## Abstract

**Background:** Chronic obstructive pulmonary disease (COPD) is a common disease associated with premature death. Tobacco exposure is the main risk factor, but lower socioeconomic status, early life insults, and occupational exposures are also important risk factors. Socially marginalized people, facing homelessness, substance use disorder, and mental illness, are likely to have a higher risk of developing COPD, and, furthermore, experience barriers to healthcare access and consequently poorer outcomes.

**Objective:** This study aims to assess COPD prevalence and the impact of opportunistic screening among hospitalized patients who are in contact with hospital social nurses. These patients constitute a group of patients with a high prevalence of psychiatric and somatic diseases, substance use, low life expectancy, and are socially marginalized.

**Methods:** The present prospective longitudinal study includes a clinical examination at baseline. Participants will have spirometry done and be interviewed regarding risk factors, socioeconomic conditions, and respiratory symptoms. The 5-year follow-up assessment incorporates data from baseline and register data over the 5 years, including information on morbidity, use of COPD medication, hospital contacts, mortality, and socioeconomic factors.

**Anticipated results:** Referral for further diagnostic work-up and management after the screening, including COPD treatment and smoking cessation support, is expected to improve survival rates. The study is still enrolling patients.

**Trial registration:** The study is registered at ClinicalTrials.gov , [NCT04754308](#) with study status: "enrolling".

**Keywords:** COPD; Equality in healthcare; Nursing; Screening.

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## Conflict of interest statement

Kristoffer Marsaa reports personal fees for lectures from Astellas Pharma, GlaxoSmithKline, AstraZeneca, Novartis, Boehringer Ingelheim, Kyowa Kirin, Norgine, outside the submitted work.

Charlotte Suppli Ulrik has received fees for lectures, participation in advisory boards etc. from AZ, GSK, Novartis, Sanofi, Chiesi, TEVA, Boehringer Ingelheim, Berlin Chemie, Pfizer, TFF pharmaceuticals and Orion Pharma outside the submitted work.

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

#### SUPPLEMENTARY INFO

MeSH terms, Associated dataexpand

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BMC Pulm Med

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. 2024 Mar 5;24(1):111.

doi: 10.1186/s12890-024-02934-w.

# [Association between admission heart rate and in-hospital mortality in patients with acute exacerbation of chronic obstructive pulmonary disease and respiratory failure: a retrospective cohort study](#)

[Ruqing Zhou](#)<sup>1</sup>, [Dianzhu Pan](#)<sup>2</sup>

Affiliations expand

- PMID: 38443791
- PMCID: [PMC10913584](#)
- DOI: [10.1186/s12890-024-02934-w](#)

**Free PMC article**

## Abstract

**Background:** Acute exacerbation of chronic obstructive pulmonary disease (AECOPD) combined with respiratory failure (RF) is a chronic respiratory disease that seriously endangers human health. This study aimed to specifically evaluate the relationship between admission heart rate (AHR) and in-hospital mortality in patients with combined AECOPD and RF to better inform clinical treatment.

**Methods:** This retrospective cohort study included 397 patients admitted to a Chinese hospital between January 2021 and March 2023. The primary outcome measure was all-cause in-hospital mortality. Multivariate logistic regression analyses were performed to calculate adjusted hazard ratios (OR) with corresponding 95% confidence intervals (CI), and curve fitting and threshold effect were performed to address nonlinear relationships.

**Results:** In total, 397 patients with AECOPD/RF were screened. The mean ( $\pm$  SD) age of the study cohort was  $72.6 \pm 9.5$  years, approximately 49.4% was female, and the overall in-hospital mortality rate was 5%. Multivariate logistic regression analysis and smooth curve fitting revealed a nonlinear association between AHR and in-hospital mortality in the study population, with 100 beats/min representing the inflection point. Left of the inflection point, the effect size (OR) was 0.474 (95% CI 0.016 ~ 13.683;  $p = 0.6635$ ). On the right side, each 1 beat/min increase in AHR resulted in an effect size (OR) of 1.094 (95% CI 1.01 ~ 1.186;  $p = 0.0281$ ).

**Conclusions:** Results of the present study demonstrated a nonlinear relationship between AHR and in-hospital mortality in patients with AECOPD/RF. When AHR was  $< 100$  beats/min, it was not statistically significant; however, AHR  $> 100$  beats/min was a predictor of potential mortality, which increased by 9.4% for every 1 beat/min increase in AHR.

**Keywords:** Acute exacerbation of chronic obstructive pulmonary disease; Admission heart rate; In-hospital mortality; Respiratory failure.

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## Conflict of interest statement

The authors declare no competing interests.

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

SUPPLEMENTARY INFO

MeSH termsexpand

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. 2024 Mar 4;14(1):5245.

doi: 10.1038/s41598-024-56114-1.

# [Using machine learning techniques to predict the risk of osteoporosis based on nationwide chronic disease data](#)

[Jun-Bo Tu](#) <sup>#1</sup>, [Wei-Jie Liao](#) <sup>#2</sup>, [Wen-Cai Liu](#) <sup>3</sup>, [Xing-Hua Gao](#) <sup>4</sup>

Affiliations expand

- PMID: 38438569
- PMCID: [PMC10912338](#)
- DOI: [10.1038/s41598-024-56114-1](#)

**Free PMC article**

## Abstract

Osteoporosis is a major public health concern that significantly increases the risk of fractures. The aim of this study was to develop a Machine Learning based predictive model to screen individuals at high risk of osteoporosis based on chronic disease data, thus facilitating early detection and personalized management. A total of 10,000 complete patient records of primary healthcare data in the German Disease Analyzer database (IMS HEALTH) were included, of which 1293 diagnosed with osteoporosis and 8707 without the condition. The demographic characteristics and chronic disease data, including age, gender, lipid disorder, cancer, COPD, hypertension, heart failure, CHD, diabetes, chronic kidney disease, and stroke were collected from electronic health records. Ten different machine learning algorithms were employed to construct the predictive model. The performance of the model was further validated and the relative importance of features in the model was analyzed. Out of the ten machine learning algorithms, the Stacker model based on Logistic Regression, AdaBoost Classifier, and Gradient Boosting Classifier demonstrated superior performance. The Stacker model demonstrated excellent performance through ten-fold cross-validation on the training set and ROC curve analysis on the test set. The confusion matrix, lift curve and calibration curves indicated that the Stacker model had optimal clinical utility. Further analysis on feature importance highlighted age, gender, lipid metabolism disorders, cancer, and COPD as the top five influential variables. In this study, a predictive model for osteoporosis based on chronic disease data was developed using machine learning. The model shows great potential in early detection and risk stratification of osteoporosis, ultimately facilitating personalized prevention and management strategies.

**Keywords:** Chronic disease; Machine learning; Osteoporosis; Predict; Stacker.

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## Conflict of interest statement

The authors declare no competing interests.

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

SUPPLEMENTARY INFO

MeSH termsexpand

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nature portfolio 

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Meta-Analysis

Cochrane Database Syst Rev

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. 2024 Mar 5;3(3):CD007491.

doi: 10.1002/14651858.CD007491.pub3.

# Admission avoidance hospital at home

[Kate Edgar](#)<sup>1</sup>, [Steve Iliffe](#)<sup>2</sup>, [Helen A Doll](#)<sup>3</sup>, [Mike J Clarke](#)<sup>4</sup>, [Daniela C Gonçalves-Bradley](#)<sup>5</sup>, [Eric Wong](#)<sup>6</sup>, [Sasha Shepperd](#)<sup>7</sup>

Affiliations expand

- PMID: 38438116
- PMCID: [PMC10911897](#)
- DOI: [10.1002/14651858.CD007491.pub3](#)

## Abstract

**Background:** Admission avoidance hospital at home provides active treatment by healthcare professionals in the patient's home for a condition that would otherwise require acute hospital inpatient care, and always for a limited time period. This is the fourth update of this review.

**Objectives:** To determine the effectiveness and cost of managing patients with admission avoidance hospital at home compared with inpatient hospital care.

**Search methods:** We searched the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, Embase, and CINAHL on 24 February 2022, and checked the reference lists of eligible articles. We sought ongoing and unpublished studies by searching ClinicalTrials.gov and WHO ICTRP, and by contacting providers and researchers involved in the field.

**Selection criteria:** Randomised controlled trials recruiting participants aged 18 years and over. Studies comparing admission avoidance hospital at home with acute hospital inpatient care.

**Data collection and analysis:** We followed the standard methodological procedures expected by Cochrane and the Effective Practice and Organisation of Care (EPOC) Group. We performed meta-analysis for trials that compared similar interventions, reported comparable outcomes with sufficient data, and used individual patient data when available. We used the GRADE approach to assess the certainty of the body of evidence for the most important outcomes.

**Main results:** We included 20 randomised controlled trials with a total of 3100 participants; four trials recruited participants with chronic obstructive pulmonary disease; two trials recruited participants recovering from a stroke; seven trials recruited participants with an acute medical condition who were mainly older; and the remaining trials recruited participants with a mix of conditions. We assessed the majority of the included studies as at low risk of selection, detection, and attrition bias, and unclear for selective reporting and performance bias. For an older population, admission avoidance hospital at home probably makes little or no difference on mortality at six months' follow-up (risk ratio (RR) 0.88, 95% confidence interval (CI) 0.68 to 1.13;  $P = 0.30$ ;  $I^2 = 0\%$ ; 5 trials, 1502 participants; moderate-certainty evidence); little or no difference on the likelihood of being readmitted to hospital after discharge from hospital at home or inpatient care within 3 to 12 months' follow-up (RR 1.14, 95% CI 0.97 to 1.34;  $P = 0.11$ ;  $I^2 = 41\%$ ; 8 trials, 1757 participants; moderate-certainty evidence); and probably reduces the likelihood of living in residential care at six months' follow-up (RR 0.53, 95% CI 0.41 to 0.69;  $P < 0.001$ ;  $I^2 = 67\%$ ; 4 trials, 1271 participants; moderate-certainty evidence). Hospital at home probably results in little to no difference in patient's self-reported health status (2006 patients; moderate-certainty

evidence). Satisfaction with health care received may be improved with admission avoidance hospital at home (1812 participants; low-certainty evidence); few studies reported the effect on caregivers. Hospital at home reduced the initial average hospital length of stay (2036 participants; low-certainty evidence), which ranged from 4.1 to 18.5 days in the hospital group and 1.2 to 5.1 days in the hospital at home group. Hospital at home length of stay ranged from an average of 3 to 20.7 days (hospital at home group only). Admission avoidance hospital at home probably reduces costs to the health service compared with hospital admission (2148 participants; moderate-certainty evidence), though by a range of different amounts and using different methods to cost resource use, and there is some evidence that it decreases overall societal costs to six months' follow-up.

**Authors' conclusions:** Admission avoidance hospital at home, with the option of transfer to hospital, may provide an effective alternative to inpatient care for a select group of older people who have been referred for hospital admission. The intervention probably makes little or no difference to patient health outcomes; may improve satisfaction; probably reduces the likelihood of relocating to residential care; and probably decreases costs.

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## Conflict of interest statement

KE: none known.

SI: none known.

HD: none known.

MC: is a Cochrane Editor, but was not involved in the editorial process of this review.

DGB: is a Cochrane Editor, but was not involved in the editorial process of this review.

EW: no declarations of interest.

SS is author of one of the included studies (Shepperd 2021); she did not perform risk of bias assessment, data extraction, or GRADE assessment for that study. SS is a Cochrane Editor, but was not involved in the editorial process of this review.

## Update of

- [doi: 10.1002/14651858.CD007491.pub2](https://doi.org/10.1002/14651858.CD007491.pub2)
- [Cited by 2 articles](#)
- [122 references](#)
- [7 figures](#)

SUPPLEMENTARY INFO

Publication types, MeSH termsexpand

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Intern Med

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. 2024 Mar 4.

doi: 10.2169/internalmedicine.3353-23. Online ahead of print.

# [Clinical Benefits of Targeting Treatable Traits in Asthma and Chronic Obstructive Pulmonary Disease](#)

[Yuko Morishima](#)<sup>1</sup>, [Nobuyuki Hizawa](#)<sup>1</sup>

Affiliations expand

- PMID: 38432980
- DOI: [10.2169/internalmedicine.3353-23](https://doi.org/10.2169/internalmedicine.3353-23)

**Free article**

## Abstract

Asthma and chronic obstructive pulmonary disease (COPD) have long been debated regarding their similarities and differences in clinical presentation and pathology. There has also been a discussion about how common therapeutics should be used differently for each disease. Traditionally, a "one size fits all" stepwise treatment has been chosen based on the severity of each case after categorizing the diseases, such as asthma or COPD.

However, recently, the need for a precise approach for the treatment of individual patients beyond the disease category has been emphasized, especially in severe cases. To achieve precise personalized therapy, it has become necessary to focus on the individual phenotypes and underlying causal molecular mechanisms (endotypes) and to identify key therapeutic targets, which are called treatable traits. This review discusses the evidence for the importance of identifying treatable traits and therapeutic strategies based on the broader perspective of chronic obstructive airway disease rather than on individual diseases such as asthma or COPD.

**Keywords:** Asthma; COPD; Endotype; Phenotype; Precision medicine; Treatable traits.

FULL TEXT LINKS



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Review

Expert Rev Respir Med

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. 2024 Mar 6:1-10.

doi: 10.1080/17476348.2024.2324086. Online ahead of print.

## [Diversity in pulmonary rehabilitation clinical trials: a systematic review of the literature](#)

[Sunaina Chopra](#)<sup>1,2</sup>, [Shivani Rana](#)<sup>3</sup>, [Reenal Patel](#)<sup>3</sup>, [Tessa Hamilton](#)<sup>3</sup>, [Alyssa Dalip](#)<sup>3</sup>, [Paramvir Malhi](#)<sup>3</sup>, [Pat G Camp](#)<sup>2,3</sup>

Affiliations expand

- PMID: 38410864
- DOI: [10.1080/17476348.2024.2324086](https://doi.org/10.1080/17476348.2024.2324086)

## Abstract

**Background:** Underrepresentation of minority groups in clinical trials may hinder the potential benefits of pulmonary rehabilitation (PR) programs for individuals with chronic obstructive pulmonary disease (COPD). The aim of this work was to determine whether participants in PR randomized control trials (RCTs) conducted in the U.S.A., Canada, the UK, and Australia are representative of ethnicity, sex, gender, and sociodemographic characteristics.

**Research design:** A systematic search was performed for relevant literature from inception to December 2022. Titles and abstracts were screened before undergoing a full article review. Relevant data on reporting of age, sex, gender, ethnicity, and sociodemographic characteristics of participants was extracted.

**Results:** Thirty-six RCTs met the inclusion criteria. Only 6% of publications reported on ethnicity, with  $\geq 90\%$  of participants reported as 'White.' All 36 papers reported on age, with the mean between 60 and 69 years old. Thirty-five studies reported on sex (97%), with the majority (67%) reporting more male than female participants. There was no mention of different genders in any paper. Other sociodemographic factors were reported in 7 (19%) papers.

**Conclusions:** Inclusivity and representation in clinical trials are essential to ensure that research findings are generalizable. Clinical trialists need to consider the demographics of today's society during recruitment.

**Keywords:** COPD; Clinical trials; ethnicity; inclusivity; pulmonary rehabilitation; race.

SUPPLEMENTARY INFO

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Am J Health Syst Pharm



. 2024 Mar 7;81(6):199-203.

doi: 10.1093/ajhp/zxad337.

## Recent and anticipated novel drug approvals for 2023 and 2024

[Matthew H Rim](#)<sup>1</sup>, [Brittany L Karas](#)<sup>1</sup>, [Farah Barada](#)<sup>1</sup>, [Andrew M Levitsky](#)<sup>2</sup>

Affiliations expand

- PMID: 38146706
- DOI: [10.1093/ajhp/zxad337](https://doi.org/10.1093/ajhp/zxad337)

### Abstract

**Purpose:** Health-system pharmacists play a crucial role in monitoring the pharmaceutical pipeline to manage formularies, allocate resources, and optimize clinical programs for new therapies. This article aims to support pharmacists by providing updates on new and anticipated novel drug approvals.

**Summary:** Selected drug approvals anticipated in the 12-month period covering the fourth quarter of 2023 through the third quarter of 2024 are reviewed. The analysis emphasizes drugs selected from 58 novel drugs awaiting FDA approval that are expected to have significant clinical and financial impact in hospitals and clinics. The pipeline includes recently added drugs with various indications, including oncology, infectious diseases such as complicated urinary tract infection and pneumonia, and rare diseases.

**Conclusion:** Cellular and gene therapies continue to strengthen the pipeline as potential new treatment options for genetic disorders, rare diseases, and cancer. Additional diseases treated by new agents include pulmonary arterial hypertension, chronic obstructive pulmonary disease, diabetes, and obesity.

**Keywords:** Food and Drug Administration drug approval; clinical trials; drug approval process; investigational drugs; medication development; new drug approvals.

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SUPPLEMENTARY INFO

MeSH termsexpand

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

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. 2024 Mar 6:14:26335565241237889.

doi: 10.1177/26335565241237889. eCollection 2024 Jan-Dec.

# Multimorbidity and chronic pain management with opioids and other therapies among adults in the United States: A cross-sectional study

[Rolake A Neba](#)<sup>1</sup>, [Hao Wang](#)<sup>2</sup>, [Misozi Kolala](#)<sup>1</sup>, [Usha Sambamoorthi](#)<sup>1</sup>

Affiliations expand

- PMID: 38454920

- PMCID: [PMC10919125](#)

- DOI: [10.1177/26335565241237889](https://doi.org/10.1177/26335565241237889)

## Abstract

**Background:** Multimorbidity, defined as the concurrent presence of  $\geq 2$  chronic conditions, and chronic pain (i.e., pain lasting  $\geq 3$  months) often co-exist. Multimodal pain management that includes non-pharmacologic treatment and non-opioid therapy is recommended to prevent serious risks associated with opioids.

**Purpose:** Estimate the prevalence of types of pain treatment and analyze their associations with multimorbidity using a nationally representative survey in the United States (US).

**Methods:** Data was collected from the 2020 National Health Interview Survey among adults with chronic pain and chronic conditions (N= 12,028). Chronic pain management was grouped into four categories: opioid therapy; non-opioid multimodal pain treatment; pain treatment with monotherapy; and no pain treatment. Chi-square tests and multivariable multinomial logistic regressions were used to analyze the association of multimorbidity with types of pain treatment after controlling for age, sex, social determinants of health (SDoH), and lifestyle characteristics.

**Results:** Among NHIS respondents, 68% had multimorbidity. In adjusted multinomial logistic regressions with "pain management with monotherapy" as the reference group, those with multimorbidity were more likely to utilize opioids (AOR=1.63, 95% CI=1.23, 2.17). Those with severe pain were also more likely to use opioid therapy (AOR=19.36, 95% CI=13.35, 28.06) than those with little pain. Those with low income and education were less likely to have multimodal pain management without opioids.

**Conclusion:** Seven in 10 adults had multimorbidity. Those with multimorbidity reported severe pain and relied on opioids for pain control. Regardless of multimorbidity status, SDoH was associated with types of chronic pain management.

**Keywords:** Multimorbidity; chronic pain; multimodal; opioid; pain management.

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## Conflict of interest statement

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

- [31 references](#)

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Review

Lancet Healthy Longev



. 2024 Mar 4:S2666-7568(24)00007-2.

doi: 10.1016/S2666-7568(24)00007-2. Online ahead of print.

# [Prevalence of multimorbidity and polypharmacy among adults and older adults: a systematic review](#)

[Kathryn Nicholson](#)<sup>1</sup>, [Winnie Liu](#)<sup>2</sup>, [Daire Fitzpatrick](#)<sup>3</sup>, [Kate Anne Hardacre](#)<sup>4</sup>, [Sarah Roberts](#)<sup>5</sup>, [Jennifer Salerno](#)<sup>6</sup>, [Saverio Stranges](#)<sup>7</sup>, [Martin Fortin](#)<sup>8</sup>, [Dee Mangin](#)<sup>9</sup>

Affiliations expand

- PMID: 38452787
- DOI: [10.1016/S2666-7568\(24\)00007-2](https://doi.org/10.1016/S2666-7568(24)00007-2)

## Abstract

Multimorbidity (multiple conditions) and polypharmacy (multiple medications) are increasingly common, yet there is a need to better understand the prevalence of co-occurrence. In this systematic review, we examined the prevalence of multimorbidity and polypharmacy among adults ( $\geq 18$  years) and older adults ( $\geq 65$  years) in clinical and community settings. Six electronic databases were searched, and 87 studies were retained

after two levels of screening. Most studies focused on adults 65 years and older and were done in population-based community settings. Although the operational definitions of multimorbidity and polypharmacy varied across studies, consistent cut-points (two or more conditions and five or more medications) were used across most studies. In older adult samples, the prevalence of multimorbidity ranged from 4.8% to 93.1%, while the prevalence of polypharmacy ranged from 2.6% to 86.6%. High heterogeneity between studies indicates the need for more consistent reporting of specific lists of conditions and medications used in operational definitions.

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## Conflict of interest statement

Declaration of interests We declare no competing interests.

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J Gerontol A Biol Sci Med Sci

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. 2024 Mar 7:glae034.

doi: 10.1093/gerona/glae034. Online ahead of print.

# [Association of combined healthy lifestyle factors with incident dementia](#)

# in participants with and without multimorbidity: a large population-based prospective cohort study

[Ying-Ying Niu](#)<sup>1</sup>, [Jian-Feng Zhong](#)<sup>1</sup>, [Hui-Yan Wen](#)<sup>1</sup>, [Hao-Yu Yan](#)<sup>1</sup>, [Zhi-Quan Diao](#)<sup>1</sup>, [Jia-Xin Li](#)<sup>1</sup>, [Xue-Rui Bai](#)<sup>1</sup>, [Jia-Min Qiu](#)<sup>1</sup>, [Zhi-Tong Xu](#)<sup>1</sup>, [Lian-Hong Chen](#)<sup>1</sup>, [Cheng-Ping Li](#)<sup>1</sup>, [Jing Li](#)<sup>1</sup>, [Xiao-Feng Liang](#)<sup>2,3</sup>, [Dan Liu](#)<sup>1,2</sup>

Affiliations expand

- PMID: 38450723
- DOI: [10.1093/gerona/glae034](https://doi.org/10.1093/gerona/glae034)

## Abstract

**Background:** The effect of a healthy lifestyle on dementia associated with multimorbidity-related is not well-understood. Our objective is to examine whether the adoption of a healthy lifestyle could potentially reduce the elevated risk of dementia in individuals with and without multimorbidity.

**Methods:** We utilized data from the UK Biobank cohort. A comprehensive healthy lifestyle score, ranging from 0 to 6, was generated. Cox proportional hazards models were used to examine the associations between multimorbidity, the healthy lifestyle score, and the incidence risk of dementia.

**Results:** Over a median follow-up period of 12.5 years, 5,852 all-cause dementia were recorded. Multimorbidity including cardiovascular, metabolic, neuro-psychiatric, and inflammation-related diseases was associated with a higher risk of subsequent dementia. Each additional chronic disease was associated with a hazard ratio (HR) of 1.38 (95% CI: 1.33, 1.44). Compared to individuals without multimorbidity and a healthy lifestyle score of 5-6, patients with multimorbidity and a lifestyle score of 0-1 had a significantly higher risk of dementia (HR: 3.13; 95% CI: 2.64, 3.72), but the risk was markedly attenuated among those with multimorbidity and a lifestyle score of 5-6. Among patients with three or more diseases, the HR for dementia was 0.53 (95%CI: 0.42, 0.68) when comparing a lifestyle score of 5-6 to 0-1. And we observed more pronounced association between them among people younger than 60 years old.

**Conclusion:** Adherence to a combination of healthy lifestyle factors, especially at a young age, were associated with a significantly lower risk of dementia among participants with multimorbidity.

**Keywords:** cohort study; dementia; lifestyle factors; multimorbidity.

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Clin Gerontol



. 2024 Mar 3:1-10.

doi: 10.1080/07317115.2024.2324323. Online ahead of print.

# [Above and Beyond Number of Illnesses: A Two-Sample Replication of Current Approaches to Depressive Symptoms in Multimorbidity](#)

[Irina Mindlis](#)<sup>1</sup>, [Tracey A Revenson](#)<sup>2</sup>

Affiliations [expand](#)

- PMID: 38431827
- DOI: [10.1080/07317115.2024.2324323](https://doi.org/10.1080/07317115.2024.2324323)

## Abstract

**Objectives:** To expand current models of depressive symptoms in older adults with multimorbidity (MM) beyond the number of illnesses as a predictor of worsened mental health.

**Methods:** Two-sample replication study of adults  $\geq 62$  years old with  $\geq$  two chronic illnesses, who completed validated questionnaires assessing depressive symptoms, and disease- and treatment-related stressors. Data were analyzed using hierarchical linear regression.

**Results:** The model of cumulative number of illnesses was worse at explaining variance in depressive symptoms (Sample 1  $R^2 = .035$ ; Sample 2  $R^2 = .029$ ), compared to models including disease- and treatment-related stressors (Sample 1  $R^2 = .37$ ; Sample 2  $R^2 = .47$ ). Disease-related stressors were the strongest factor associated with depressive symptoms, specifically, poor subjective cognitive function (Sample 1:  $b = -.202$ ,  $p = .013$ ; Sample 2:  $b = -.288$ ,  $p < .001$ ) and greater somatic symptoms ( $b = .455$ ,  $p < .001$ ; Sample 2:  $b = .355$ ,  $p < .001$ ).

**Conclusions:** Using the number of illnesses to understand depressive symptoms in MM is a limited approach. Models that move beyond descriptive relationships between MM and depressive symptoms are needed.

**Clinical implications:** Providers should consider the role of somatic symptom management in patients with MM and depressive symptoms.

**Keywords:** Aging; depressive symptoms; disease burden; multimorbidity; older adults; treatment burden.

FULL TEXT LINKS



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Trans R Soc Trop Med Hyg

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. 2024 Mar 4;118(3):137-147.

# Primary healthcare service delivery for older people with progressive multimorbidity in low- and middle-income countries: a systematic review

[Duncan Kwaitana](#)<sup>1</sup>, [Felix Chisoni](#)<sup>1</sup>, [Dorothee van Breevoort](#)<sup>1</sup>, [Thomas Mildestvedt](#)<sup>2</sup>, [Eivind Meland](#)<sup>2</sup>, [Jane Bates](#)<sup>1</sup>, [Eric Umar](#)<sup>1</sup>

Affiliations expand

- PMID: 37795606
- DOI: [10.1093/trstmh/trad068](https://doi.org/10.1093/trstmh/trad068)

## Abstract

Ensuring primary healthcare (PHC) accessibility to older people with multimorbidity is vital in preventing unnecessary health deterioration. However, older people  $\geq 50$  y of age in low- and middle-income countries (LMICs) face challenges in effectively accessing and utilizing PHC. A systematic review was conducted adopting the Andersen-Newman theoretical framework for health services utilization to assess evidence on factors that affect access to PHC by older people. This framework predicts that a series of factors (predisposing, enabling and need factors) influence the utilization of health services by people in general. Seven publications were identified and a narrative analytical method revealed limited research in this area. Facilitating factors included family support, closeness to the PHC facility, friendly service providers and improved functional status of the older people. Barriers included long distance and disjointed PHC services, fewer health professionals and a lack of person-centred care. The following needs were identified: increasing the number of health professionals, provision of PHC services under one roof and regular screening services. There is a need for more investment in infrastructure development, coordination of service delivery and capacity building of service providers in LMICs to improve access and utilization of PHC services for older people.

**Keywords:** access; healthcare facility; low- and middle-income countries; multimorbidity; older people; primary healthcare.

SUPPLEMENTARY INFO

Publication types, MeSH terms, Grants and fundingexpand

FULL TEXT LINKS



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

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NPJ Prim Care Respir Med

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. 2024 Mar 9;34(1):2.

doi: 10.1038/s41533-024-00360-3.

# Documentation of comorbidities, lifestyle factors, and asthma management during primary care scheduled asthma contacts

[Jaana Takala](#)<sup>1,2,3</sup>, [Iida Vähätalo](#)<sup>4,5</sup>, [Leena E Tuomisto](#)<sup>4,5</sup>, [Onni Niemelä](#)<sup>6,7</sup>, [Pinja Ilmarinen](#)<sup>4,5</sup>, [Hannu Kankaanranta](#)<sup>4,5,8</sup>

Affiliations expand

- PMID: 38461294
- DOI: [10.1038/s41533-024-00360-3](https://doi.org/10.1038/s41533-024-00360-3)

## Abstract

Systematically assessing asthma during follow-up contacts is important to accomplish comprehensive treatment. No previous long-term studies exist on how comorbidities, lifestyle factors, and asthma management details are documented in scheduled asthma contacts in primary health care (PHC). We showed comorbidities and lifestyle factors were

poorly documented in PHC in this real-life, 12-year, follow-up study. Documented information on rhinitis was found in 8.9% and BMI, overweight, or obesity in  $\leq 1.5\%$  of the 542 scheduled asthma contacts. Of the 145 patients with scheduled asthma contacts, 6.9% had undergone revision of their inhalation technique; 16.6% had documentation of their asthma action plan. Screening of respiratory symptoms was recorded in 79% but nasal symptoms in only 15.5% of contacts. Lifestyle guidance interventions were found in  $<1\%$  of contacts. These results, based on documented patient data, indicate a need exists to further improve the assessment and guidance of asthma patients in PHC.

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- [71 references](#)

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BMJ Open Respir Res

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. 2024 Mar 9;11(1):e002142.

doi: 10.1136/bmjresp-2023-002142.

## [Predicting parameters of airway dynamics generated from inspiratory and expiratory plethysmographic airway loops, differentiating subtypes of chronic obstructive diseases](#)

[Richard Kraemer](#)<sup>1,2</sup>, [Hans-Jürgen Smith](#)<sup>3</sup>, [Juergen Reinstaedtler](#)<sup>4</sup>, [Sabina Gallati](#)<sup>5</sup>, [Heinrich Matthys](#)<sup>6</sup>

Affiliations expand

- PMID: 38460977
- DOI: [10.1136/bmjresp-2023-002142](https://doi.org/10.1136/bmjresp-2023-002142)

## Abstract

**Background:** The plethysmographic shift volume-flow loop ( $sR_{aw}$ -loop) measured during tidal breathing allows the determination of several lung function parameters such as the effective specific airway resistance ( $sR_{eff}$ ), calculated from the ratio of the integral of the resistive aerodynamic specific work of breathing (sWOB) and the integral of the corresponding flow-volume loop. However, computing the inspiratory and expiratory areas of the  $sR_{aw}$ -loop separately permits the determination of further parameters of airway dynamics. Therefore, we aimed to define the discriminating diagnostic power of the inspiratory and expiratory sWOB ( $sWOB_{in}$ ,  $sWOB_{ex}$ ), as well as of the inspiratory and expiratory  $sR_{eff}$  ( $sR_{eff}^{IN}$  and  $sR_{eff}^{EX}$ ), for discriminating different functional phenotypes of chronic obstructive lung diseases.

**Methods:** Reference equations were obtained from measurement of different databases, incorporating 194 healthy subjects (35 children and 159 adults), and applied to a collective of 294 patients with chronic lung diseases (16 children with asthma, aged 6-16 years, and 278 adults, aged 17-92 years). For all measurements, the same type of plethysmograph was used (Jaeger Würzburg, Germany).

**Results:** By multilinear modelling, reference equations of  $sWOB_{in}$ ,  $sWOB_{ex}$ ,  $sR_{eff}^{IN}$  and  $sR_{eff}^{EX}$  were derived. Apart from anthropometric indices, additional parameters such as tidal volume ( $V_T$ ), the respiratory drive ( $P_{0.1}$ ), measured by means of a mouth occlusion pressure measurement 100 ms after inspiration and the mean inspiratory flow ( $V_T/T_i$ ) were found to be informative. The statistical approach to define reference equations for parameters of airway dynamics reveals the interrelationship between covariants of the actual breathing pattern and the control of breathing.

**Conclusions:** We discovered that  $sWOB_{in}$ ,  $sWOB_{ex}$ ,  $sR_{eff}^{IN}$  and  $sR_{eff}^{EX}$  are new discriminating target parameters, that differentiate much better between chronic obstructive diseases and their subtypes, especially between chronic obstructive pulmonary disease (COPD) and asthma-COPD overlap (ACO), thus strengthening the concept of precision medicine.

**Keywords:** Asthma; COPD Pathology; Equipment Evaluations; Lung Physiology; Respiratory Function Test.

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# Conflict of interest statement

Competing interests: None declared.

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Review

Environ Pollut

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. 2024 Mar 6:123733.

doi: 10.1016/j.envpol.2024.123733. Online ahead of print.

## [Relationship between flame retardants and respiratory health- A systematic review and meta-analysis of observational studies](#)

[Sónia D Coelho](#)<sup>1</sup>, [Tiago Maricoto](#)<sup>2</sup>, [Luís Taborda-Barata](#)<sup>3</sup>, [Isabella Annesi-Maesano](#)<sup>4</sup>, [Tomohiko Isobe](#)<sup>5</sup>, [Ana C A Sousa](#)<sup>6</sup>

Affiliations expand

- PMID: 38458527
- DOI: [10.1016/j.envpol.2024.123733](https://doi.org/10.1016/j.envpol.2024.123733)

# Abstract

Chronic respiratory diseases are a leading cause of death and disability worldwide. Their prevalence is steadily increasing and the exposure to environmental contaminants, including Flame Retardants (FRs), is being considered as a possible risk factor. Despite the widespread and continuous exposure to FRs, the role of these contaminants in chronic respiratory diseases is yet not clear. This study aims to systematically review the association between the exposure to FRs and chronic respiratory diseases. Searches were performed using the Cochrane Library, MEDLINE, EMBASE, PUBMED, SCOPUS, ISI Web of Science (Science and Social Science Index), WHO Global Health Library and CINAHL EBSCO. Among the initial 353 articles found, only 9 fulfilled the inclusion criteria and were included. No statistically significant increase in the risk for chronic respiratory diseases with exposure to FRs was found and therefore there is not enough evidence to support that FRs pose a significantly higher risk for the development or worsening of respiratory diseases. However, a non-significant trend for potential hazard was found for asthma and rhinitis/rhinoconjunctivitis, particularly considering urinary organophosphate esters (OPEs) including TNBP, TPHP, TCEP and TCIPP congeners/compounds. Most studies showed a predominance of moderate risk of bias, therefore the global strength of the evidence is low. The limitations of the studies here reviewed, and the potential hazardous effects herein identified highlights the need for good quality large-scale cohort studies in which biomarkers of exposure should be quantified in biological samples.

**Keywords:** Asthma; COPD; Flame retardants; Organophosphorus flame retardants; PBDEs; Respiratory diseases; Rhinitis; Rhinoconjunctivitis.

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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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Acad Emerg Med

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. 2024 Mar 8.

doi: 10.1111/acem.14890. Online ahead of print.

# [The association of prehospital systemic corticosteroids with emergency department and in-hospital outcomes for patients with asthma exacerbations](#)

[Sriram Ramgopal](#)<sup>1</sup>, [Vishal V Naik](#)<sup>1</sup>, [Sho Komukai](#)<sup>2</sup>, [Sylvia Owusu-Ansah](#)<sup>3</sup>, [Remle P Crowe](#)<sup>4</sup>, [Masashi Okubo](#)<sup>5</sup>, [Christian Martin-Gill](#)<sup>5</sup>

Affiliations expand

- PMID: 38456349
- DOI: [10.1111/acem.14890](https://doi.org/10.1111/acem.14890)

## Abstract

**Background:** Timely administration of systemic corticosteroids is a cornerstone of asthma exacerbation treatment, yet little is known regarding potential benefits of prehospital administration by emergency medical services (EMS) clinicians. We examined factors associated with prehospital corticosteroid administration with hospitalization and hospital length of stay (LOS).

**Methods:** We performed a retrospective study of EMS encounters for patients 2-50 years of age with suspected asthma exacerbation from a national data set. We evaluated factors associated with systemic corticosteroid administration using generalized estimating equations. We performed propensity matching based on service level, age, encounter duration, vital signs, and treatments to evaluate the association of prehospital corticosteroid administration with hospitalization and LOS using weighted logistic

regression. We evaluated the association of prehospital corticosteroid administration with admission using Bayesian models.

**Results:** Of 15,834 encounters, 4731 (29.9%) received prehospital systemic corticosteroids. Administration of corticosteroids was associated with older age; sex; urbanicity; advanced life support provider; vital sign instability; increasing doses of albuterol; and provision of ipratropium bromide, magnesium, epinephrine, and supplementary oxygen. Within the matched sample, prehospital corticosteroids were not associated with hospitalization (odds ratio [OR] 0.86, 95% confidence interval [CI] 0.73-1.01) or LOS (multiplier 0.76, 95% CI 0.56-1.05). Administration of corticosteroids was associated with lower odds of admission and shorter LOS in longer EMS encounters (>34 min), lower admission odds in patients with documented wheezing, and shorter LOS among patients treated with albuterol. In a Bayesian model with noninformative priors, the OR for admission among encounters given corticosteroids was 0.86 (95% credible interval 0.77-0.96).

**Conclusions:** Prehospital systemic corticosteroid administration was not associated with hospitalization or LOS in the overall cohort of asthma patients treated by EMS, though they had a lower probability of admission within Bayesian models. Improved outcomes were noted among subgroups of longer EMS encounters, documented wheezing, and receipt of albuterol.

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- [27 references](#)

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Editorial

Thorax



. 2024 Mar 7:thorax-2023-221117.

doi: 10.1136/thorax-2023-221117. Online ahead of print.

# Impacts of sex and gender on severe asthma

[Kimberley C W Wang](#)<sup>1,2</sup>, [John D Blakey](#)<sup>3,4</sup>

Affiliations expand

- PMID: 38453471
- DOI: [10.1136/thorax-2023-221117](https://doi.org/10.1136/thorax-2023-221117)

*No abstract available*

**Keywords:** Asthma.

## Conflict of interest statement

Competing interests: JB declares potential conflicts of interest outside of this area of research from manufacturers of asthma therapeutics: in the last 3 years, he or his institution has received income for educational activities or advisory work or research support from AstraZeneca, Boehringer Ingelheim, Chiesi, GSK and Sanofi.

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Editorial

Thorax

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. 2024 Mar 7:thorax-2023-221345.

doi: 10.1136/thorax-2023-221345. Online ahead of print.

# Unravelling the obesity-asthma connection in childhood and adolescence: does body shape matter?

[Ann D Morgan](#)<sup>1</sup>

Affiliations expand

- PMID: 38453470
- DOI: [10.1136/thorax-2023-221345](https://doi.org/10.1136/thorax-2023-221345)

*No abstract available*

**Keywords:** Asthma Epidemiology; Eating; Paediatric asthma; Respiratory Measurement.

## Conflict of interest statement

Competing interests: None declared.

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Review

Eur Respir J



. 2024 Mar 7:2301397.

doi: 10.1183/13993003.01397-2023. Online ahead of print.

# [The airway epithelium: an orchestrator of inflammation, a key structural barrier and a therapeutic target in severe asthma](#)

[Richard J Russell](#)<sup>1</sup>, [Louis-Philippe Boulet](#)<sup>2</sup>, [Christopher E Brightling](#)<sup>3</sup>, [Ian D Pavord](#)<sup>4</sup>, [Celeste Porsbjerg](#)<sup>5</sup>, [Del Dorscheid](#)<sup>6</sup>, [Asger Sverrild](#)<sup>5</sup>

Affiliations expand

- PMID: 38453256
- DOI: [10.1183/13993003.01397-2023](https://doi.org/10.1183/13993003.01397-2023)

## Abstract

Asthma is a disease of heterogeneous pathology, typically characterized by excessive inflammatory and bronchoconstrictor responses to the environment. The clinical expression of the disease is a consequence of the interaction between environmental factors and host factors over time, including genetic susceptibility, immune dysregulation and airway remodelling. As a critical interface between the host and the environment, the

airway epithelium plays an important role in maintaining homeostasis in the face of environmental challenges. Disruption of epithelial integrity is a key factor contributing to multiple processes underlying asthma pathology. In this review, we first discuss the unmet need in asthma management and provide an overview of the structure and function of the airway epithelium. We then focus on key pathophysiological changes that occur in the airway epithelium, including epithelial barrier disruption, immune hyperreactivity, remodelling, mucus hypersecretion and mucus plugging, highlighting how these processes manifest clinically and how they might be targeted by current and novel therapeutics.

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Review

Ital J Pediatr

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. 2024 Mar 6;50(1):42.

doi: 10.1186/s13052-023-01492-x.

## [Pediatric asthma and altitude: a complex interplay between different environmental factors](#)

[Laura Bisoffi](#)<sup>1</sup>, [Giovanni Sassudelli](#)<sup>1</sup>, [Fabio Agostinis](#)<sup>2</sup>, [Annalisa Cogo](#)<sup>3,4</sup>, [Renato Cutrera](#)<sup>5</sup>, [Irene Dalpiaz](#)<sup>1</sup>, [Maria Elisa Di Cicco](#)<sup>6</sup>, [Battista Guidi](#)<sup>7</sup>, [Stefania La Grutta](#)<sup>8</sup>, [Andrea Miceli](#)<sup>7</sup>, [Francesca Mori](#)<sup>9</sup>, [Giorgio Piacentini](#)<sup>10</sup>, [Diego Peroni](#)<sup>6</sup>, [Deborah Snjiders](#)<sup>11</sup>, [Mattia Giovannini](#)<sup>12,13</sup>, [Ermanno Baldo](#)<sup>14</sup>

Affiliations expand

- PMID: 38448980
- PMCID: [PMC10918861](#)
- DOI: [10.1186/s13052-023-01492-x](#)

**Free PMC article**

## Abstract

Asthma is one of the most common non-communicable diseases, and its prevalence and morbidity are influenced by a wide array of factors that are only partially understood. In addition to individual predisposition linked to genetic background and early life infections, environmental factors are crucial in determining the impact of asthma both on an individual patient and on a population level. Several studies have examined the role of the environment where asthmatic subjects live in the pathogenesis of asthma. This review aims to investigate the differences in the prevalence and characteristics of asthma between the pediatric population residing at higher altitudes and children living at lower altitudes, trying to define factors that potentially determine such differences. For this purpose, we reviewed articles from the literature concerning observational studies assessing the prevalence of pediatric asthma in these populations and its characteristics, such as spirometric and laboratory parameters and associated sensitization to aeroallergens. Despite the heterogeneity of the environments examined, the hypothesis of a beneficial effect of residing at a higher altitude on the prevalence of pediatric asthma could be confirmed, as well as a good profile on airway inflammation in asthmatic children. However, the possibility of a higher hospitalization risk for asthma in children living at higher altitudes was demonstrated. Moreover, a positive association between residing at a higher altitude and sensitization to pollens and between lower altitude and sensitization to house dust mites could be confirmed in some pediatric patients, even if the results are not homogeneous, probably due to the different geographical and climatic regions considered. Nonetheless, further studies, e.g., extensive and international works, need to be conducted to better understand the complex interplay between different environmental factors, such as altitude, and the pathogenesis of asthma and how its prevalence and characteristics could vary due to climate change.

**Keywords:** Altitude; Asthma; Environment; Mountain; Pediatrics.

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## Conflict of interest statement

The authors declare that they have no competing interests to disclose in relation to this paper.

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

### SUPPLEMENTARY INFO

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Review

Nat Rev Genet

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. 2024 Mar 6.

doi: 10.1038/s41576-024-00695-0. Online ahead of print.

# [Genetics of chronic respiratory disease](#)

[Ian Sayers](#)<sup>1,2</sup>, [Catherine John](#)<sup>3,4</sup>, [Jing Chen](#)<sup>3</sup>, [Ian P Hall](#)<sup>5,6</sup>

Affiliations [expand](#)

- PMID: 38448562
- DOI: [10.1038/s41576-024-00695-0](https://doi.org/10.1038/s41576-024-00695-0)

## Abstract

Chronic respiratory diseases, such as chronic obstructive pulmonary disease (COPD), asthma and interstitial lung diseases are frequently occurring disorders with a polygenic basis that account for a large global burden of morbidity and mortality. Recent large-scale genetic epidemiology studies have identified associations between genetic variation and individual respiratory diseases and linked specific genetic variants to quantitative traits related to lung function. These associations have improved our understanding of the genetic basis and mechanisms underlying common lung diseases. Moreover, examining the overlap between genetic associations of different respiratory conditions, along with evidence for gene-environment interactions, has yielded additional biological insights into affected molecular pathways. This genetic information could inform the assessment of respiratory disease risk and contribute to stratified treatment approaches.

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- [152 references](#)

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BMJ Open Respir Res

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. 2024 Mar 5;11(1):e001702.

# Characteristics, treatment patterns and burden of illness in US patients with asthma newly initiating multiple-inhaler triple therapy

[Beade Numbere](#)<sup>1</sup>, [Yunhao Liu](#)<sup>2</sup>, [Shiyuan Zhang](#)<sup>3</sup>, [Alexandrosz Czira](#)<sup>2</sup>, [Yifei Lu](#)<sup>4</sup>

Affiliations expand

- PMID: 38448044
- PMID: [PMC10916089](#)
- DOI: [10.1136/bmjresp-2023-001702](#)

**Free PMC article**

## Abstract

**Introduction:** For patients with asthma who remain symptomatic on medium-dose inhaled corticosteroid/long-acting  $\beta_2$ -agonist, add-on long-acting muscarinic antagonist is a treatment option, which can be administered as multiple-inhaler triple therapy (MITT). A high proportion of patients (61.5%-88.2%) discontinue MITT use within 1 year postinitiation; however, which patients discontinue and their treatment patterns at initiation are unknown. This study aimed to understand the demographic, clinical and treatment-related characteristics of patients with asthma who newly initiated MITT, by discontinuation status.

**Methods:** This retrospective cohort study used administrative data from IBM Truven MarketScan Commercial Claims and Encounters Database with Medicare supplement between 1 January 2016 and 31 December 2019. Adult patients with asthma who initiated MITT between 1 January 2017 and 31 March 2019 were included and were classified based on their discontinuation status. 'Continuous users' had continuous use of MITT and 'discontinuers' discontinued treatment within the 6-month period postinitiation. Demographics and clinical characteristics, asthma treatment use prior to MITT initiation (12-month baseline period), mode of MITT initiation and complexity of regimen were described.

**Results:** Of 4132 patients (mean age: 49.0 years, 67.9% female), 78.0% (n=3224) were discontinuers; 22.0% (n=908) were continuous users. Demographic and other clinical and treatment-related characteristics during baseline were broadly similar between cohorts. A significantly higher proportion of continuous users versus discontinuers had  $\geq 6$  dispensed claims for short-acting  $\beta_2$ -agonist canisters (16.0% vs 12.5%;  $p=0.006$ ) during baseline and initiated a once-daily MITT regimen (35.2% vs 26.2%;  $p<0.001$ ). Fewer continuous MITT users used a mix of once-daily and twice-daily regimens than those who discontinued MITT (64.3% vs 72.3%;  $p<0.001$ ).

**Conclusions:** Most patients with asthma discontinued MITT within 6 months. Results indicate that patients with a history of uncontrolled, symptomatic asthma and those using less complex triple therapy regimens at initiation are less likely to discontinue MITT than patients with controlled asthma and those using a complex MITT regimen.

**Keywords:** asthma; asthma epidemiology.

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## Conflict of interest statement

Competing interests: BN was an employee of CY Partners Recruitment Ltd and on assignment at GSK as a Complementary Worker at the time of the study. AC and YLiu were employees of GSK at the time of the study and hold shares/stocks in the company. SZ is an employee of GSK and holds shares/stocks in the company. YLu has no competing interests. AC, BN, SZ, YLiu, and YLu act as guarantors of the manuscript.

- [10 references](#)
- [2 figures](#)

SUPPLEMENTARY INFO

MeSH termsexpand

FULL TEXT LINKS



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. 2024 Mar 4:107583.

doi: 10.1016/j.rmed.2024.107583. Online ahead of print.

# Exhaled breath analyses for bronchial thermoplasty in severe asthma patients

[Pieta C Wijsman<sup>1</sup>](#), [Annika W M Goorsenberg<sup>1</sup>](#), [Julia N S d'Hooghe<sup>1</sup>](#), [Els J M Weersink<sup>1</sup>](#), [Dominic W Fenn<sup>1</sup>](#), [Anke H Maitland van der Zee<sup>1</sup>](#), [Jouke T Annema<sup>1</sup>](#), [Paul Brinkman<sup>1</sup>](#), [Peter I Bonta<sup>2</sup>](#)

Affiliations expand

- PMID: 38447787
- DOI: [10.1016/j.rmed.2024.107583](https://doi.org/10.1016/j.rmed.2024.107583)

## Abstract

**Background:** Bronchial thermoplasty (BT) is a bronchoscopic treatment for severe asthma. Although multiple trials have demonstrated clinical improvement after BT, optimal patient selection remains a challenge and the mechanism of action is incompletely understood. The aim of this study was to examine whether exhaled breath analysis can contribute to discriminate between BT-responders and non-responders at baseline and to explore pathophysiological insights of BT.

**Methods:** Exhaled breath was collected from patients at baseline and six months post-BT. Patients were defined as responders or non-responders based on a half point increase in asthma quality of life questionnaire scores. Gas chromatography-mass spectrometry was used for volatile organic compounds (VOCs) detection and analyses. Analytical workflow consisted of: 1) detection of VOCs that differentiate between responders and non-responders and those that differ between baseline and six months post-BT, 2) identification of VOCs of interest and 3) explore correlations between clinical biomarkers and VOCs.

**Results:** Data was available from 14 patients. Nonanal, 2-ethylhexanol and 3-thujol showed a significant difference in intensity between responders and non-responders at baseline ( $p = 0.04$ ,  $p = 0.01$  and  $p = 0.03$ , respectively). After BT, no difference was found in

the compound intensity of these VOCs. A negative correlation was observed between nonanal and IgE and BALF eosinophils ( $r = -0.68$ ,  $p < 0.01$  and  $r = -0.61$ ,  $p = 0.02$  respectively) and 3-thujol with BALF neutrophils ( $r = -0.54$ ,  $p = 0.04$ ).

**Conclusions:** This explorative study identified discriminative VOCs in exhaled breath between BT responders and non-responders at baseline. Additionally, correlations were found between VOC's and inflammatory BALF cells. Once validated, these findings encourage research in breath analysis as a non-invasive easy to apply technique for identifying airway inflammatory profiles and eligibility for BT or immunotherapies in severe asthma.

**Keywords:** Asthma; Bronchial thermoplasty; Exhaled breath; Gas chromatography-mass spectrometry; Volatile organic compounds.

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## Conflict of interest statement

Declaration of competing interest PIB declares to have received financial support from the Netherlands LungFoundation (Grant number: 5.2.13.064JO), Stichting Astma Bestrijding (SAB): grant nr. 1018/041, The Netherlands Organization for Health Research and Development (ZonMw grant number: 90713477) and Boston Scientific Corporation during the conduct of this study. AHM reports grants from Health Holland, GSK and Boehringer Ingelheim outside the submitted work. PB reports grants from Amsterdam UMC, Vertex, Stichting Astma Bestrijding (SAB), Boehringer Ingelheim Grant, Eurostars, Horizon Europe Framework Programme (HORIZON) outside the submitted work. All other authors have no conflict of interest to disclose.

FULL TEXT LINKS



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J Asthma

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. 2024 Mar 6:1-19.

# ARE NIGHT-TIME RESPIRATORY SYMPTOMS ASSESSED BY ASTHMA CONTROL TEST AFFECTED BY COMORBIDITIES?

[Alida Benfante](#)<sup>1</sup>, [Alessandra Tomasello](#)<sup>1</sup>, [Chiara Caponetto](#)<sup>1</sup>, [Salvatore Battaglia](#)<sup>1</sup>, [Nicola Scichilone](#)<sup>1</sup>

Affiliations expand

- PMID: 38446620
- DOI: [10.1080/02770903.2024.2327036](https://doi.org/10.1080/02770903.2024.2327036)

## Abstract

**Objective:** Nocturnal symptoms are common in the asthmatic population, reflecting an exaggerated airway narrowing overnight due to several factors; it is questioned to what extent the awakenings documented in the clinical assessment of asthma control are due to the disease itself or to comorbidities. To answer this question, we aimed to evaluate to what proportion rhinitis, gastroesophageal reflux and the likelihood of being affected by OSAS were related to poor asthma control, by means of ACT evaluation.

**Methods:** Asthmatics attending the outpatient clinic were enrolled and administered the following questionnaires: ACT, Total 5 Symptom Score, GERD Impact Scale, Pittsburgh Sleep Quality Index and the Sleep Disorders Questionnaire.

**Results:** One-hundred consecutive patients (M/F: 42/58, mean age  $52 \pm 15$  years) were recruited. According to the ACT findings, 14 asthmatics resulted as fully controlled (FC, ACT equal to 25), 55 partially controlled (PC,  $25 < \text{ACT} > 19$ ) and 31 as uncontrolled (UC,  $\text{ACT} < 19$ ). GERD was not associated with the ACT score neither did rhinitic symptomatology. On the other hand, the PSQI scores appeared to significantly increase with the lack of symptom control: FC, 2.0 (1-4); PC, 3.5 (2-5); UC, 6.6 (4-8) ( $p = 0.002$ ). The SA-SDQ questionnaire results significantly increased with the loss of asthma control: FC, 11.0 (9-12); PC, 12.5 (10-14); UC, 15.1 (14-16) ( $p = 0.005$ ).

**Conclusions:** These results confirm and extend previous findings showing that there is a higher likelihood that underlying unknown sleep disturbances worsen asthma control,

suggesting that a more comprehensive assessment is necessary to clarify the cause of nocturnal symptoms in asthma.

**Keywords:** OSAS; asthma control; nocturnal symptoms; obesity; rhinitis.

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Ann Am Thorac Soc



. 2024 Mar 6.

doi: 10.1513/AnnalsATS.202312-1023RL. Online ahead of print.

# [Asthma and Sleep-disordered Breathing Overlap in School-aged Children](#)

[Seyni Gueye-Ndiaye](#)<sup>1,2,3</sup>, [Sigfus Gunnlaugsson](#)<sup>4</sup>, [Le Li](#)<sup>5</sup>, [Jonathan M Gaffin](#)<sup>6,7</sup>, [Ying Zhang](#)<sup>5</sup>, [Tamar Sofer](#)<sup>8</sup>, [Judith Owens](#)<sup>9,7</sup>, [Diane R Gold](#)<sup>10,11,7</sup>, [Gary Adamkiewicz](#)<sup>10</sup>, [Wanda Phipatanakul](#)<sup>12,7</sup>, [Susan Redline](#)<sup>13,14</sup>

Affiliations expand

- PMID: 38446416
- DOI: [10.1513/AnnalsATS.202312-1023RL](https://doi.org/10.1513/AnnalsATS.202312-1023RL)

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BMC Pulm Med

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. 2024 Mar 5;24(1):114.

doi: 10.1186/s12890-024-02920-2.

# [Proportions and risk factors of chronic obstructive pulmonary disease and preserved ratio impaired spirometry, and association with small airway disease, in the positive screening older population from China: a cross-sectional study](#)

[Le Sang](#)<sup>1</sup>, [Xia Gong](#)<sup>1</sup>, [Yunlei Huang](#)<sup>1</sup>, [Jian Sun](#)<sup>2</sup>

Affiliations [expand](#)

- PMID: 38443893
- PMCID: [PMC10916211](#)
- DOI: [10.1186/s12890-024-02920-2](#)

## Abstract

**Background:** Early diagnosing Chronic Obstructive Pulmonary Disease (COPD) is relatively difficult. Therefore, the concepts of preserved ratio impaired spirometry (PRISm) and small airway disease (SAD) were proposed to achieve early diagnosis for COPD. Besides, the occurrence of COPD is positively related to age. However, the relationship among COPD, PRISm, and SAD still requires clarification. Thus, we estimated the proportions and risk factors of COPD and PRISm in the positive screening participants, and searched the methods of early diagnosing COPD via the SAD indicators.

**Methods:** A total of 53,641 residents aged more than 60 years old from Shaoxing City, Zhejiang Province, China, completed a series of screening projects. And 2327 of positive screening participants ultimately finished bronchodilator tests. The data were statistically analyzed to figure out the proportions and risk factors of COPD and PRISm, and the efficacy of early diagnosing COPD by the SAD indicators.

**Results:** Totally 2229 positive screening participants were included, the proportion of PRISm was 6.3% (141/2229), and of COPD was 78.2% (1743/2229). Statistical analyses showed that COPD patients were more likely to be smokers, males, and older. And COPD patients had higher questionnaire scores, meaning that they were more prone to have family history of respiratory diseases and more severe respiratory symptoms. Additionally, COPD patients had lower maximal mid-expiratory flow (MMEF) pred, forced expiratory flow (FEF) 75pred, and FEF50pred. And we found that male sex and presence of respiratory symptoms might lead to COPD and PRISm. Also, the methods of early diagnosing COPD through the SAD indicators might be acceptable.

**Conclusion:** There is a close association between COPD and decreased small airway function (SAF) among the participants included. Age, smoking, male sex, worse SAF, and respiratory symptoms might cause the progressing from normal people to PRISm, then to COPD patients. Besides, the SAD indicators such as MMEFpred, FEF75pred, and FEF50pred were included in lung function tests and bronchodilator tests. Intriguingly, it was found that early diagnosing COPD via the SAD indicators might be feasible. In the future, early diagnosis for COPD requires further research.

**Keywords:** COPD; Early diagnosis; PRISm; Proportions; Risk factors; SAD.

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## Conflict of interest statement

The authors declare no competing interests.

- [22 references](#)

- [5 figures](#)

#### SUPPLEMENTARY INFO

MeSH terms, Substances, Supplementary concepts, Grants and funding [expand](#)

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BMJ

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. 2024 Mar 5:384:q563.

doi: 10.1136/bmj.q563.

# [Montelukast: Regulator reviewing asthma drug over concerns about mental health effects](#)

[Elisabeth Mahase](#)<sup>1</sup>

Affiliations [expand](#)

- PMID: 38443098
- DOI: [10.1136/bmj.q563](https://doi.org/10.1136/bmj.q563)

*No abstract available*

#### SUPPLEMENTARY INFO

MeSH terms, Substancesexpand

FULL TEXT LINKS



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BMJ



. 2024 Mar 5;384:q564.

doi: 10.1136/bmj.q564.

# [Asthma: Four in 10 patients do not receive timely follow-up after hospital admission, finds study](#)

[Gareth Iacobucci](#)<sup>1</sup>

Affiliations expand

- PMID: 38443068
- DOI: [10.1136/bmj.q564](https://doi.org/10.1136/bmj.q564)

*No abstract available*

SUPPLEMENTARY INFO

MeSH termsexpand

FULL TEXT LINKS

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Intern Emerg Med

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. 2024 Mar 5.

doi: 10.1007/s11739-024-03554-2. Online ahead of print.

# Associations of asthma control with hypertension, cardiovascular disease, and mortality in obese individuals

[Ping Lin](#)<sup>1</sup>, [Yuean Zhao](#)<sup>1</sup>, [Yujun Shi](#)<sup>2</sup>, [Zongan Liang](#)<sup>3</sup>

Affiliations expand

- PMID: 38441863
- DOI: [10.1007/s11739-024-03554-2](https://doi.org/10.1007/s11739-024-03554-2)

## Abstract

The objective of this study was to assess the associations of asthma control with hypertension, cardiovascular disease, and mortality in obese individuals. We used data from the National Health and Nutrition Examination Survey (NHANES), 2001-2018. Weighted logistic regression analyses and Cox proportional hazard models were performed to evaluate the influence of asthma control on hypertension, cardiovascular disease, and mortality. A total of 2744 obese participants were included. Of them, 937 participants had poorly controlled asthma, 873 had well-controlled asthma, and 934 did not have asthma. We found that poorly controlled asthma was associated with an increased risk of angina pectoris, congestive heart failure (CHF), stroke, and all-cause

mortality in obese participants, while well-controlled asthma was associated with an increased risk of CHF and all-cause mortality. Compared with patients with poorly controlled asthma, patients with well-controlled asthma were at low risk of angina pectoris (OR [odds ratio], 0.49; 95% CI [confidence interval], 0.29-0.81), heart attack (OR, 0.54; 95% CI 0.34-0.87), CHF (OR, 0.62; 95% CI 0.39-0.99), and stroke (OR, 0.45; 95% CI 0.27-0.73). The present study suggested that obese individuals with poorly controlled asthma were associated with increased risks of angina pectoris, CHF, stroke, and all-cause mortality. Well-controlled asthma had fewer negative health effects than poorly controlled asthma in obese individuals.

**Keywords:** Asthma; Cardiovascular disease; Mortality; NHANES.

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- [31 references](#)

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Curr Opin Pulm Med

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. 2024 Mar 5.

doi: 10.1097/MCP.0000000000001073. Online ahead of print.

## [Obesity-related asthma: new insights leading to a different approach](#)

[Adjan Witte](#)<sup>1</sup>, [Yasemin Türk](#)<sup>1,2</sup>, [Gert-Jan Braunstahl](#)<sup>1,3</sup>

Affiliations expand

- PMID: 38441436
- DOI: [10.1097/MCP.0000000000001073](https://doi.org/10.1097/MCP.0000000000001073)

## Abstract

**Purpose of review:** Obesity is a growing global health threat that significantly contributes to the burden of asthma by increasing the risk of developing asthma and exerting a distinct effect on lung function and inflammation. The treatment of obesity-related asthma is hindered by a poor response to standard asthma treatments, leading to worse asthma control. Weight loss strategies have a significant effect on asthma symptoms but are not feasible for a large proportion of patients, underscoring the need for a better understanding of the pathophysiology and the development of additional treatment options.

**Recent findings:** Recent literature focusing on pathophysiology particularly delved into nontype 2 inflammatory mechanisms, associations with the metabolic syndrome and small airway impairment. Additionally, several new treatment options are currently investigated, including biologics, weight reduction interventions, and novel antiobesity drugs.

**Summary:** Obesity-related asthma is a highly prevalent asthma phenotype for which weight loss strategies currently stand as the most specific treatment. Furthermore, novel pharmacological interventions aiming at metabolic processes are on the way.

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[Review](#)



# Fatal food anaphylaxis in adults and children

[Elio Novembre](#)<sup>1</sup>, [Mariannita Gelsomino](#)<sup>2</sup>, [Lucia Liotti](#)<sup>3</sup>, [Simona Barni](#)<sup>1</sup>, [Francesca Mori](#)<sup>1</sup>, [Mattia Giovannini](#)<sup>1,4</sup>, [Carla Mastroianni](#)<sup>5</sup>, [Luca Pecoraro](#)<sup>6</sup>, [Francesca Saretta](#)<sup>7</sup>, [Riccardo Castagnoli](#)<sup>8,9</sup>, [Stefania Arasi](#)<sup>10</sup>, [Lucia Caminiti](#)<sup>11</sup>, [Angela Klain](#)<sup>12</sup>, [Michele Miraglia Del Giudice](#)<sup>12</sup>

Affiliations expand

- PMID: 38439086
- PMCID: [PMC10913226](#)
- DOI: [10.1186/s13052-024-01608-x](#)

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## Abstract

Anaphylaxis is a life-threatening reaction characterized by the acute onset of symptoms involving different organ systems and requiring immediate medical intervention. The incidence of fatal food anaphylaxis is 0.03 to 0.3 million/people/year. Most fatal food-induced anaphylaxis occurs in the second and third decades of life. The identified risk factors include the delayed use of epinephrine, the presence of asthma, the use of recreational drugs (alcohol, nicotine, cannabis, etc.), and an upright position. In the United Kingdom (UK) and Canada, the reported leading causal foods are peanuts and tree nuts. In Italy, milk seems to be the most common cause of fatal anaphylaxis in children < 18 years. Fatal food anaphylaxis in Italian children and adolescents almost always occurs outside and is characterized by cardiorespiratory arrest; auto-injectable adrenaline intramuscular was available in few cases. Mortality from food anaphylaxis, especially in children, is a very rare event with stable incidence, but its risk deeply impacts the quality of life of patients with food allergy and their families. Prevention of fatal food anaphylaxis must involve patients

and their families, as well as the general public, public authorities, and patients' associations.

**Keywords:** Drug allergy; Epinephrine; Fatal anaphylaxis; Food allergy; Prevention.

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## Conflict of interest statement

The authors declare that they have no conflict of interests to disclose in relation to this paper.

- [53 references](#)

### SUPPLEMENTARY INFO

Publication types, MeSH terms, Substancesexpand

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Br J Gen Pract

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. 2024 Mar 4:BJGP.2023.0214.

doi: 10.3399/BJGP.2023.0214. Online ahead of print.

# [Post-hospitalisation asthma management in primary care: a retrospective cohort study](#)

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Affiliations expand

- PMID: 38438269
- DOI: [10.3399/BJGP.2023.0214](https://doi.org/10.3399/BJGP.2023.0214)

## Abstract

**Background:** Clinical guidelines recommend that patients admitted to hospital for asthma attacks are reviewed in primary care following hospital discharge.

**Aim:** To evaluate asthma management in primary care following a hospital admission for asthma and its associations with patient characteristics.

**Design and setting:** A retrospective cohort study using English primary care data from the Clinical Practice Research Datalink Aurum database and linked Hospital Episode Statistics Admitted Patient Care data.

**Method:** Patients with asthma aged  $\geq 5$  years who had at least one asthma-related hospital admission from 1 January 2017 to 31 December 2019 were included. The primary outcome was a composite of any of the following delivered in primary care within 28 days from hospital discharge: asthma review, asthma management plan, asthma medication prescriptions, demonstration of inhaler technique, or smoking cessation counselling. The association between patient characteristics and delivery of clinical care was assessed using logistic regression.

**Results:** The study included 17 457 patients. A total of 10 515 (60.2%) patients received the primary outcome within 28 days of hospital discharge. There were 2311 (13.2%) who received an asthma review, 1459 (8.4%) an asthma management plan, 9996 (57.3%) an asthma medication, 1500 (8.6%) a demonstration of inhaler technique, and 52 (1.2% of smokers) had smoking cessation counselling. Patients from Black ethnic minority groups received less of this care (27%- 54% lower odds, depending on age). However, short-acting bronchodilator prescriptions in the previous year were associated with an increased likelihood of the primary outcome.

**Conclusion:** A significant proportion of patients do not receive timely follow-up in primary care following asthma-related admissions to hospital, particularly among Black ethnic minority groups.

**Keywords:** asthma; cohort studies; ethnic and racial minorities; management; post-hospitalisation; primary health care.

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Review

Ital J Pediatr



. 2024 Mar 3;50(1):36.

doi: 10.1186/s13052-024-01595-z.

## [Imported allergens in Italy: an emerging issue](#)

[Luca Pecoraro](#)<sup>1</sup>, [Mattia Giovannini](#)<sup>2,3</sup>, [Francesca Mori](#)<sup>2</sup>, [Simona Barni](#)<sup>2</sup>, [Riccardo Castagnoli](#)<sup>4,5</sup>, [Stefania Arasi](#)<sup>6</sup>, [Carla Mastroianni](#)<sup>7</sup>, [Francesca Saretta](#)<sup>8</sup>, [Lucia Liotti](#)<sup>9</sup>, [Lucia Caminiti](#)<sup>10</sup>, [Angela Klain](#)<sup>11</sup>, [Mariannita Gelsomino](#)<sup>12</sup>, [Michele Miraglia Del Giudice](#)<sup>11</sup>, [Elio Novembre](#)<sup>3</sup>

Affiliations expand

- PMID: 38433225
- PMCID: [PMC10910788](#)
- DOI: [10.1186/s13052-024-01595-z](#)

**Free PMC article**

# Abstract

Imported allergens are involved in many allergic reactions, with unexpected and unusual implications. They can be involved in developing asthma, allergic rhinoconjunctivitis, Hymenoptera venom allergies and food allergies. Imported allergens can be implied in respiratory allergies attributable to commercial practices and accidental diffusion through air currents that have introduced non-native species in new geographical contexts. *Ambrosia artemisiifolia* L., a plant native to North America and currently in the western part of Lombardy, represents an example. Moreover, a variation in the pollen concentration in the Northwest Tuscany area and Trentino Alto-Adige was observed. *Cannabis sativa* is another imported allergen used frequently by adolescents. Regarding potential imported food allergens, there is no validated list. Imported food allergens derive from ethnic foods, referring to Mexican/Latin American, Chinese/Japanese, Southeast Asian, Arab/Middle Eastern and African cuisine. Four insect flours were recently introduced to the European and Italian markets (*Acheta domesticus*, *Alphitobius diaperinus*, *Tenebrio molitor* and *Locusta migratoria*). The association between the accidental introduction through commercial traffic, climate change, and the absence of natural enemies in the destination ecosystem is related to the introduction of a specific Hymenoptera, *Vespa velutina*, in Italy and Europe. External events attributable to human activities, such as climate change and the introduction of non-native plants, foods and Hymenoptera through trade, have contributed to the issue of imported allergens. Making the correct diagnosis and guiding the diagnostic and therapeutic path in this particular context represent the concerns of the pediatric allergist.

**Keywords:** *Ambrosia artemisiifolia*; Asian Wasp *Velutina*; *Cannabis sativa*; Ethnic food; Imported allergens.

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## Conflict of interest statement

The authors declare that the article was written in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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

SUPPLEMENTARY INFO

Publication types, MeSH terms, Substances, Grants and funding [expand](#)

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Ann Biomed Eng



. 2024 Mar 3.

doi: 10.1007/s10439-024-03475-3. Online ahead of print.

# [The Effect of Simulated Obstructive Apneas on Mechanical Characteristics of Lower Airways in Individuals with Asthma](#)

[Nasim Montazeri Ghahjaverestan](#)<sup>1,2</sup>, [Shaghayegh Chavoshian](#)<sup>1,2</sup>, [Xiaoshu Cao](#)<sup>1,2</sup>, [T Douglas Bradley](#)<sup>1,3,4</sup>, [Susan M Tarlo](#)<sup>4</sup>, [Matthew Stanbrook](#)<sup>5,6</sup>, [Kenneth R Chapman](#)<sup>3,7</sup>, [Azadeh Yadollahi](#)<sup>8,9,10</sup>

Affiliations expand

- PMID: 38433152
- DOI: [10.1007/s10439-024-03475-3](https://doi.org/10.1007/s10439-024-03475-3)

## Abstract

Increased negative intrathoracic pressure that occurs during pharyngeal obstruction can increase thoracic fluid volume that may contribute to lower airway narrowing in individuals with obstructive sleep apnea (OSA) and asthma. Our previous study showed that fluid accumulation in the thorax induced by simulated OSA can increase total respiratory resistance. However, the effect of fluid shift on lower airway narrowing has not been investigated. To examine the effect of fluid accumulation in the thorax on the resistance of the lower airway. Non-asthma participants and individuals with (un)controlled asthma were recruited and underwent a single-day experiment. A catheter with six pressure sensors was

inserted through the nose to continuously measure pressure at different sites of the airway, while a pneumotachograph was attached to a mouthpiece to record airflow. To simulate obstructive apneas, participants performed 25 Mueller maneuvers (MMs) while lying supine. Using the recordings of pressure sensor and airflow, total respiratory ( $R_T$ ), lower respiratory components ( $R_L$ ), and upper airway ( $R_{UA}$ ) resistances were calculated before and after MMs. Generalized estimation equation method was used to find the predictors of  $R_L$  among variables including age, sex, body mass index, and the effect of MMs and asthma. Eighteen participants were included. Performing MMs significantly increased  $R_T$  ( $2.23 \pm 2.08$  cmH<sub>2</sub>O/L/s,  $p = 0.003$ ) and  $R_L$  ( $1.52 \pm 2.00$  cmH<sub>2</sub>O/L/s,  $p = 0.023$ ) in participants with asthma, while only  $R_L$  was increased in non-asthma group ( $1.96 \pm 1.73$  cmH<sub>2</sub>O/L/s,  $p = 0.039$ ). We found the model with age, and the effect of MMs and asthma severity generated the highest correlation ( $R^2 = 0.69$ ,  $p < 0.001$ ). We provide evidence that fluid accumulation in the thorax caused by excessive intrathoracic pressure increases  $R_L$  in both non-asthma and asthma groups. The changes in  $R_L$  were related to age, having asthma and the effect of simulated OSA. This can explain the interrelationship between OSA and asthma.

**Keywords:** Asthma; Negative intrathoracic pressure; Obstructive sleep apnea; Thoracic fluid volume.

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- [35 references](#)

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Intern Med

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. 2024 Mar 4.

doi: 10.2169/internalmedicine.3353-23. Online ahead of print.

# Clinical Benefits of Targeting Treatable Traits in Asthma and Chronic Obstructive Pulmonary Disease

[Yuko Morishima](#)<sup>1</sup>, [Nobuyuki Hizawa](#)<sup>1</sup>

Affiliations expand

- PMID: 38432980
- DOI: [10.2169/internalmedicine.3353-23](https://doi.org/10.2169/internalmedicine.3353-23)

**Free article**

## Abstract

Asthma and chronic obstructive pulmonary disease (COPD) have long been debated regarding their similarities and differences in clinical presentation and pathology. There has also been a discussion about how common therapeutics should be used differently for each disease. Traditionally, a "one size fits all" stepwise treatment has been chosen based on the severity of each case after categorizing the diseases, such as asthma or COPD. However, recently, the need for a precise approach for the treatment of individual patients beyond the disease category has been emphasized, especially in severe cases. To achieve precise personalized therapy, it has become necessary to focus on the individual phenotypes and underlying causal molecular mechanisms (endotypes) and to identify key therapeutic targets, which are called treatable traits. This review discusses the evidence for the importance of identifying treatable traits and therapeutic strategies based on the broader perspective of chronic obstructive airway disease rather than on individual diseases such as asthma or COPD.

**Keywords:** Asthma; COPD; Endotype; Phenotype; Precision medicine; Treatable traits.

FULL TEXT LINKS



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Occup Environ Med



. 2024 Mar 8;81(3):129-135.

doi: 10.1136/oemed-2023-109100.

# Chronic occupational exposures to irritants and asthma in the CONSTANCES cohort

[Guillaume Sit](#)<sup>1</sup>, [Laurent Orsi](#)<sup>1</sup>, [Yuriko Iwatsubo](#)<sup>2</sup>, [Brigitte Dananché](#)<sup>1</sup>, [Florence Orsi](#)<sup>1</sup>, [Marcel Goldberg](#)<sup>3,4</sup>, [Benedicte Leynaert](#)<sup>1</sup>, [Rachel Nadif](#)<sup>1</sup>, [Céline Ribet](#)<sup>3,4</sup>, [Nicolas Roche](#)<sup>5</sup>, [Yves Roquelaure](#)<sup>6</sup>, [Raphäelle Varraso](#)<sup>1</sup>, [Marie Zins](#)<sup>3,4</sup>, [Corinne Pilorget](#)<sup>2</sup>, [Nicole Le Moual](#)<sup>1</sup>, [Oriane Dumas](#)<sup>7</sup>

Affiliations expand

- PMID: 38418224
- DOI: [10.1136/oemed-2023-109100](https://doi.org/10.1136/oemed-2023-109100)

## Abstract

**Objectives:** The impact of chronic occupational exposures to irritants on asthma remains discussed. We studied the associations between occupational exposures and asthma, with specific interest for chronic exposure to irritants, including disinfectants and cleaning products (DCPs) and solvents.

**Methods:** Cross-sectional analyses included 115 540 adults (55% women, mean age 43 years, 10% current asthma) working at inclusion in the French population-based CONSTANCES cohort (2012-2020). Current asthma was defined by ever asthma with symptoms, medication or asthma attacks (past 12 months), and the asthma symptom score by the sum of 5 respiratory symptoms (past 12 months). Both lifetime and current occupational exposures were assessed by the Occupational Asthma-specific Job-Exposure Matrix. Associations were evaluated by gender using logistic and binomial negative regressions adjusted for age, smoking status and body mass index.

**Results:** In women, associations were observed between current asthma and lifetime exposure to irritants (OR 1.05, 95% CI 1.00 to 1.11), DCPs (1.06, 95% CI 1.00 to 1.12) and solvents (1.06, 95% CI 0.98 to 1.14). In men, only lifetime exposure to DCPs (1.10, 95% CI 1.01 to 1.20) was associated with current asthma. Lifetime exposure to irritants was associated with higher asthma symptom score both in women (mean score ratio: 1.08, 95% CI 1.05 to 1.11) and men (1.11, 95% CI 1.07 to 1.15), especially for DCPs (women: 1.09, 95% CI 1.06 to 1.13, men: 1.21, 95% CI 1.15 to 1.27) and solvents (women 1.14, 95% CI 1.10 to 1.19, men: 1.10, 95% CI 1.05 to 1.15). For current exposures, no consistent associations were observed with current asthma and asthma symptom score.

**Conclusions:** Lifetime occupational exposures to irritants were associated with current asthma and higher asthma symptom score. These exposures should be carefully considered in asthma management.

**Keywords:** Asthma; Cross-Sectional Studies; Epidemiology; Occupational Health; Solvents.

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## Conflict of interest statement

Competing interests: None declared.

FULL TEXT LINKS



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

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NPJ Prim Care Respir Med

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. 2024 Mar 9;34(1):2.

doi: 10.1038/s41533-024-00360-3.

**Documentation of comorbidities,  
lifestyle factors, and asthma**

# management during primary care scheduled asthma contacts

[Jaana Takala](#)<sup>1,2,3</sup>, [Iida Vähätalo](#)<sup>4,5</sup>, [Leena E Tuomisto](#)<sup>4,5</sup>, [Onni Niemelä](#)<sup>6,7</sup>, [Pinja Ilmarinen](#)<sup>4,5</sup>, [Hannu Kankaanranta](#)<sup>4,5,8</sup>

Affiliations expand

- PMID: 38461294
- DOI: [10.1038/s41533-024-00360-3](https://doi.org/10.1038/s41533-024-00360-3)

## Abstract

Systematically assessing asthma during follow-up contacts is important to accomplish comprehensive treatment. No previous long-term studies exist on how comorbidities, lifestyle factors, and asthma management details are documented in scheduled asthma contacts in primary health care (PHC). We showed comorbidities and lifestyle factors were poorly documented in PHC in this real-life, 12-year, follow-up study. Documented information on rhinitis was found in 8.9% and BMI, overweight, or obesity in  $\leq 1.5\%$  of the 542 scheduled asthma contacts. Of the 145 patients with scheduled asthma contacts, 6.9% had undergone revision of their inhalation technique; 16.6% had documentation of their asthma action plan. Screening of respiratory symptoms was recorded in 79% but nasal symptoms in only 15.5% of contacts. Lifestyle guidance interventions were found in  $< 1\%$  of contacts. These results, based on documented patient data, indicate a need exists to further improve the assessment and guidance of asthma patients in PHC.

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- [71 references](#)

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. 2024 Mar 7:118627.

doi: 10.1016/j.envres.2024.118627. Online ahead of print.

# Greenness and its composition and configuration in association with allergic rhinitis in preschool children

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Affiliations expand

- PMID: 38460662
- DOI: [10.1016/j.envres.2024.118627](https://doi.org/10.1016/j.envres.2024.118627)

## Abstract

**Background:** Few studies focus on the associations of green space composition and configuration with children's allergic rhinitis (AR).

**Methods:** A multi-center population-based cross-sectional study was performed in 7 cities in mainland of China between 2019 and 2020, recruiting 36,867 preschool children. Information on the current AR symptoms and demographics were collected by questionnaire. Exposure to residential greenness was estimated by Normalized Difference Vegetation Index (NDVI, 1000 m buffer) around the residences. Greenness composition was estimated in 3 main categories: forest, grassland, shrubland. Configuration of each category and total greenness (a spatial resolution of 10 m × 10 m) was estimated by 6 landscape pattern metrics to quantify their area, shape complexity, aggregation, connectivity, and patch density. Exposure to daily ambient particulate matter (PM<sub>1</sub>, PM<sub>2.5</sub> and PM<sub>10</sub>, a spatial resolution of 1 km × 1 km) was estimated. Multilevel logistic regression models were applied to analyze the associations of greenness and its composition and configuration with AR, and mediation effects by PMs were examined by mediation analysis models.

**Results:** The prevalence of self-reported current AR in preschool children was 33.1%. Two indicators of forest, Aggregation Index of forest patches (Aforest) (odds ratio (OR):0.92, 95% Confidential Interval (CI): 0.88-0.97), and Patch Cohesion of forest (COHESIONforest) (OR: 0.93, 95% CI:0.89-0.98) showed significantly negative associations with AR symptoms. Mediation analyses found the associations were partially mediated by PMs. Age, exclusive breastfeed duration and season were the potential effect modifiers. The associations varied across seven cities.

**Conclusion:** Our findings suggest the inverse associations of the aggregation and connectivity of forest patches surrounding residence addresses with AR symptoms. Since the cross-sectional study only provides associations rather than causation, further studies are needed to confirm our results as well as the underlying mechanisms.

**Keywords:** Air pollution; Allergic rhinitis; Composition and configuration; Green space; Mediation analyses.

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## Conflict of interest statement

Declaration of competing interest The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:Zhuohui zhao reports financial support was provided by the Shanghai 3-year Public Health Action Plan [grant numbers GWVI-11.2-XD11]. Zhuohui zhao reports financial support was provided by Shanghai International Science and Technology Partnership Project (No. 21230780200). Zhuohui zhao reports financial support was provided by Shanghai B&R Joint Laboratory Project [grant numbers No.22230750300].

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[Review](#)

Environ Pollut



. 2024 Mar 6:123733.

doi: 10.1016/j.envpol.2024.123733. Online ahead of print.

# Relationship between flame retardants and respiratory health- A systematic review and meta-analysis of observational studies

[Sónia D Coelho](#)<sup>1</sup>, [Tiago Maricoto](#)<sup>2</sup>, [Luís Taborda-Barata](#)<sup>3</sup>, [Isabella Annesi-Maesano](#)<sup>4</sup>, [Tomohiko Isobe](#)<sup>5</sup>, [Ana C A Sousa](#)<sup>6</sup>

Affiliations expand

- PMID: 38458527
- DOI: [10.1016/j.envpol.2024.123733](https://doi.org/10.1016/j.envpol.2024.123733)

## Abstract

Chronic respiratory diseases are a leading cause of death and disability worldwide. Their prevalence is steadily increasing and the exposure to environmental contaminants, including Flame Retardants (FRs), is being considered as a possible risk factor. Despite the widespread and continuous exposure to FRs, the role of these contaminants in chronic respiratory diseases is yet not clear. This study aims to systematically review the association between the exposure to FRs and chronic respiratory diseases. Searches were performed using the Cochrane Library, MEDLINE, EMBASE, PUBMED, SCOPUS, ISI Web of Science (Science and Social Science Index), WHO Global Health Library and CINAHL EBSCO. Among the initial 353 articles found, only 9 fulfilled the inclusion criteria and were included. No statistically significant increase in the risk for chronic respiratory diseases with exposure to FRs was found and therefore there is not enough evidence to support that FRs pose a significantly higher risk for the development or worsening of respiratory diseases. However, a non-significant trend for potential hazard was found for asthma and rhinitis/rhinoconjunctivitis, particularly considering urinary organophosphate esters (OPEs) including TNBP, TPHP, TCEP and TCIPP congeners/compounds. Most studies showed a predominance of moderate risk of bias, therefore the global strength of the evidence is low. The limitations of the studies here reviewed, and the potential hazardous effects

herein identified highlights the need for good quality large-scale cohort studies in which biomarkers of exposure should be quantified in biological samples.

**Keywords:** Asthma; COPD; Flame retardants; Organophosphorus flame retardants; PBDEs; Respiratory diseases; Rhinitis; Rhinoconjunctivitis.

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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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J Asthma

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. 2024 Mar 6:1-19.

doi: 10.1080/02770903.2024.2327036. Online ahead of print.

# ARE NIGHT-TIME RESPIRATORY SYMPTOMS ASSESSED BY ASTHMA CONTROL TEST AFFECTED BY COMORBIDITIES?

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Affiliations expand

- PMID: 38446620
- DOI: [10.1080/02770903.2024.2327036](https://doi.org/10.1080/02770903.2024.2327036)

## Abstract

**Objective:** Nocturnal symptoms are common in the asthmatic population, reflecting an exaggerated airway narrowing overnight due to several factors; it is questioned to what extent the awakenings documented in the clinical assessment of asthma control are due to the disease itself or to comorbidities. To answer this question, we aimed to evaluate to what proportion rhinitis, gastroesophageal reflux and the likelihood of being affected by OSAS were related to poor asthma control, by means of ACT evaluation.

**Methods:** Asthmatics attending the outpatient clinic were enrolled and administered the following questionnaires: ACT, Total 5 Symptom Score, GERD Impact Scale, Pittsburgh Sleep Quality Index and the Sleep Disorders Questionnaire.

**Results:** One-hundred consecutive patients (M/F: 42/58, mean age  $52 \pm 15$  years) were recruited. According to the ACT findings, 14 asthmatics resulted as fully controlled (FC, ACT equal to 25), 55 partially controlled (PC,  $25 < \text{ACT} > 19$ ) and 31 as uncontrolled (UC, ACT  $< 19$ ). GERD was not associated with the ACT score neither did rhinitic symptomatology. On the other hand, the PSQI scores appeared to significantly increase with the lack of symptom control: FC, 2.0 (1-4); PC, 3.5 (2-5); UC, 6.6 (4-8) ( $p = 0.002$ ). The SA-SDQ questionnaire results significantly increased with the loss of asthma control: FC, 11.0 (9-12); PC, 12.5 (10-14); UC, 15.1 (14-16) ( $p = 0.005$ ).

**Conclusions:** These results confirm and extend previous findings showing that there is a higher likelihood that underlying unknown sleep disturbances worsen asthma control, suggesting that a more comprehensive assessment is necessary to clarify the cause of nocturnal symptoms in asthma.

**Keywords:** OSAS; asthma control; nocturnal symptoms; obesity; rhinitis.

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Review

Allergy

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. 2024 Mar 4.

doi: 10.1111/all.16092. Online ahead of print.

# [Skin, gut, and lung barrier: Physiological interface and target of intervention for preventing and treating allergic diseases](#)

[Roberto Berni Canani](#)<sup>1,2</sup>, [Marco Caminati](#)<sup>3</sup>, [Laura Carucci](#)<sup>1,2</sup>, [Ibon Eguiluz-Gracia](#)<sup>4,5</sup>

Affiliations expand

- PMID: 38439599
- DOI: [10.1111/all.16092](https://doi.org/10.1111/all.16092)

## Abstract

The epithelial barriers of the skin, gut, and respiratory tract are critical interfaces between the environment and the host, and they orchestrate both homeostatic and pathogenic immune responses. The mechanisms underlying epithelial barrier dysfunction in allergic and inflammatory conditions, such as atopic dermatitis, food allergy, eosinophilic oesophagitis, allergic rhinitis, chronic rhinosinusitis, and asthma, are complex and influenced by the exposome, microbiome, individual genetics, and epigenetics. Here, we review the role of the epithelial barriers of the skin, digestive tract, and airways in maintaining homeostasis, how they influence the occurrence and progression of allergic and inflammatory conditions, how current treatments target the epithelium to improve

symptoms of these disorders, and what the unmet needs are in the identification and treatment of epithelial disorders.

**Keywords:** IL-25; IL-33; TSLP; biologics; tight junctions.

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- [208 references](#)

SUPPLEMENTARY INFO

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Eur Arch Otorhinolaryngol

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. 2024 Mar 4.

doi: 10.1007/s00405-024-08576-2. Online ahead of print.

# [A nasal airflow oscillation device targeting nasal congestion: a preliminary report](#)

[Jim Bartley](#)<sup>1</sup>, [Robin Hankin](#)<sup>2</sup>

Affiliations [expand](#)

- PMID: 38436754

- DOI: [10.1007/s00405-024-08576-2](https://doi.org/10.1007/s00405-024-08576-2)

## Abstract

**Purpose:** Upper respiratory tract complaints are common in the general population. A safe, non-pharmacologic treatment would be an attractive option for many patients either as an alternative to existing therapies, or as a complementary therapy. This study assessed the acceptability, safety and possible efficacy of a nasal airflow oscillation device in a group of people suffering chronic nasal congestion.

**Methods:** Subjects with a known history of nasal congestion, but without fixed anatomical obstruction, participated in a prospective clinical study. Efficacy was assessed using peak nasal inspiratory flow (NPIF) and a 10-point visual analogue scale (VAS) administered before and after the oscillation device had been worn for twenty minutes.

**Results:** Twenty-one subjects (mean age 37 years; 43% female) were enrolled in the study. After treatment with the small nasal airflow oscillation device for twenty minutes, average NPIF increased significantly from 84.8 L/minute to 99.0 L/minute ( $p < 0.05$ ). There was a corresponding significant reduction in the VAS score for nasal congestion ( $p < 0.05$ ). Similar significant improvements were also seen for the immediate sensation of nasal drainage, sinonasal pressure and overall sinonasal symptoms ( $p < 0.05$ ). There was no change in the sense of smell ( $p = 0.37$ ). Subjects rated ease of use highly; average = 9.1 (Range 7-10).

**Conclusion:** Treatment of nasal congestion with the nasal airflow oscillation device was found to result in significant improvement in NPIF after twenty minutes of use. Initial patient-reported outcomes improved significantly, and the treatment was safe and highly acceptable.

**Trial registration:** Public clinical trial registration: Universal Trial Number (U1111-1259-0704). Australian New Zealand clinical trials registration: ACTRN12623001307695.

**Keywords:** Allergic rhinitis; Nitric oxide; Rhinitis; Sinusitis; Therapeutics; Vibration.

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- [20 references](#)

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## chronic cough

1

J Cyst Fibros

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. 2024 Mar 8:S1569-1993(24)00033-X.

doi: 10.1016/j.jcf.2024.03.005. Online ahead of print.

# Symptoms and quality of life in adults with cystic fibrosis: A cross-sectional analysis of the InSPIRe:CF trial

[Natalia Smirnova](#)<sup>1</sup>, [Jane Lowers](#)<sup>2</sup>, [Alexandre Cammarata-Mouchtouris](#)<sup>3</sup>, [Elisabeth P Dellon](#)<sup>4</sup>, [Anne Fitzpatrick](#)<sup>5</sup>, [Dio Kavalieratos](#)<sup>6</sup>

Affiliations expand

- PMID: 38461123
- DOI: [10.1016/j.jcf.2024.03.005](https://doi.org/10.1016/j.jcf.2024.03.005)

## Abstract

**Background:** People living with cystic fibrosis (CF) experience a high symptom burden. Due to the changing landscape of CF in the era of modulator therapy, we sought to examine the epidemiology of symptoms and their association with quality of life, to help CF clinicians improve symptom screening in clinic.

**Methods:** Using baseline data from a trial of specialist palliative care in adults with CF, we examined symptom prevalence, distress, and association with quality of life (measured with the Functional Assessment of Chronic Illness Therapy Total Score).

**Results:** Among 262 participants, median age was 33, and 78% were on modulator therapy. The most common symptoms were lack of energy (n = 194, 74%) and cough (190, 73%), whereas the most distressing were difficulty sleeping (range 0-4, mean 2.19, SD 1.15)

and pain (mean 2.04, SD 1.1). The symptoms that impaired quality of life the most were extrapulmonary: lack of energy (average quality of life score -29.8, 95% CI -36.8 to -22.8), feeling sad (-29.8, 95% CI -35.6 to -23.9) and worrying (-28.7, 95% CI -34.9 to -22.5).

**Conclusions:** The symptoms that were associated with the lowest quality of life were extrapulmonary. CF clinicians may consider screening for common symptoms that affect quality of life the most (lack of energy, worrying, difficulty sleeping, feeling irritable, pain, and shortness of breath). These symptoms may identify people living with CF who are most at risk for a decreased quality of life and may benefit from additional support.

**Keywords:** Palliative care; Quality of life; Symptom management.

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## Conflict of interest statement

Declaration of competing interest Dio Kavalieratos, Elisabeth Dellon, and Alexandre Cammarata-Mouchtouris have research funding from the Cystic Fibrosis Foundation (CFF). The remaining author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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. 2024 Mar 4;10(2):00923-2023.

doi: 10.1183/23120541.00923-2023. eCollection 2024 Mar.

# Qualitative assessment of sensations and triggers in chronic cough

[Barnaby Hirons](#)<sup>1,2</sup>, [Katherine Rhatigan](#)<sup>1,2</sup>, [Harini Kesavan](#)<sup>2</sup>, [Peter S P Cho](#)<sup>1,2</sup>, [Surinder S Biring](#)<sup>1,2</sup>

Affiliations expand

- PMID: 38444666
- PMCID: [PMC10910352](#)
- DOI: [10.1183/23120541.00923-2023](#)

**Free PMC article**

## Abstract

**Qualitative interviews show a wide range of cough triggers and sensations in patients with refractory chronic cough. Knowledge of these may help us manage this complicated and impactful condition.** <https://bit.ly/41k9Ot5>.

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## Conflict of interest statement

Conflict of interest: None declared.

- [21 references](#)

FULL TEXT LINKS



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

1  
Rev Mal Respir

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. 2024 Mar 8:S0761-8425(24)00136-0.

doi: 10.1016/j.rmr.2024.02.006. Online ahead of print.

# [Bronchial involvement in granulomatosis with polyangiitis]

[Article in French]

[R Batton](#)<sup>1</sup>, [P Le Guen](#)<sup>1</sup>, [A Cazes](#)<sup>2</sup>, [M-P Debray](#)<sup>3</sup>, [C Taillé](#)<sup>4</sup>

Affiliations expand

- PMID: 38461090
- DOI: [10.1016/j.rmr.2024.02.006](https://doi.org/10.1016/j.rmr.2024.02.006)

*No abstract available*

**Keywords:** ANCA; Airway disease; Anti-Neutrophil Cytoplasmic Antibody; Bronchiectasis; Dilatation des bronches; Granulomatose avec polyangéite; Granulomatosis with polyangiitis; Maladie bronchique.

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Am J Respir Crit Care Med

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. 2024 Mar 7.

doi: 10.1164/rccm.202402-0314ED. Online ahead of print.

# Bronchiectasis–COPD Overlap: A ROSE by Any Other Name?

[David C LaFon](#)<sup>1</sup>, [Mark T Dransfield](#)<sup>2</sup>

Affiliations expand

- PMID: 38452226
- DOI: [10.1164/rccm.202402-0314ED](https://doi.org/10.1164/rccm.202402-0314ED)

*No abstract available*

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BMC Pulm Med

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. 2024 Mar 6;24(1):118.

doi: 10.1186/s12890-024-02909-x.

## Hospital admission rates and related outcomes among adult Aboriginal australians with bronchiectasis – a ten-year retrospective cohort study

[Timothy Howarth](#)<sup>1,2,3,4</sup>, [Claire Gibbs](#)<sup>5</sup>, [Subash S Heraganahally](#)<sup>6,7,8</sup>, [Asanga Abeyaratne](#)<sup>9</sup>

Affiliations expand

- PMID: 38448862
- PMCID: [PMC10918854](#)
- DOI: [10.1186/s12890-024-02909-x](#)

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## Abstract

**Background:** This study assessed hospitalisation frequency and related clinical outcomes among adult Aboriginal Australians with bronchiectasis over a ten-year study period.

**Method:** This retrospective study included patients aged  $\geq 18$  years diagnosed with bronchiectasis between 2011 and 2020 in the Top End, Northern Territory of Australia. Hospital admissions restricted to respiratory conditions (International Classification of Diseases (ICD) code J) and relevant clinical parameters were assessed and compared between those with and without hospital admissions.

**Results:** Of the 459 patients diagnosed to have bronchiectasis, 398 (87%) recorded at least one respiratory related (ICD-J code) hospitalisation during the 10-year window. In comparison to patients with a recorded hospitalisation against those without-hospitalised patients were older (median 57 vs 53 years), predominantly females (54 vs 46%), had lower body mass index (23 vs 26 kg/m<sup>2</sup>) and had greater concurrent presence of chronic obstructive pulmonary disease (COPD) (88 vs 47%), including demonstrating lower spirometry values (forced vital capacity (FVC) and forced expiratory volume in 1 s (FEV<sub>1</sub>) (median FVC 49 vs 63% & FEV<sub>1</sub> 36 vs 55% respectively)). The total hospitalisations accounted for 3,123 admissions (median 4 per patient (IQR 2, 10)), at a median rate of 1 /year (IQR 0.5, 2.2) with a median length of 3 days (IQR 1, 6). Bronchiectasis along with COPD with lower respiratory tract infection (ICD code-J44) was the most common primary diagnosis code, accounting for 56% of presentations and 46% of days in hospital, which was also higher for patients using inhaled corticosteroids (81 vs 52%,  $p = 0.007$ ). A total of 114 (29%) patients were recorded to have had an ICU admission, with a higher rate, including longer hospital stay among those patients with bronchiectasis and respiratory failure related presentations (32/35, 91%). In multivariate regression model, concurrent presence of COPD or asthma alongside bronchiectasis was associated with shorter times between subsequent hospitalisations (-423 days,  $p = 0.007$  & -119 days,  $p = 0.02$  respectively).

**Conclusion:** Hospitalisation rates among adult Aboriginal Australians with bronchiectasis are high. Future interventions are required to explore avenues to reduce the overall morbidity associated with bronchiectasis among Aboriginal Australians.

**Keywords:** Asthma; BMI; COPD; Chest CT; ICD; ICS; ICU; Pneumonia; Respiratory failure; Spirometry.

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## Conflict of interest statement

Nil.

The authors declare no competing interests.

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

### SUPPLEMENTARY INFO

MeSH terms, Supplementary concepts, Grants and funding [expand](#)

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Ann Am Thorac Soc

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. 2024 Mar 6.

doi: 10.1513/AnnalsATS.202303-267OC. Online ahead of print.

# Ultrafine Particles and Hospital Visits for Chronic Lower Respiratory Diseases in New York State

Ian Trees<sup>1</sup>, Fangqun Yu<sup>2</sup>, Xinlei Deng<sup>3</sup>, Gan Luo<sup>2</sup>, Wangjian Zhang<sup>4</sup>, Shao Lin<sup>5</sup>

Affiliations expand

- PMID: 38445971
- DOI: [10.1513/AnnalsATS.202303-267OC](https://doi.org/10.1513/AnnalsATS.202303-267OC)

## Abstract

**Rationale:** Exposure to particulate matter is associated with various adverse health outcomes. Ultrafine particles are a unique public health challenge due to their size. However, limited studies have examined their impacts on human health, especially across seasons and demographics.

**Objectives:** To evaluate the effect of ultrafine particle exposure on the risk of visiting the emergency department for a chronic lower respiratory disease in New York State NYS, 2013-2018.

**Methods:** We used a case-crossover design and conditional logistic regression to estimate how ultrafine particle exposure led to chronic lower respiratory disease-related emergency department visits. GEOS-Chem-APM, a state-of-the-art chemical transport model with a size-resolved particle microphysics model, generated air pollution simulation data. We then matched ultrafine particle exposure estimates to geocoded health records for asthma, bronchiectasis, chronic bronchitis, emphysema, unspecified bronchitis, and other chronic airway obstructions in NYS from 2013-2018. In addition, we assessed interactions with age, ethnicity, race, sex, meteorological factors, and season.

**Measurements and main results:** Each interquartile range increase in ultrafine particle exposure led to a 0.37% increased risk of a respiratory-related emergency department visit on lag 0-0 (95% CI: 0.23-0.52%) and a 1.81% increase on lag 0-6 (95% CI: 1.58-2.03%). The highest risk was in the subtype emphysema (lag 0-5: 4.18%, 95% CI: 0.16-8.37%), followed by asthma (lag 0-6: 2.00%), chronic bronchitis (lag 0-6: 1.78%), other chronic airway obstructions (lag 0-6: 1.60%), and unspecified bronchitis (lag 0-6: 1.49%). We also found significant interactions between UFP health impacts and season (fall, 3.29%), temperature (<90th percentile, 2.27%), relative humidity (>90th percentile, 4.63%), age (children <18, 3.19%), and sex (men, 2.06%) on lag 0-6.

**Conclusion:** In this study, UFP exposure increased chronic lower respiratory disease-related emergency department visits across all seasons and demographics, yet these associations varied according to various factors, which requires more research.

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. 2024 Mar 4;10(2):01008-2023.

doi: 10.1183/23120541.01008-2023. eCollection 2024 Mar.

## [Sputum metagenomics of people with bronchiectasis](#)

[Ilona Rosenboom](#)<sup>1</sup>, [Ajith Thavarasa](#)<sup>1</sup>, [Hollian Richardson](#)<sup>2</sup>, [Merete B Long](#)<sup>2</sup>, [Lutz Wiehlmann](#)<sup>3</sup>, [Colin F Davenport](#)<sup>3</sup>, [Amelia Shoemark](#)<sup>2</sup>, [James D Chalmers](#)<sup>2</sup>, [Burkhard Tümmler](#)<sup>1,4</sup>

Affiliations expand

- PMID: 38444657
- PMCID: [PMC10910388](#)
- DOI: [10.1183/23120541.01008-2023](#)

**Free PMC article**

## Abstract

**Background:** The microbiota in the sputum of people with bronchiectasis has repeatedly been investigated in cohorts of different geographic origin, but so far has not been studied to the species level in comparison to control populations including healthy adults and smokers without lung disease.

**Methods:** The microbial metagenome from sputa of 101 European Bronchiectasis Registry (EMBARC) study participants was examined by using whole-genome shotgun sequencing.

**Results:** Our analysis of the metagenome of people with bronchiectasis revealed four clusters characterised by a predominance of *Haemophilus influenzae*, *Pseudomonas aeruginosa* or polymicrobial communities with varying compositions of nonpathogenic commensals and opportunistic pathogens. The metagenomes of the severely affected patients showed individual profiles characterised by low alpha diversity. Importantly, nearly 50% of patients with severe disease were grouped in a cluster characterised by commensals. Comparisons with the sputum metagenomes of healthy smokers and healthy nonsmokers revealed a gradient of depletion of taxa in bronchiectasis, most often *Neisseria subflava*, *Fusobacterium periodonticum* and *Eubacterium sulci*.

**Conclusion:** The gradient of depletion of commensal taxa found in healthy airways is a key feature of bronchiectasis associated with disease severity.

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## Conflict of interest statement

Conflict of interest: A. Shoemark reports consulting fees from Spirovant and Translate Bio. Conflict of interest: J.D. Chalmers reports grants or contracts from AstraZeneca, Boehringer Ingelheim, Insmad, Gilead Sciences, Novartis, Genentech, GlaxoSmithKline and Trudell; fees from AstraZeneca, Boehringer Ingelheim, Insmad, Gilead Sciences, Novartis, Genentech, GlaxoSmithKline, Trudell, Zambon, CSL Behring, Janssen and Antabio; and is an associate editor of this journal. Conflict of interest: B. Tümmler reports grants from Vertex Pharmaceuticals. Conflict of interest: All other authors have nothing to disclose.

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

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Pol J Microbiol



. 2024 Mar 4;73(1):59-68.

doi: 10.33073/pjm-2024-007. eCollection 2024 Mar 1.

# Association between Clinical Characteristics and Microbiota in Bronchiectasis Patients Based on Metagenomic Next-Generation Sequencing Technology

[Dongfeng Shen](#)<sup>1</sup>, [Xiaodong Lv](#)<sup>2</sup>, [Hui Zhang](#)<sup>2</sup>, [Chunyuan Fei](#)<sup>2</sup>, [Jing Feng](#)<sup>3</sup>, [Jiaqi Zhou](#)<sup>2</sup>, [Linfeng Cao](#)<sup>2</sup>, [Ying Ying](#)<sup>2</sup>, [Na Li](#)<sup>2</sup>, [Xiaolong Ma](#)<sup>2</sup>

Affiliations expand

- PMID: 38437464
- PMCID: [PMC10911701](#)
- DOI: [10.33073/pjm-2024-007](#)

**Free PMC article**

## Abstract

This study aimed to investigate the disparities between metagenomic next-generation sequencing (mNGS) and conventional culture results in patients with bronchiectasis. Additionally, we sought to investigate the correlation between the clinical characteristics of patients and their microbiome profiles. The overarching goal was to enhance the effective management and treatment of bronchiectasis patients, providing a theoretical foundation for healthcare professionals. A retrospective survey was conducted on 67 bronchiectasis

patients admitted to The First Hospital of Jiaying from October 2019 to March 2023. Clinical baseline information, inflammatory indicators, and pathogen detection reports, including mNGS, conventional blood culture, bronchoalveolar lavage fluid (BALF) culture, and sputum culture results, were collected. By comparing the results of mNGS and conventional culture, the differences in pathogen detection rate and pathogen types were explored, and the diagnostic performance of mNGS compared to conventional culture was evaluated. Based on the various pathogens detected by mNGS, the association between clinical characteristics of bronchiectasis patients and mNGS microbiota results was analyzed. The number and types of pathogens detected by mNGS were significantly larger than those detected by conventional culture. The diagnostic efficacy of mNGS was significantly superior to conventional culture for all types of pathogens, particularly in viral detection ( $p < 0.01$ ). Regarding pathogen detection rate, the bacteria with the highest detection rate were *Pseudomonas aeruginosa* (17/58) and *Haemophilus influenzae* (11/58); the fungus with the highest detection rate was *Aspergillus fumigatus* (10/21), and the virus with the highest detection rate was human herpes virus 4 (4/11). Differences were observed between the positive and negative groups for *P. aeruginosa* in terms of common scoring systems for bronchiectasis and whether the main symptom of bronchiectasis manifested as thick sputum ( $p < 0.05$ ). Significant distinctions were also noted between the positive and negative groups for *A. fumigatus* regarding Reiff score, neutrophil percentage, bronchiectasis etiology, and alterations in treatment plans following mNGS results reporting ( $p < 0.05$ ). Notably, 70% of patients with positive *A. fumigatus* infection opted to change their treatment plans. The correlation study between clinical characteristics of bronchiectasis patients and mNGS microbiological results revealed that bacteria, such as *P. aeruginosa*, and fungi, such as *A. fumigatus*, were associated with specific clinical features of patients. This underscored the significance of mNGS in guiding personalized treatment approaches. mNGS could identify multiple pathogens in different types of bronchiectasis samples and was a rapid and effective diagnostic tool for pathogen identification. Its use was recommended for diagnosing the causes of infections in bronchiectasis patients.

**Keywords:** bronchiectasis; infection; mNGS technology; microbiological culture.

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## Conflict of interest statement

### Conflict of interest

The authors do not report any financial or personal connections with other persons or organizations, which might negatively affect the contents of this publication and/or claim authorship rights to this publication.

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. 2024 Mar 3;40(3):505-515.

doi: 10.1080/09593985.2022.2126741. Epub 2022 Sep 20.

# [Patient perspectives of airway clearance techniques in bronchiectasis](#)

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- PMID: 36124537
- DOI: [10.1080/09593985.2022.2126741](https://doi.org/10.1080/09593985.2022.2126741)

## Abstract

**Introduction:** While airway clearance techniques (ACTs) are recommended for individuals with bronchiectasis, data suggests the use of and adherence to ACTs is poor.

**Objective:** This study aimed to identify patient perceptions regarding ACTs, the barriers and facilitators to ACTs, and factors affecting adherence.

**Methods:** A multi-center qualitative study using in-depth semi-structured interviews of individuals with bronchiectasis was undertaken. All interviews were audio recorded and

transcribed verbatim. Data was analyzed using the thematic framework approach described by Braun and Clark. NVIVO™ 12 software assisted with coding and thematic analysis of the interview transcripts. Data saturation was achieved when no new common themes were identified. Findings were summarized into major conceptual themes. Participant demographic data was also obtained.

**Results:** Twenty-four participants participated in semi-structured interviews. The main facilitators to using ACTs included a perceived health and quality of life benefit, a tailored approach to ACTs and the use of self-management strategies. Main barriers included lack of time and motivation, lack of access to resources, and a lack of perceived health benefit. A number of factors were identified by participants that may help promote adherence including combining and trialing different ACTs, receiving regular ACT reviews and education from physiotherapists, and having good social support.

**Conclusion:** To assist the personalized prescription of ACTs, these facilitators and barriers should be considered by clinicians to help promote adherence and improve patient outcomes.

**Keywords:** Airway clearance techniques; adherence; barriers; facilitators; patient perspectives.

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