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

1

Semin Respir Crit Care Med

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. 2024 Jul 19.

doi: 10.1055/s-0044-1787560. Online ahead of print.

[Lung Transplant for Chronic Obstructive Pulmonary Disease](#)

[Kyle Swartz](#)<sup>1</sup>, [Ali Mansour](#)<sup>2,3</sup>, [Sammar Alsunaid](#)<sup>2,3</sup>

Affiliations expand

- PMID: 39029509
- DOI: [10.1055/s-0044-1787560](#)

Abstract

Chronic obstructive pulmonary disease (COPD) carries a high burden of morbidity and mortality to patient and a high cost to health care systems. Lung transplantation is a last resort available for end-stage COPD patients interested in pursuing it and meeting the strict transplant requirements. It requires commitment from patients and their loved ones to support them through this tough process. This review will cover history of transplant, indications, candidate selection, evaluation testing, transplant listing, type of transplant (single versus bilateral), posttransplant complications, immunosuppression, and rejection. It is tailored to the COPD patient

when applicable; however, many aspects of lung transplantation are shared amongst all lung diseases eligible for transplant.

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Conflict of interest statement

None declared.

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Medicine (Baltimore)

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. 2024 Jul 19;103(29):e38998.

doi: 10.1097/MD.00000000000038998.

[Examining the effectiveness of artificial intelligence applications in asthma and COPD outpatient support in terms of patient health and public cost: SWOT analysis](#)

[Seha Akduman](#)<sup>1</sup>, [Kadir Yilmaz](#)<sup>2</sup>

Affiliations expand

- PMID: 39029048
- DOI: [10.1097/MD.00000000000038998](#)

Abstract

This research aimed to examine the effectiveness of artificial intelligence applications in asthma and chronic obstructive pulmonary disease (COPD) outpatient treatment support in terms of patient health and public costs. The data obtained in the research using semiotic analysis, content analysis and trend analysis methods were analyzed with strengths, weakness, opportunities, threats (SWOT) analysis. In this context, 18 studies related to asthma, COPD and artificial intelligence were evaluated. The strengths of artificial intelligence applications in asthma and COPD outpatient treatment stand out as early diagnosis, access to

more patients and reduced costs. The points that stand out among the weaknesses are the acceptance and use of technology and vulnerabilities related to artificial intelligence. Opportunities arise in developing differential diagnoses of asthma and COPD and in examining prognoses for the diseases more effectively. Malicious use, commercial data leaks and data security issues stand out among the threats. Although artificial intelligence applications provide great convenience in the outpatient treatment process for asthma and COPD diseases, precautions must be taken on a global scale and with the participation of international organizations against weaknesses and threats. In addition, there is an urgent need for accreditation for the practices to be carried out in this regard.

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#### Conflict of interest statement

The authors have no conflicts of interest to disclose.

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[Review](#)

[Pulmonology](#)

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. 2024 Jul 18:S2531-0437(24)00095-3.

doi: 10.1016/j.pulmoe.2024.06.002. Online ahead of print.

[High altitudes and partial pressure of arterial oxygen in patients with chronic obstructive pulmonary disease - A systematic review and meta-analysis](#)

[A Sevik<sup>1</sup>, T Gaisl<sup>2</sup>, A Forrer<sup>1</sup>, L Graf<sup>1</sup>, S Ulrich<sup>3</sup>, K E Bloch<sup>3</sup>, M Lichtblau<sup>3</sup>, M Furian<sup>4</sup>](#)

## Affiliations expand

- PMID: 39030093
- DOI: [10.1016/j.pulmoe.2024.06.002](https://doi.org/10.1016/j.pulmoe.2024.06.002)

## Abstract

**Importance:** Prior study in healthy subjects has shown a reduction of partial pressure of arterial oxygen (PaO<sub>2</sub>) by -1.60 kPa/kilometre of altitude gain. However, the association of altitude-related change in PaO<sub>2</sub> and altitude-related adverse health effects (ARAHE) in patients with chronic obstructive pulmonary disease (COPD) remain unknown.

**Objective:** To provide an effect size estimate for the decline in PaO<sub>2</sub> with each kilometre of altitude gain and to identify ARAHE in relation to altitude in patients with COPD. [www.crd.york.ac.uk/prospero](http://www.crd.york.ac.uk/prospero): CRD42020217938.

**Data sources:** A systematic search of PubMed and Embase was performed from inception to May 30, 2023.

**Study selection:** Peer-reviewed and prospective studies in patients with COPD staying at altitudes >1500 m providing arterial blood gases within the first 3 days at the target altitude.

**Data extraction and synthesis:** Aggregate data (AD) on study characteristics were extracted, and individual patient data (IPD) were requested. Estimates were pooled using random-effects meta-analysis.

**Main outcome and measures:** Relative risk estimates and 95 % confidence intervals for the association between PaO<sub>2</sub> and altitude in patients with COPD.

**Results:** Thirteen studies were included in the AD analysis, of which 6 studies (222 patients, 45.2 % female) provided IPD, thus were included in the quantitative analysis. The estimated effect size of PaO<sub>2</sub> was -0.84 kPa [95 %CI, -0.92 to -0.76] per 1000 m of altitude gain (I<sup>2</sup>=65.0 %, P < 0.001). In multivariable regression analysis, COPD severity, baseline PaO<sub>2</sub>, age and time spent at altitude were predictors for PaO<sub>2</sub> at altitude. Overall, 37.8 % of COPD patients experienced an ARAHE, whereas older age, female sex, COPD severity, baseline PaO<sub>2</sub>, and target altitude were predictors for the occurrence of ARAHE (area under ROC curve: 0.9275, P < 0.001).

**Conclusions and relevance:** This meta-analysis, providing altitude-related decrease in PaO<sub>2</sub> and risk of ARAHE in patients with COPD ascending to altitudes >1500 m, revealed a lower altitude-related decrease in PaO<sub>2</sub> in COPD patients compared with healthy. However, these findings might improve patient care and facilitate decisions about initiating preventive measures against hypoxaemia and ARAHE in patients with COPD planning an altitude sojourn or intercontinental flight, i.e. supplemental oxygen or acetazolamide.

**Keywords:** Arterial blood gas; COPD; High altitude medicine.

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## Conflict of interest statement

**Conflicts of interest** The authors declare no conflict of interest concerning this work.

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## Heart Lung

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. 2024 Jul 18:68:191-194.

doi: 10.1016/j.hrtlng.2024.07.003. Online ahead of print.

[The role of Sodium-Glucose Transporter-2 Inhibitors \(SGLT-2i\) in preventing chronic obstructive disease exacerbation in patients with diabetes and COPD: An electronic health database analysis](#)

[Sushan Gupta](#)<sup>1</sup>, [Avani Mohta](#)<sup>1</sup>, [Alexa Lauinger](#)<sup>2</sup>, [Danish Thameem](#)<sup>3</sup>

## Affiliations expand

- PMID: 39029439
- DOI: [10.1016/j.hrtlng.2024.07.003](#)

## Abstract

**Background:** Sodium Glucose Transporter 2 inhibitor (SGLT-2i) medications reduce inflammation, improve glycemic control, and impart weight loss, all of which may play a role in chronic obstructive pulmonary disease (COPD) pathophysiology.

**Objectives:** The primary objective of our study was to explore the incidence of COPD exacerbation in patients with diabetes and COPD on SGLT-2i medications.

**The secondary objective was to assess the impact of SGLT-2i medications on COPD exacerbations needing hospitalization, ICU admission, and mechanical ventilation.**

**Methods:** This was a retrospective cohort analysis of COPD patients with diabetes enrolled in the COPD registry at a Mid-west Tertiary care teaching hospital from January 1, 2022, to December 31, 2022. We used Slicer-Dicer, a self-service cohort exploration tool embedded in EPIC for data extraction.

**Results:** We had 31,411 patients registered with the COPD registry during the study period. Of these, 18,713 had diabetes, and 1295 patients were on SGLT-2i medication. The incidence of COPD exacerbation, including severe COPD exacerbation needing hospitalization, was significantly lower in the SGLT-2i medication group (3.16% vs 18.3%,  $p < 0.05$ ; 1.2% vs 5.04%,  $p < 0.05$ ). Also, there was a non-significant trend suggesting that the incidence of COPD exacerbation needing intensive care unit admission and intubation was lower in the SGLT-2i medication group (0.07% vs 3.4%; 0 vs 0.04%). SGLT-2i medication use was associated with reduced incidence of COPD exacerbation irrespective of underlying control of diabetes.

**Conclusions:** Our study suggests possible role of SGLT-2i in preventing COPD exacerbation. Randomized trials are needed in the future to confirm or refute these findings.

**Keywords:** COPD exacerbation; Chronic obstructive pulmonary disease; Obstructive airway disease; SGLT-2i; Sodium-glucose transporter-2 inhibitors.

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**Conflict of interest statement**

**Declaration of competing interest** The authors have no conflict of interest.

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**Randomized Controlled Trial**

**Crit Care**

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. 2024 Jul 18;28(1):250.

doi: 10.1186/s13054-024-05040-9.

**High flow nasal cannula oxygen therapy versus non-invasive ventilation for acute exacerbations of chronic obstructive pulmonary disease with acute-moderate hypercapnic respiratory failure: a randomized controlled non-inferiority trial**

**Dingyu Tan #<sup>1</sup>, Bingxia Wang #<sup>1</sup>, Peng Cao <sup>1</sup>, Yunyun Wang <sup>2</sup>, Jiayan Sun <sup>3</sup>, Ping Geng <sup>1</sup>, Joseph Harold Walline <sup>4</sup>, Yachao Wang <sup>1</sup>, Chenlong Wang <sup>1</sup>**

**Affiliations expand**

- PMID: 39026242
- DOI: [10.1186/s13054-024-05040-9](https://doi.org/10.1186/s13054-024-05040-9)

**Abstract**

**Background:** Although cumulative studies have demonstrated a beneficial effect of high-flow nasal cannula oxygen (HFNC) in acute hypercapnic respiratory failure, randomized trials to compare HFNC with non-invasive ventilation (NIV) as initial treatment in acute exacerbations of chronic obstructive pulmonary disease (AECOPD) patients with acute-moderate hypercapnic respiratory failure are limited. The aim of this randomized, open label, non-inferiority trial was to compare treatment failure rates between HFNC and NIV in such patients.

**Methods:** Patients diagnosed with AECOPD with a baseline arterial blood gas pH between 7.25 and 7.35 and PaCO<sub>2</sub> ≥ 50 mmHg admitted to two intensive care units (ICUs) at a large tertiary academic teaching hospital between March 2018 and December 2022 were randomly assigned to HFNC or NIV. The primary endpoint was the rate of treatment failure, defined as endotracheal intubation or a switch to the other study treatment modality. Secondary endpoints were rates of intubation or treatment change, blood gas values, vital signs at one, 12, and 48 h, 28-day mortality, as well as ICU and hospital lengths of stay.

**Results:** 225 total patients (113 in the HFNC group and 112 in the NIV group) were included in the intention-to-treat analysis. The failure rate of the HFNC group was 25.7%, while the NIV group was 14.3%. The failure rate risk difference between the two groups was 11.38% (95% CI 0.25-21.20, P = 0.033), which was higher than the non-inferiority cut-off of 9%. In the per-protocol analysis, treatment failure occurred in 28 of 110 patients (25.5%) in the HFNC group and 15 of 109 patients (13.8%) in the NIV group (risk difference, 11.69%; 95% CI 0.48-22.60). The intubation rate in the HFNC group was higher than in the NIV group (14.2% vs 5.4%, P = 0.026). The treatment switch rate, ICU and hospital length of stay or 28-day mortality in the HFNC group were not statistically different from the NIV group (all P > 0.05).

**Conclusion:** HFNC was not shown to be non-inferior to NIV and resulted in a higher incidence of treatment failure than NIV when used as the initial respiratory support for AECOPD patients with acute-moderate hypercapnic respiratory failure.

**Trial registration:** [chictr.org](https://www.chictr.org) (ChiCTR1800014553). Registered 21 January 2018, <http://www.chictr.org.cn>.

**Keywords:** Chronic obstructive pulmonary diseases; High-flow nasal cannula oxygen therapy; Non-invasive ventilation; Randomized controlled trial; Respiratory failure.

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- [31 references](#)

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**Review**

**NPJ Prim Care Respir Med**

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. 2024 Jul 18;34(1):21.

doi: [10.1038/s41533-024-00381-y](https://doi.org/10.1038/s41533-024-00381-y).

[Change is in the air: key questions on the 'Treatable Traits' model for chronic airway diseases in primary care](#)

[Alvar Agusti](#)<sup>1 2 3 4</sup>, [Peter G Gibson](#)<sup>5</sup>, [Liam G Heaney](#)<sup>6</sup>, [Mike Thomas](#)<sup>7</sup>

**Affiliations expand**

- PMID: [39025870](#)
- PMCID: [PMC11258123](#)
- DOI: [10.1038/s41533-024-00381-y](https://doi.org/10.1038/s41533-024-00381-y)

## Abstract

Despite great advancements in the treatment of chronic airway diseases, improvements in morbidity and mortality have stalled in recent years. Asthma and chronic obstructive pulmonary disease are complex and heterogeneous diseases that require tailored management based on individual patient characteristics and needs. The Treatable Traits (TTs) approach aims to personalise and improve patient care through the identification and targeting of clinically relevant and modifiable pulmonary, extra-pulmonary and behavioural traits. In this article, we outline the rationale for TTs-based management and provide practical guidance for its application in primary care. To aid implementation, seven potential 'prime' traits are proposed: airflow obstruction, eosinophilic inflammation, adherence, inhaler technique, smoking, low body mass index/obesity and anxiety and depression-selected for their prevalence, recognisability and feasibility of use. Some of the key questions among healthcare professionals, that may be roadblocks to widespread application of a TTs model of care, are also addressed.

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## Conflict of interest statement

AA has research grants from AstraZeneca, GSK and Menarini; is a lector for AstraZeneca, Chiesi, Cipla, GSK, Menarini, Sanofi and Zambon; and is a member of scientific boards for AstraZeneca, Chiesi, GSK, Menarini and Sanofi. PGG has research grants from AstraZeneca and GSK; consulting lecturing and advisory board honoraria from AstraZeneca, Chiesi, GSK, Novartis and Sanofi; and is a respiratory physician at John Hunter Hospital, New South Wales, Australia. LGH has research grants from Aerocrine, Amgen, AstraZeneca, Genentech (Roche), GSK, MedImmune, Novartis and Vitalograph; consulting lecturing and advisory board honoraria from AstraZeneca, Boehringer Ingelheim, Chiesi, Circassia, Evelo Biosciences, GSK, Napp Pharmaceuticals, Novartis, Roche, Teva and Theravance; and is a clinical professor a Queens University and Belfast City Hospital, Belfast, UK. MT has consulting lecturing honoraria from GSK and is an Emeritus Professor of Primary Care Research at the University of Southampton, UK. All authors have no non-financial competing interests.

- [70 references](#)

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Semin Respir Crit Care Med

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. 2024 Jul 18.

doi: 10.1055/s-0044-1787876. Online ahead of print.

## Bronchoscopic Lung Volume Reduction: A Review

Shreya Podder<sup>1</sup>, Marium Khan<sup>1</sup>, Zane Sink<sup>2</sup>, Steven Verga<sup>1,3</sup>, Jonathan S Kurman<sup>1,3</sup>, Elizabeth Malsin<sup>1,3</sup>

Affiliations expand

- PMID: 39025124
- DOI: [10.1055/s-0044-1787876](https://doi.org/10.1055/s-0044-1787876)

## Abstract

Bronchoscopic lung volume reduction (BLVR) is an established treatment modality for the management of advanced chronic obstructive pulmonary disease complicated by severe emphysema and hyperinflation refractory to other therapies. BLVR aims to reduce hyperinflation and residual volume, thereby improving pulmonary function, symptom control, and quality of life. Multiple distinct devices and technologies, including endobronchial coils, thermal vapor ablation, bio-lung volume reduction, and airway bypass stenting, have been developed to achieve lung volume reduction with varying degrees of accessibility and evidence. The most promising BLVR treatment modality to date has been the placement of one-way endobronchial valves (EBVs), with more than 25,000 cases performed worldwide. Identifying symptomatic patients who would benefit from BLVR is challenging and can be time and resource intensive, and candidacy may be limited by physiologic parameters. Additional new technologies may be able to improve the identification and evaluation of candidates as well as increase the portion of evaluated patients who ultimately qualify for BLVR. In this review, we aim to provide historical context to BLVR, summarize the available evidence regarding its use, discuss potential complications, and provide readers with a clear guide to patient selection and referral for BLVR, with a focus on EBV placement. In addition, we will highlight potential future directions for the field.

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Conflict of interest statement

None declared.

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Observational Study

JMIR Mhealth Uhealth

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. 2024 Jul 18:12:e56226.

doi: 10.2196/56226.

[Continuous Monitoring of Heart Rate Variability and Respiration for the Remote Diagnosis of Chronic Obstructive Pulmonary Disease: Prospective Observational Study](#)

[Xiaolan Chen](#)<sup>#1 2</sup>, [Han Zhang](#)<sup>#2</sup>, [Zhiwen Li](#)<sup>#3</sup>, [Shuang Liu](#)<sup>4</sup>, [Yuqi Zhou](#)<sup>4</sup>

Affiliations expand

- PMID: 39024559
- DOI: [10.2196/56226](#)

Free article

Abstract

**Background:** Conventional daytime monitoring in a single day may be influenced by factors such as motion artifacts and emotions, and continuous monitoring of nighttime heart rate variability (HRV) and respiration to assist in chronic obstructive pulmonary disease (COPD) diagnosis has not been reported yet.

**Objective:** The aim of this study was to explore and compare the effects of continuously monitored HRV, heart rate (HR), and respiration during night sleep on the remote diagnosis of COPD.

**Methods:** We recruited patients with different severities of COPD and healthy controls between January 2021 and November 2022. Vital signs such as HRV, HR, and respiration were recorded using noncontact bed sensors from 10 PM to 8 AM of the following day, and the recordings of each patient lasted for at least 30 days. We obtained statistical means of HRV, HR, and respiration over time periods of 7, 14,

and 30 days by continuous monitoring. Additionally, the effects that the statistical means of HRV, HR, and respiration had on COPD diagnosis were evaluated at different times of recordings.

**Results:** In this study, 146 individuals were enrolled: 37 patients with COPD in the case group and 109 participants in the control group. The median number of continuous night-sleep monitoring days per person was 56.5 (IQR 32.0-113.0) days. Using the features regarding the statistical means of HRV, HR, and respiration over 1, 7, 14, and 30 days, binary logistic regression classification of COPD yielded an accuracy, Youden index, and area under the receiver operating characteristic curve of 0.958, 0.904, and 0.989, respectively. The classification performance for COPD diagnosis was directionally proportional to the monitoring duration of vital signs at night. The importance of the features for diagnosis was determined by the statistical means of respiration, HRV, and HR, which followed the order of respiration > HRV > HR. Specifically, the statistical means of the duration of respiration rate faster than 21 times/min (RRF), high frequency band power of 0.15-0.40 Hz (HF), and respiration rate (RR) were identified as the top 3 most significant features for classification, corresponding to cutoff values of 0.1 minute, 1316.3 nU, and 16.3 times/min, respectively.

**Conclusions:** Continuous monitoring of nocturnal vital signs has significant potential for the remote diagnosis of COPD. As the duration of night-sleep monitoring increased from 1 to 30 days, the statistical means of HRV, HR, and respiration showed a better reflection of an individual's health condition compared to monitoring the vital signs in a single day or night, and better was the classification performance for COPD diagnosis. Further, the statistical means of RRF, HF, and RR are crucial features for diagnosing COPD, demonstrating the importance of monitoring HRV and respiration during night sleep.

**Keywords:** COPD diagnosis; ROC curve; chronic obstructive pulmonary disease; continuous monitoring; heart rate; heart rate variability; noncontact bed sensors; prospective study; respiratory rate.

©Xiaolan Chen, Han Zhang, Zhiwen Li, Shuang Liu, Yuqi Zhou. Originally published in JMIR mHealth and uHealth (<https://mhealth.jmir.org>), 18.07.2024.

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Multicenter Study

## Trials

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. 2024 Jul 17;25(1):487.

doi: [10.1186/s13063-024-08251-1](https://doi.org/10.1186/s13063-024-08251-1).

**Reflections on the challenges of conducting an international multicentre randomized controlled trial of balance training in addition to pulmonary rehabilitation and its impact on fall incidence in people with COPD**

**Anastasia N L Newman**<sup>1</sup>, **Marla K Beauchamp**<sup>2 3</sup>, **Cindy Ellerton**<sup>3</sup>, **Roger Goldstein**<sup>3 4 5 6</sup>, **Jennifer A Alison**<sup>7 8</sup>, **Gail Dechman**<sup>9</sup>, **Kimberley J Haines**<sup>10</sup>, **Samantha L Harrison**<sup>11</sup>, **Anne E Holland**<sup>12 13 14</sup>, **Annemarie L Lee**<sup>14 15</sup>, **Alda Marques**<sup>16</sup>, **Lissa Spencer**<sup>7 17</sup>, **Michael K Stickland**<sup>18 19</sup>, **Elizabeth H Skinner**<sup>10 15</sup>, **Pat G Camp**<sup>20 21</sup>, **Michelle E Kho**<sup>2 22</sup>, **Dina Brooks**<sup>2 3 4 5 6</sup>

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- PMID: [39020430](https://pubmed.ncbi.nlm.nih.gov/39020430/)
- PMCID: [PMC11256496](https://pubmed.ncbi.nlm.nih.gov/PMC11256496/)
- DOI: [10.1186/s13063-024-08251-1](https://doi.org/10.1186/s13063-024-08251-1)

## Abstract

**Background:** Pulmonary rehabilitation (PR) is accepted as standard care for individuals with COPD. We conducted an international, multi-centred randomized controlled trial (RCT) to determine if adding balance training to PR would reduce the incidence of falls in people with COPD. While there have been many trials investigating the effectiveness of PR, few have involved international collaboration. Successful execution of rehabilitation trials requires a significant investment of time, staffing, and resources. With the recent completion of the Balance Training for Fall Reduction in COPD RCT, we report on the design, implementation, and execution of our trial using project management phases. We also highlight our lessons learned for consideration in future multi-centre rehabilitation trials.

**Methods:** This was a retrospective review of the planning, preparation, timelines, and personnel training involved in the execution of this study using four of the five project management phases described by Farrell et al. in 2010: (1) initiation, (2) planning, (3) execution, and (4) monitoring and controlling. We report descriptive statistics as percentages and counts and summarize our lessons learned.

**Results:** Ten outpatient PR programs in three continents participated. Thirty-one personnel worked on the trial across all sites. Enrolment began in January 2017 and was suspended in March 2020 due to the COVID-19 pandemic. Approximately 1275 patients were screened, 455 (36%) were eligible, 258 (57%) consented, 243 (53%) participated, and 130 (61%) completed the 12-month follow-up assessment. Lessons learned through our experience included (1) ensuring awareness of funder policies and considering the impact on collaborating sites; (2) preparing for the possibility of human resource and program disruptions; (3) anticipating site dropout and having a contingency plan in place; (4) planning and monitoring process measure data before, during, and after trial initiation; (5) ensuring frequent and consistent communication with and between collaborating sites; (6) maximizing features of database platform to ensure data set completeness and controlled data access; and (7) identifying strategies for increasing patient engagement in a high-demand study.

**Conclusions:** We identify seven lessons learned through our experience conducting an international, multicentre rehabilitation-based RCT. These lessons can provide guidance to other trialists conducting studies with similar logistics and may assist with future trial planning and implementation.

**Keywords:** Balance training; Chronic obstructive pulmonary disease (COPD); Project management; Pulmonary rehabilitation; Randomized controlled trial.

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**Conflict of interest statement**

The authors declare that they have no competing interests.

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Respirology

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. 2024 Jul 17.

doi: 10.1111/resp.14799. Online ahead of print.

## **COPD is associated with increased cardiovascular disease risk independent of phenotype**

**Kolton Cobb<sup>1</sup>, Jonathan Kenyon<sup>1</sup>, Juan Lu<sup>2</sup>, Benjamin Krieger<sup>1</sup>, Apostolos Perelas<sup>3</sup>, Patrick Nana-Sinkam<sup>3</sup>, Youngdeok Kim<sup>1</sup>, Paula Rodriguez-Miguelez<sup>1,3</sup>**

**Affiliations expand**

- PMID: 39019777
- DOI: [10.1111/resp.14799](https://doi.org/10.1111/resp.14799)

### **Abstract**

**Background and objective:** Chronic obstructive pulmonary disease (COPD) is a leading cause of death worldwide that frequently presents with concomitant cardiovascular diseases. Despite the pathological distinction between individual COPD phenotypes such as emphysema and chronic bronchitis, there is a lack of knowledge about the impact of COPD phenotype on cardiovascular disease risk. Thus, this study aimed to utilize a nationally representative sample to investigate cardiovascular disease prevalence in patients with COPD with emphysema and chronic bronchitis phenotypes.

**Methods:** Data from 31,560 adults including 2504 individuals with COPD, collected as part of the National Health and Nutrition Examination Survey (1999-2018), were examined.

**Results:** A significantly increased cardiovascular disease risk, including coronary heart disease, heart failure, myocardial infarction and stroke, was identified in patients with COPD among all disease phenotypes. Particularly, compared to those without COPD, individuals with chronic bronchitis presented with 1.76 (95% CI: 1.41-2.20) times greater odds, individuals with emphysema with 2.31 (95% CI: 1.80-2.96) times greater odds, while those with a concurrent phenotype (combined chronic bronchitis and emphysema) exhibited 2.98 (95% CI: 2.11-4.21) times greater odds of reporting cardiovascular diseases.

**Conclusion:** Our data confirms that patients with COPD present an elevated risk of developing cardiovascular disease among all phenotypes, with the most marked increase being in those with concurrent chronic bronchitis and emphysema phenotypes. These findings emphasize the need for awareness and appropriate cardiovascular screening in COPD.

**Keywords:** COPD; cardiovascular disease risk; cardiovascular screening; chronic bronchitis; chronic obstructive pulmonary disease; emphysema.

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- [58 references](#)

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**Observational Study**

**BMJ Open Respir Res**

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. 2024 Jul 17;11(1):e001740.

doi: [10.1136/bmjresp-2023-001740](https://doi.org/10.1136/bmjresp-2023-001740).

**Risk factors of acute exacerbation and disease progression in young patients with COPD**

[Juye Bae](#)<sup>1</sup>, [Hyo Jin Lee](#)<sup>2</sup>, [Kwang Yong Choi](#)<sup>3</sup>, [Jung-Kyu Lee](#)<sup>2</sup>, [Tae Yun Park](#)<sup>2</sup>, [Eun Young Heo](#)<sup>2</sup>, [Chang Hoon Lee](#)<sup>1</sup>, [Deog Kyeom Kim](#)<sup>2</sup>, [Hyun Woo Lee](#)<sup>4</sup>

**Affiliations** expand

- PMID: [39019624](https://pubmed.ncbi.nlm.nih.gov/39019624/)
- PMCID: [PMC11256056](https://pubmed.ncbi.nlm.nih.gov/PMC11256056/)
- DOI: [10.1136/bmjresp-2023-001740](https://doi.org/10.1136/bmjresp-2023-001740)

**Abstract**

**Objective:** We aimed to elucidate the clinical factors associated with acute exacerbation and disease progression in young patients with chronic obstructive pulmonary disease (COPD).

**Methods:** This retrospective longitudinal observational study included patients with COPD aged between 20 and 50 years with post-bronchodilator forced expiratory

volume in one second (FEV<sub>1</sub>)/forced vital capacity (FVC)<0.7. Eligible patients were followed up with ≥2 spirometry examinations at 1 year interval after COPD diagnosis. The primary outcome was moderate-to-severe acute exacerbation in young patients with COPD. Secondary outcomes were early initiation of regular inhalation therapy and accelerated annual post-bronchodilator FEV<sub>1</sub> decline.

**Results:** A total of 342 patients were followed up during a median of 64 months. In multivariable analyses, risk factors for moderate-to-severe exacerbation were history of asthma (adjusted HR (aHR)=2.999, 95% CI=[2.074-4.335]), emphysema (aHR=1.951, 95% CI=[1.331-2.960]), blood eosinophil count >300/μL (aHR=1.469, 95% CI=[1.038-2.081]) and low FEV<sub>1</sub> (%) (aHR=0.979, 95% CI=[0.970-0.987]). A history of asthma, sputum, blood eosinophil count >300/μL, low FEV<sub>1</sub> (%) and low diffusing capacity of the lung for carbon monoxide (DL<sub>CO</sub>) (%) were identified as clinical factors associated with the early initiation of regular inhalation therapy. The risk factors associated with worsened FEV<sub>1</sub> decline were increasing age, female sex, history of pulmonary tuberculosis, sputum, low FEV<sub>1</sub> (%) and low DL<sub>CO</sub> (%).

**Conclusions:** In young COPD patients, specific high-risk features of acute exacerbation and disease progression need to be identified, including a history of previous respiratory diseases, current respiratory symptoms, blood eosinophil counts, and structural or functional pulmonary impairment.

**Keywords:** COPD Exacerbations; COPD Pharmacology; Emphysema; Pulmonary Disease, Chronic Obstructive.

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**Conflict of interest statement**

**Competing interests:** None declared.

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

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**Publication types, MeSH terms, Substances expand**

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**Ann Am Thorac Soc**

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. 2024 Jul 17.

doi: [10.1513/AnnalsATS.202401-017OC](https://doi.org/10.1513/AnnalsATS.202401-017OC). Online ahead of print.

## **Risk of Atherosclerotic Cardiovascular Disease Hospitalizations after COPD Hospitalization among Older Adults**

**Christopher L Mosher<sup>1</sup>, Oyomoare L Osazuwa-Peters<sup>2</sup>, Michael G Nanna<sup>3</sup>, Neil R MacIntyre<sup>4</sup>, Loretta G Que<sup>5</sup>, Schuyler Jones<sup>2</sup>, Scott M Palmer<sup>6</sup>, Emily C O'Brien<sup>7</sup>**

**Affiliations expand**

- PMID: 39018486
- DOI: [10.1513/AnnalsATS.202401-017OC](https://doi.org/10.1513/AnnalsATS.202401-017OC)

### **Abstract**

**Background:** Meta-analyses have suggested the risk of cardiovascular disease (CVD) events is significantly higher after a chronic obstructive pulmonary disease (COPD) exacerbation. However, many of these studies have included a broad array of CVD events or have been limited to highly selected patient populations potentially not generalizable to the broader population of COPD.

**Methods:** We assessed the risk of atherosclerotic cardiovascular disease (ASCVD) hospitalizations after COPD hospitalization compared to before COPD hospitalization and identified patient factors associated with ASCVD hospitalizations after COPD hospitalization. This retrospective cohort study used claims data from 920,550 Medicare beneficiaries hospitalized for COPD from 2016-2019 in the US. The primary outcome was risk of a ASCVD hospitalization composite outcome (myocardial infarction, percutaneous coronary intervention, coronary artery by-pass graft surgery, stroke, or transient ischemic attack) in the 30-days and 1 year after-COPD hospitalization relative to the same time period before-COPD hospitalization. Time in the before- and after-COPD hospitalization time periods to a composite ASCVD hospitalization outcome were modeled using an extension of the Cox Proportional-Hazards model, the Anderson-Gill model with adjustment for patient characteristics. Additional analyses evaluated for interactions in subgroups associated with the composite ASCVD hospitalization outcome.

**Results:** Among 920,550 patients in the 30-day and 1-year cohorts, (mean age, 73-74 years) the hazard ratio estimate (HR; 95% CI) for the composite ASCVD hospitalization outcome after-COPD hospitalization vs before-COPD hospitalization for the 30-day cohort was 0.99 (0.93, 1.05; p = 0.67) and for the 1-year cohort was 0.99 (0.97, 1.02; p = 0.53) following adjustment. We observed 3 subgroups that were significantly associated with higher risk for ASCVD hospitalizations 1 year after COPD hospitalization: 76+ years old, women, COPD hospitalization severity.

**Conclusion: Among Medicare beneficiaries hospitalized for COPD, the risk of ASCVD hospitalizations was not significantly increased 30-day or 1-year after COPD-hospitalization relative to before-COPD hospitalization. In sub-group analyses, we identified age 76+ years old, female sex, and COPD hospitalization severity as high risk subgroups with increased risk of ASCVD events 1-year after-COPD hospitalization. Further research is needed to characterize the COPD exacerbation populations at highest ASCVD hospitalization risk.**

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World J Clin Cases

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. 2024 Jul 16;12(20):4057-4064.

doi: 10.12998/wjcc.v12.i20.4057.

[Study on the impact of comprehensive geriatric assessment on anxiety and depression in chronic obstructive pulmonary disease patients](#)

[Xian-Rong Shi](#)<sup>1</sup>, [Wen-Li Wu](#)<sup>2</sup>, [Chun-Yan Li](#)<sup>3</sup>, [Jiao Ao](#)<sup>2</sup>, [Hai-Xia Xiong](#)<sup>2</sup>, [Jing Guo](#)<sup>1</sup>, [Yan Fang](#)<sup>4</sup>

Affiliations expand

- PMID: 39015897
- PMCID: [PMC11235538](#)
- DOI: [10.12998/wjcc.v12.i20.4057](#)

Abstract

**Background: Psychological factors such as anxiety and depression will not only aggravate the symptoms of chronic obstructive pulmonary disease (COPD) patients and reduce the quality of life of patients, but also affect the treatment effect and long-term prognosis. Therefore, it is of great significance to explore the clinical**

**application of senile comprehensive assessment in the treatment of COPD and its influence on psychological factors such as anxiety and depression.**

**Aim: To explore the clinical application of comprehensive geriatric assessment in COPD care and its impact on anxiety and depression in elderly patents.**

**Methods: In this retrospective study, 60 patients with COPD who were hospitalized in our hospital from 2019 to 2020 were randomly divided into two groups with 30 patients in each group. The control group was given routine nursing, and the observation group was given comprehensive assessment. Clinical symptoms, quality of life [COPD assessment test (CAT) score], anxiety and depression Hamilton Anxiety Rating Scale (HAMA) and Hamilton Depression Rating Scale (HAMD) were compared between the two groups.**

**Results: CAT scores in the observation group decreased from an average of 24.5 points at admission to an average of 18.3 points at discharge, and in the control group from an average of 24.7 points at admission to an average of 18.3 points at discharge. The average score was 22.1 ( $P < 0.05$ ). In the observation group, HAMA scores decreased from 14.2 points at admission to 8.6 points at discharge, and HAMD scores decreased from 13.8 points at admission to 7.4 points at discharge. The mean HAMD scores in the control group decreased from an average of 14.5 at admission to an average of 12.3 at discharge, and from an average of 14.1 at admission to an average of 11.8 at discharge.**

**Conclusion: The application of comprehensive geriatric assessment in COPD care has a significant effect on improving patients' clinical symptoms and quality of life, and can effectively reduce patients' anxiety and depression.**

**Keywords: Anxiety; Chronic obstructive pulmonary disease; Comprehensive geriatric assessment; Depression; Hamilton Anxiety Rating Scale; Retrospective study.**

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**Conflict of interest statement**

**Conflict-of-interest statement: All the authors report no relevant conflicts of interest for this article.**

- [24 references](#)

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## Observational Study

### BMC Pulm Med

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. 2024 Jul 16;24(1):345.

doi: 10.1186/s12890-024-03151-1.

### Hypercapnia and lung function parameters in chronic obstructive pulmonary disease

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#### Affiliations expand

- PMID: 39014325
- PMCID: [PMC11251095](#)
- DOI: [10.1186/s12890-024-03151-1](#)

#### Abstract

**Background:** In advanced chronic obstructive pulmonary disease (COPD), hypercapnia may occur due to severe bronchial obstruction with lung hyperinflation. Non-invasive ventilation (NIV) provides the standard of care intended to achieve physiological PCO<sub>2</sub> levels, thereby reducing overall mortality. The present study aimed to evaluate pulmonary function parameters derived from spirometry (forced vital capacity [FVC], forced expiratory volume in 1 s [FEV1]), body plethysmography (residual volume [RV], total lung capacity [TLC]), and lung diffusion capacity for carbon monoxide (single-breath method [DCO-SB], alveolar-volume corrected values [DCO-VA]) as predictors of chronic hypercapnia in patients with advanced COPD.

**Methods:** This monocentric, retrospective observational study included 423 COPD patients. Receiver operating characteristic (ROC) curve analysis and cross-validation were used to assess lung function parameters' diagnostic accuracy for predicting chronic hypercapnia, with the resulting performance expressed as area under the ROC curve (AUROC). We performed univariable and multivariable binary logistic regression analysis to determine if these parameters were independently associated with chronic hypercapnia, with probabilities reported as odds ratios [OR] with 95% confidence intervals [95%CI].

**Results:** FVC% (AUROC 0.77 [95%CI 0.72-0.81],  $P < 0.01$ ) and FEV1% (AURIC 0.75 [95%CI 0.70-0.79],  $P < 0.01$ ) exhibited reasonable accuracy in the prediction of chronic hypercapnia, whereas lung diffusion capacity performed poorly (AUROC 0.64 [95%CI 0.58-0.71] for DCO-SB%,  $P < 0.01$ ). FVC% (OR 0.95 [95%CI 0.93-0.97],  $P < 0.01$ ) and FEV1% (OR 0.97 [95%CI 0.94-0.99],  $P = 0.029$ ) were the only parameters associated independently with chronic hypercapnia in logistic regression analysis. FVC and FEV1 thresholds that best separated hypercapnic from normocapnic subjects reached 56% and 33% of predicted values.

**Conclusions:** Routinely collected pulmonary function parameters, particularly FVC% and FEV1%, may predict chronic hypercapnia during COPD progression.

**Keywords:** COPD; Hypercapnia; Lung function parameters; Pulmonary function tests.

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**Conflict of interest statement**

The authors declare no competing interests.

- [33 references](#)
- [4 figures](#)

**supplementary info**

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**Thorax**

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. 2024 Jul 16;79(8):725-734.

doi: 10.1136/thorax-2023-221211.

[Quantifying sustained health system benefits of primary care-based integrated disease management for COPD: a 6-year interrupted time series study](#)

**Christopher Licskai**<sup>1 2 3</sup>, **Anna Hussey**<sup>3</sup>, **Véronique Rowley**<sup>4</sup>, **Madonna Ferrone**<sup>3 5</sup>, **Zihang Lu**<sup>4</sup>, **Kimball Zhang**<sup>6 7</sup>, **Emilie Terebessy**<sup>6</sup>, **Andrew Scarffe**<sup>8</sup>, **Shannon Sibbald**<sup>9</sup>, **Cathy Faulds**<sup>10 3</sup>, **Tim O'Callahan**<sup>3 11</sup>, **Teresa To**<sup>6 7</sup>

**Affiliations expand**

- PMID: 38889973
- DOI: [10.1136/thorax-2023-221211](https://doi.org/10.1136/thorax-2023-221211)

**Free article**

**Abstract**

**Background:** Severe exacerbation of chronic obstructive pulmonary disease (COPD) is a trajectory-changing life event for patients and a major contributor to health system costs. This study evaluates the real-world impact of a primary care, integrated disease management (IDM) programme on acute health service utilisation (HSU) in the Canadian health system.

**Methods:** Interrupted time series analysis using retrospective health administrative data, comparing monthly HSU event rates 3 years prior to and 3 years following the implementation of COPD IDM. Primary outcomes were COPD-related hospitalisation and emergency department (ED) visits. Secondary outcomes included hospital bed days and all-cause HSU.

**Results:** There were 2451 participants. COPD-related and all-cause HSU rates increased in the 3 years prior to IDM implementation. With implementation, there was an immediate decrease (month 1) in COPD-related hospitalisation and ED visit rates of -4.6 (95% CI: -7.76 to -1.39) and -6.2 (95% CI: -11.88, -0.48) per 1000 participants per month, respectively, compared with the counterfactual control group. After 12 months, COPD-related hospitalisation rates decreased: -9.1 events per 1000 participants per month (95% CI: -12.72, -5.44) and ED visits -19.0 (95% CI: -25.50, -12.46). This difference nearly doubled by 36 months. All-cause HSU also demonstrated rate reductions at 12 months, hospitalisation was -10.2 events per 1000 participants per month (95% CI: -15.79, -4.44) and ED visits were -30.4 (95% CI: -41.95, -18.78).

**Conclusions:** Implementation of COPD IDM in a primary care setting was associated with a changed trajectory of COPD-related and all-cause HSU from an increasing year-on-year trend to sustained long-term reductions. This highlights a substantial real-world opportunity that may improve health system performance and patient outcomes.

**Keywords:** COPD Exacerbations; COPD epidemiology.

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**Conflict of interest statement**

**Competing interests:** None declared.

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**Editorial**

**Thorax**

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. 2024 Jul 16;79(8):709-710.

doi: [10.1136/thorax-2024-221754](https://doi.org/10.1136/thorax-2024-221754).

[Integrated disease management: good news but more work to do](#)

[Christine R Jenkins](#)<sup>1</sup>

**Affiliations expand**

- PMID: 38889972
- DOI: [10.1136/thorax-2024-221754](https://doi.org/10.1136/thorax-2024-221754)

*No abstract available*

**Keywords:** COPD Exacerbations; COPD epidemiology; Pulmonary Rehabilitation.

**Conflict of interest statement**

**Competing interests:** CRJ received payments for lectures, advisory board membership, consultations, educational content and travel to meetings when a speaker from AstraZeneca, Boehringer Ingelheim, Chiesi, GlaxoSmithKline, Novartis and Sanofi.

**supplementary info**

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**Editorial**

**Thorax**

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. 2024 Jul 16;79(8):705-706.

doi: 10.1136/thorax-2023-221141.

[Undertreating cardiovascular disease in people with chronic obstructive pulmonary disease \(COPD\)](#)

[Andrea S Gershon](#)<sup>1 2 3 4</sup>, [Alina Blazer](#)<sup>2</sup>, [Dennis Ko](#)<sup>5 3 4</sup>

**Affiliations expand**

- PMID: 38876490
- DOI: [10.1136/thorax-2023-221141](#)

*No abstract available*

**Keywords:** COPD epidemiology.

**Conflict of interest statement**

**Competing interests:** None declared.

**supplementary info**

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. 2024 Jul 15:S1323-8930(24)00055-8.

doi: 10.1016/j.alit.2024.05.004. Online ahead of print.

[Mucus plugging on computed tomography and the sputum microbiome in patients with asthma, chronic obstructive pulmonary disease, and asthma-COPD overlap](#)

[Naoya Tanabe](#)<sup>1</sup>, [Hisako Matsumoto](#)<sup>2</sup>, [Chie Morimoto](#)<sup>3</sup>, [Yusuke Hayashi](#)<sup>3</sup>, [Ryo Sakamoto](#)<sup>4</sup>, [Tsuyoshi Oguma](#)<sup>3</sup>, [Tadao Nagasaki](#)<sup>3</sup>, [Hironobu Sunadome](#)<sup>5</sup>, [Atsuyasu Sato](#)<sup>3</sup>, [Susumu Sato](#)<sup>5</sup>, [Kai Ohashi](#)<sup>6</sup>, [Takamitsu Tsukahara](#)<sup>6</sup>, [Toyohiro Hirai](#)<sup>3</sup>

Affiliations expand

- PMID: 39013753
- DOI: [10.1016/j.alit.2024.05.004](#)

Free article

Abstract

**Background:** Despite clinical implications, the pathogenesis of mucus plugging in asthma, chronic obstructive pulmonary disease (COPD), and asthma-COPD overlap (ACO) remains unclear. We hypothesized that distinct airway microbiomes might affect mucus plugging differently among ACO, asthma, and COPD and among different extents of airway eosinophilic inflammation.

**Methods:** The sputum microbiome, sputum cell differential count, and mucus plug score on computed tomography were cross-sectionally evaluated in patients with chronic airflow limitation.

**Results:** Patients with ACO, asthma, or COPD were enrolled (n = 56, 10, and 25). Higher mucus plug scores were associated with a greater relative abundance of the phylum Proteobacteria ( $\rho = 0.29$ ) only in patients with ACO and a greater relative abundance of the phylum Actinobacteria ( $\rho = 0.46$ ) only in patients with COPD. In

multivariable models including only patients with ACO, the presence of mucus plugs was associated with a greater relative abundance of the phylum Proteobacteria and the genus Haemophilus, independent of smoking status, airflow limitation, and emphysema severity. Moreover, the mucus score was associated with a greater relative abundance of the genus Streptococcus ( $\rho = 0.46$ ) in patients with a high sputum eosinophil count ( $n = 22$ ) and with that of the genus Haemophilus ( $\rho = 0.46$ ) in those with a moderate sputum eosinophil count ( $n = 26$ ).

**Conclusions:** The associations between mucus plugging and the microbiome in ACO differed from those in COPD and asthma. Greater relative abundances of the phylum Proteobacteria and genus Haemophilus may be involved in mucus plugging in patients with ACO and moderate airway eosinophilic inflammation.

**Keywords:** Airway inflammation; Asthma-COPD overlap; Computed tomography; Microbiome; Mucus.

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. 2024 Jul 15;10(4):00982-2023.

doi: 10.1183/23120541.00982-2023. eCollection 2024 Jul.

[Long-term impact of COVID-19 hospitalisation among individuals with pre-existing airway diseases in the UK: a multicentre, longitudinal cohort study - PHOSP-COVID](#)

Omer Elneima<sup>1</sup>, John R Hurst<sup>2,3</sup>, Carlos Echevarria<sup>4,5</sup>, Jennifer K Quint<sup>6</sup>, Samantha Walker<sup>7</sup>, Salman Siddiqui<sup>8</sup>, Petr Novotny<sup>1</sup>, Paul E Pfeffer<sup>9,10</sup>, Jeremy S Brown<sup>2</sup>, Manu Shankar-Hari<sup>11</sup>, Hamish J C McAuley<sup>1</sup>, Olivia C Leavy<sup>1,12</sup>, Aarti Shikotra<sup>1</sup>, Amisha Singapuri<sup>1</sup>, Marco Sereno<sup>1</sup>, Matthew Richardson<sup>1</sup>, Ruth M Saunders<sup>1</sup>, Victoria C Harris<sup>1</sup>, Linzy Houchen-Wolloff<sup>1,13</sup>, Neil J Greening<sup>1</sup>, Ewen M Harrison<sup>14</sup>, Annemarie B Docherty<sup>14</sup>, Nazir I Lone<sup>14</sup>, James D Chalmers<sup>15</sup>, Ling-Pei Ho<sup>16,17</sup>, Alex Horsley<sup>18,19</sup>, Michael Marks<sup>20,21</sup>, Krisnah Poinasamy<sup>7</sup>, Betty

Raman <sup>17 22</sup>, Rachael A Evans <sup>1</sup>, Louise V Wain <sup>1 11</sup>, Aziz Sheikh <sup>14</sup>, Chris E Brightling <sup>1 23</sup>, Anthony De Soyza <sup>4 24 23</sup>, Liam G Heaney <sup>25 26 23</sup>

#### Affiliations expand

- PMID: 39010888
- PMCID: [PMC11247371](#)
- DOI: [10.1183/23120541.00982-2023](#)

#### Abstract

**Background:** The long-term outcomes of COVID-19 hospitalisation in individuals with pre-existing airway diseases are unknown.

**Methods:** Adult participants hospitalised for confirmed or clinically suspected COVID-19 and discharged between 5 March 2020 and 31 March 2021 were recruited to the Post-hospitalisation COVID-19 (PHOSP-COVID) study. Participants attended research visits at 5 months and 1 year post discharge. Clinical characteristics, perceived recovery, burden of symptoms and health-related quality of life (HRQoL) of individuals with pre-existing airway disease (*i.e.*, asthma, COPD or bronchiectasis) were compared to the non-airways group.

**Results:** A total of 615 out of 2697 (22.8%) participants had a history of pre-existing airway diseases (72.0% diagnosed with asthma, 22.9% COPD and 5.1% bronchiectasis). At 1 year, the airways group participants were less likely to feel fully recovered (20.4% *versus* 33.2%,  $p<0.001$ ), had higher burden of anxiety (29.1% *versus* 22.0%,  $p=0.002$ ), depression (31.2% *versus* 24.7%,  $p=0.006$ ), higher percentage of impaired mobility using short physical performance battery  $\leq 10$  (57.4% *versus* 45.2%,  $p<0.001$ ) and 27% had a new disability (assessed by the Washington Group Short Set on Functioning) *versus* 16.6%,  $p=0.014$ . HRQoL assessed using EQ-5D-5L Utility Index was lower in the airways group (mean $\pm$ SD 0.64 $\pm$ 0.27 *versus* 0.73 $\pm$ 0.25,  $p<0.001$ ). Burden of breathlessness, fatigue and cough measured using a study-specific tool was higher in the airways group.

**Conclusion:** Individuals with pre-existing airway diseases hospitalised due to COVID-19 were less likely to feel fully recovered, had lower physiological performance measurements, more burden of symptoms and reduced HRQoL up to 1 year post-hospital discharge.

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#### Conflict of interest statement

**Conflict of interest:** J.R. Hurst has received support to attend meetings, research grants, and personal payment and payment to his employer from pharmaceutical companies that make medicines to treat airways diseases. J.K. Quint reports grants from Industrial Strategy Challenge Fund, the Medical Research Council, Health Data Research, GlaxoSmithKline (GSK), Boehringer Ingelheim (BI), Asthma+Lung UK and AstraZeneca (AZ), and consulting fees from GSK, Evidera, Chiesi, AZ and Insmed

outside the submitted work. P.E. Pfeffer reports grants from NIHR and GSK, Honoraria payments for lectures from AZ, GSK, Sanofi and Chiesi and travel fees from AZ, GSK, Sanofi outside the submitted work. N.J. Greening reports grants from GSK and BioAge, and personal fees and travel grants from Genentech, Roche, Chiesi, AZ, GSK, Pulmonx and Chiesi outside the submitted work. J.D. Chalmers is an associate editor of this journal. A. Horsley reports grants from UKRI, NIHR and NIHR Manchester BRC during the conduct of this study and unenumerated role as the chair of NIHR Translational Research Collaboration. A. Sheikh has served on AZ's thrombotic thrombocytopenic taskforce, and on a number of UK and Scottish Government COVID-19 advisory bodies; all these roles were unremunerated. B. Raman reports grant from BHF Oxford CRE and speaker fees from Axcella Therapeutics. R.A. Evans reports grants from UKRI/MRC, DHSC/NIHR, Wolfson Foundation and Genentec/Roche during the conduct of this study, travel and speaker fees from AZ/Evidera, Boehringer Ingelheim (BI), Moderna and Chiesi, and unremunerated leadership roles in ERS/ATS outside the submitted work. C.E. Brightling declares that their institute was awarded a grant from UKRI/NIHR to complete this work; the author reports grants from GSK, AZ, Sanofi, Regeneron, BI, Chiesi, Novartis, Roche, Genentech, Mologic and 4DPharma; and consultancy fees paid to their institution from GSK, AZ, Sanofi, BI, Chiesi, Novartis, Roche, Genentech, Mologic, 4DPharma and Areteia. A. De Soyza declares receiving personal consulting fees and travel grants from AZ, Bayer, GSK, Chiesi, Novartis, Pfizer, Insmmed, Gilead and 30T outside the submitted work. All other authors declare no competing interests.

- [42 references](#)
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BMC Pulm Med

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. 2024 Jul 15;24(1):341.

doi: 10.1186/s12890-024-03150-2.

[COPD, PRISm and lung function reduction affect the brain cortical structure: a Mendelian randomization study](#)

**Chuangsen Fang<sup>#1 2</sup>, Ao Li<sup>#2</sup>, Yanming Li<sup>3 4</sup>**

**Affiliations expand**

- PMID: 39010041
- PMCID: [PMC11251327](#)
- DOI: [10.1186/s12890-024-03150-2](#)

**Abstract**

Chronic obstructive pulmonary disease (COPD) has been associated with alterations in the brain cortical structure. Nonetheless, the causality between COPD and brain cortical structure has not been determined. In the present study, we used Mendelian randomization (MR) analysis to explore the causal effects of genetic predicated COPD on brain cortical structure, namely cortical surface area (SA) and cortical thickness (TH). Genetic association summary data for COPD were obtained from the FinnGen consortium (N = 358,369; Ncase = 20,066). PRISm summary genetic data were retrieved from a case-control GWAS conducted in the UK Biobank (N = 296,282). Lung function indices, including forced expiratory volume in one second (FEV1), forced vital capacity (FVC), and FEV1/FVC, were extracted from a meta-analysis of the UK Biobank and SpiroMeta consortium (N = 400,102). Brain cortical structure data were obtained from the ENIGMA consortium (N = 51,665). Inverse-variance weighted (IVW) method was used as the primary analysis, and a series of sensitivity tests were exploited to evaluate the heterogeneity and pleiotropy of our results. The results identified potential causal effects of COPD on several brain cortical specifications, including pars orbitalis, cuneus and inferior parietal gyrus. Furthermore, genetic predicated lung function index (FEV1, FVC and FEV1/FVC), as well as PRISm, also has causal effects on brain cortical structure. According to our results, a total of 15 functional specifications were influenced by lung function index and PRISm. These findings contribute to understanding the causal effects of COPD and lung function to brain cortical structure.

**Keywords:** Brain cortical structural; Chronic obstructive pulmonary disease; Lung function; Mendelian randomization.

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**Conflict of interest statement**

The authors declare no competing interests.

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

**supplementary info**

**MeSH terms, Grants and funding expand**

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Editorial

Respirology

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. 2024 Jul 15.

doi: 10.1111/resp.14794. Online ahead of print.

[Home oxygen guidelines: We do not know enough about LTOT](#)

[Richard D Branson](#)<sup>1</sup>

Affiliations expand

- PMID: 39009414
- DOI: [10.1111/resp.14794](#)

*No abstract available*

Keywords: COPD; clinical respiratory medicine; pulmonary rehabilitation; quality of life.

- [10 references](#)

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Review

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. 2024 Jul 15:1-15.

doi: [10.1080/17476348.2024.2379459](https://doi.org/10.1080/17476348.2024.2379459). Online ahead of print.

[The benefits and drawbacks of home oxygen therapy for COPD: what's next?](#)

[Yet H Khor](#)<sup>1 2 3 4</sup>, [Magnus Ekström](#)<sup>5</sup>

Affiliations expand

- PMID: 38984511
- DOI: [10.1080/17476348.2024.2379459](https://doi.org/10.1080/17476348.2024.2379459)

Abstract

**Introduction:** Home oxygen therapy is one of the few interventions that can improve survival in patients with chronic obstructive pulmonary disease (COPD) when administered appropriately, although it may cause side effects and be an unnecessary burden for some patients.

**Areas covered:** This narrative review summarizes the current literature on the assessment of hypoxemia, different types of home oxygen therapy, potential beneficial and adverse effects, and emerging research on home oxygen therapy in COPD. A literature search was performed using MEDLINE and EMBASE up to January 2024, with additional articles being identified through clinical guidelines.

**Expert opinion:** Hypoxemia is common in patients with more severe COPD. Long-term oxygen therapy is established to prolong survival in patients with chronic severe resting hypoxemia. Conversely, in the absence of chronic severe resting hypoxemia, home oxygen therapy has an unclear or conflicting evidence base, including for palliation of breathlessness, and is generally not recommended. However, beneficial effects in some patients cannot be precluded. Evidence is emerging on the optimal daily duration of oxygen use, the role of high-flow and auto-titrated oxygen therapy, improved informed decision-making, and telemonitoring. Further research is needed to validate novel oxygen delivery

systems and monitoring tools and establish long-term effects of ambulatory oxygen therapy in COPD.

**Keywords:** Chronic obstructive pulmonary disease; ambulatory care; hypoxemia; oximetry; oxygen therapy; respiratory failure.

supplementary info

Publication typesexpand

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23

Review

Life Sci

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. 2024 Jul 15:349:122718.

doi: 10.1016/j.lfs.2024.122718. Epub 2024 May 14.

[Challenges in clinical practice, biological mechanism and prospects of physical ablation therapy for COPD](#)

[Haoyang Zhu](#)<sup>1</sup>, [Xiaoyu Zhou](#)<sup>2</sup>, [Ran Ju](#)<sup>2</sup>, [Jing Leng](#)<sup>2</sup>, [Jiawei Tian](#)<sup>3</sup>, [Shenao Qu](#)<sup>2</sup>, [Shiran Tao](#)<sup>2</sup>, [Yi Lyu](#)<sup>4</sup>, [Nana Zhang](#)<sup>5</sup>

Affiliations expand

- PMID: 38754815
- DOI: [10.1016/j.lfs.2024.122718](#)

Abstract

Chronic obstructive pulmonary disease (COPD) is projected to become the third leading cause of death globally by 2030. Despite the limited treatment options

available for advanced COPD, which are mostly restricted to costly lung transplants, physical ablation therapy offers promising alternatives. This technique focuses on ablating lesioned airway epithelium, reducing secretions and obstructions, and promoting normal epithelial regeneration, demonstrating significant therapeutic potential. Physical ablation therapy primarily involves thermal steam ablation, cryoablation, targeted lung denervation, and high-voltage pulsed electric field ablation. These methods help transform the hypersecretory phenotype, alleviate airway inflammation, and decrease the volume of emphysematous lung segments by targeting goblet cells and damaged lung areas. Compared to traditional treatments, endoscopic physical ablation offers fewer injuries, quicker recovery, and enhanced safety. However, its application in COPD remains limited due to inconsistent clinical outcomes, a lack of well-understood mechanisms, and the absence of standardized guidelines. This review begins by exploring the development of these ablation techniques and their current clinical uses in COPD treatment. It then delves into the therapeutic effects reported in recent clinical studies and discusses the underlying mechanisms. Finally, the review assesses the future prospects and challenges of employing ablation technology in COPD clinical practice, aiming to provide a practical reference and a theoretical basis for its use and inspire further research.

**Keywords:** Chronic obstructive pulmonary disease (COPD); Clinical application; Physical ablation therapy; Therapeutic effect.

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**Conflict of interest statement**

**Declaration of competing interest** The authors declare that there are no competing interests associated with the manuscript.

**supplementary info**

**Publication types, MeSH termsexpand**

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**Am J Respir Crit Care Med**

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. 2024 Jul 15;210(2):147-154.

doi: 10.1164/rccm.202310-1972PP.

## **Molecular Characterization of the Distal Lung: Novel Insights from Chronic Obstructive Pulmonary Disease Omics**

**Peter J Castaldi**<sup>1 2</sup>, **Maor Sauler**<sup>3</sup>

**Affiliations expand**

- PMID: 38701385
- DOI: [10.1164/rccm.202310-1972PP](https://doi.org/10.1164/rccm.202310-1972PP)

*No abstract available*

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**Am J Respir Crit Care Med**

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. 2024 Jul 15;210(2):248-249.

doi: 10.1164/rccm.202403-0476LE.

## **Reply to Chen *et al.*: Reexamining Chronic Obstructive Pulmonary Disease in Bronchiectasis: Elucidating Overdiagnosis and Outcomes from EMBARC's ROSE Criteria**

**James D Chalmers**<sup>1</sup>, **Anthony De Soyza**<sup>2</sup>, **Stefano Aliberti**<sup>3 4</sup>, **Eva Polverino**<sup>5 6</sup>

**Affiliations expand**

- PMID: 38579281

- DOI: [10.1164/rccm.202403-0476LE](https://doi.org/10.1164/rccm.202403-0476LE)

**No abstract available**

**supplementary info**

**Publication types, MeSH termsexpand**

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. 2024 Jul 15;210(2):247-248.

doi: [10.1164/rccm.202402-0289LE](https://doi.org/10.1164/rccm.202402-0289LE).

**[Reexamining Chronic Obstructive Pulmonary Disease in Bronchiectasis: Elucidating Overdiagnosis and Outcomes from EMBARC's ROSE Criteria](#)**

**[Yen-Fu Chen](#)<sup>1 2 3</sup>, [Jung-Yien Chien](#)<sup>3 4</sup>, [Hao-Chien Wang](#)<sup>3 4 5</sup>, [Chong-Jen Yu](#)<sup>3 4 6</sup>**

**Affiliations expand**

- PMID: 38579279
- DOI: [10.1164/rccm.202402-0289LE](https://doi.org/10.1164/rccm.202402-0289LE)

**No abstract available**

**supplementary info**

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Am J Respir Crit Care Med

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. 2024 Jul 15;210(2):145-146.

doi: [10.1164/rccm.202402-0392VP](https://doi.org/10.1164/rccm.202402-0392VP).

[Telehealth Pulmonary Rehabilitation: A Call for Minimum Standards](#)

[Surya P Bhatt](#)<sup>1</sup>, [Richard Casaburi](#)<sup>2</sup>, [Christopher L Mosher](#)<sup>3,4</sup>, [Carolyn L Rochester](#)<sup>5,6</sup>, [Chris Garvey](#)<sup>7</sup>

Affiliations expand

- PMID: [38536108](https://pubmed.ncbi.nlm.nih.gov/38536108/)
- DOI: [10.1164/rccm.202402-0392VP](https://doi.org/10.1164/rccm.202402-0392VP)

*No abstract available*

- [Cited by 1 article](#)

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Respir Med

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. 2024 Jul 13:107740.

doi: 10.1016/j.rmed.2024.107740. Online ahead of print.

## The Effect of Pulmonary Rehabilitation on Cardiovascular Risk, Oxidative Stress and Systemic Inflammation in Patients with COPD

Ana Muñoz Montiel<sup>1</sup>, Pedro Ruiz-Esteban<sup>2</sup>, Adolfo Doménech Del Río<sup>1</sup>, Pedro Valdivielso<sup>3</sup>, Miguel Ángel Sánchez Chaparro<sup>4</sup>, Casilda Oliveira<sup>5</sup>

Affiliations expand

- PMID: 39009098
- DOI: [10.1016/j.rmed.2024.107740](https://doi.org/10.1016/j.rmed.2024.107740)

### Abstract

**Purpose:** Chronic obstructive pulmonary disease (COPD) is a leading cause of death, and cardiovascular (CV) comorbidities play a role. Evidence of the pulmonary rehabilitation (PR) effect in reducing the CV risk (CVR) in COPD patients is limited. In this study, we aimed to determine the impact of an 8-week PR program (PRP) on the CVR of the overall population and to compare the impact on the exacerbator versus non-exacerbator patients.

**Patients and methods:** This was a prospective study that included adults who had post-bronchodilator forced expiratory volume in 1 s (FEV1) to forced vital capacity (FVC) (FEV1/FVC) ratio <70% and FEV1 <80% predicted, had quit smoking for at least 1 year and had a history of tobacco consumption greater than 10 packs/year, and were clinically stable in the last 8 weeks. Pre- and post-PRP assessments included respiratory function evaluation, laboratory tests, and exercise capacity assessment (6-minute walking test [6MWT]). CVR was assessed using different risk prediction models.

**Results:** A total of 50 patients (28 exacerbators and 22 non-exacerbators) completed the PRP (median age: 64.5 years, men: 72%; arterial hypertension: 70%, dyslipidemia: 30%, diabetes: 20%; CV disease (CVD): 24%). After the PRP, exacerbator patients showed a significant decrease in the CVR calculated by the COPDCoRi model ( $p < 0.001$ ); patients with  $\geq 30$ -meter increase on the 6MWT showed statistically significant lower levels of glucose ( $p = 0.004$ ), HbA1c ( $p = 0.004$ ) and BODE index score ( $p = 0.026$ ) compared to patients with <30-meter increase.

**Conclusions:** PR reduced certain modifiable CVR factors and CVD risk, especially in exacerbator patients.

**Keywords:** ApoB48; cardiovascular risk (CVR); chronic obstructive pulmonary disease (COPD); phenotype; pulmonary rehabilitation (PR).

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Conflict of interest statement

Declaration of Competing Interest The authors report no conflicts of interest in this work.

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Comparative Study

Respir Res

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. 2024 Jul 13;25(1):274.

doi: 10.1186/s12931-024-02902-2.

[Midregional Proatrial Natriuretic Peptide \(MRproANP\) is associated with vertebral fractures and low bone density in patients with chronic obstructive pulmonary disease \(COPD\)](#)

[Franziska C Trudzinski](#)<sup>1</sup>, [Rudolf A Jörres](#)<sup>2</sup>, [Peter Alter](#)<sup>3</sup>, [Henrik Watz](#)<sup>4,5</sup>, [Claus F Vogelmeier](#)<sup>3</sup>, [Hans-Ulrich Kauczor](#)<sup>6,7</sup>, [Subasini Thangamani](#)<sup>6,7</sup>, [Manuel Debic](#)<sup>6,7</sup>, [Tobias Welte](#)<sup>8</sup>, [Jürgen Behr](#)<sup>9</sup>, [Kathrin Kahnert](#)<sup>9,10</sup>, [Robert Bals](#)<sup>11</sup>, [Christian Herr](#)<sup>11</sup>, [Claus Peter Heußel](#)<sup>7,12</sup>, [Jürgen Biederer](#)<sup>6,7,13,14</sup>, [Oyunbileg von Stackelberg](#)<sup>6,7</sup>, [Sebastian Fähndrich](#)<sup>15</sup>, [Emiel F M Wouters](#)<sup>16,17,18</sup>, [Benjamin Waschki](#)<sup>19,20</sup>, [Klaus F Rabe](#)<sup>19</sup>, [Felix J F Herth](#)<sup>21</sup>, [Viktoria Palm](#)<sup>6,7</sup>; [COSYCONET study group](#)

Collaborators, Affiliations expand

- PMID: 39003487
- PMCID: [PMC11245771](#)

- DOI: [10.1186/s12931-024-02902-2](https://doi.org/10.1186/s12931-024-02902-2)

## Abstract

**Background:** Patients with COPD are often affected by loss of bone mineral density (BMD) and osteoporotic fractures. Natriuretic peptides (NP) are known as cardiac markers, but have also been linked to fragility-associated fractures in the elderly. As their functions include regulation of fluid and mineral balance, they also might affect bone metabolism, particularly in systemic disorders such as COPD.

**Research question:** We investigated the association between NP serum levels, vertebral fractures and BMD assessed by chest computed tomography (CT) in patients with COPD.

**Methods:** Participants of the COSYCONET cohort with CT scans were included. Mean vertebral bone density on CT (BMD-CT) as a risk factor for osteoporosis was assessed at the level of TH12 (AI-Rad Companion), and vertebral compression fractures were visually quantified by two readers. Their relationship with N-terminal pro-B-type natriuretic peptide (NT-proBNP), Mid-regional pro-atrial natriuretic peptide (MRproANP) and Midregional pro-adrenomedullin (MRproADM) was determined using group comparisons and multivariable analyses.

**Results:** Among 418 participants (58% male, median age 64 years, FEV<sub>1</sub> 59.6% predicted), vertebral fractures in TH12 were found in 76 patients (18.1%). Compared to patients without fractures, these had elevated serum levels ( $p \leq 0.005$ ) of MRproANP and MRproADM. Using optimal cut-off values in multiple logistic regression analyses, MRproANP levels  $\geq 65$  nmol/l (OR 2.34;  $p = 0.011$ ) and age ( $p = 0.009$ ) were the only significant predictors of fractures after adjustment for sex, BMI, smoking status, FEV<sub>1</sub>% predicted, SGRQ Activity score, daily physical activity, oral corticosteroids, the diagnosis of cardiac disease, and renal impairment. Correspondingly, MRproANP ( $p < 0.001$ ), age ( $p = 0.055$ ), SGRQ Activity score ( $p = 0.061$ ) and active smoking ( $p = 0.025$ ) were associated with TH12 vertebral density.

**Interpretation:** MRproANP was a marker for osteoporotic vertebral fractures in our COPD patients from the COSYCONET cohort. Its association with reduced vertebral BMD on CT and its known modulating effects on fluid and ion balance are suggestive of direct effects on bone mineralization.

**Trial registration:** ClinicalTrials.gov [NCT01245933](https://clinicaltrials.gov/ct2/show/study/NCT01245933), Date of registration: 18 November 2010.

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## Conflict of interest statement

FCT reported payments or honoraria for lectures and presentations from Boehringer Ingelheim Chiesi, GlaxoSmithKline, GrifolsNovartis, CSL Behring, Streamed up, RG Gesellschaft für Information and Organisation mbH, PA reports grants from German Federal Ministry of Education and Research (BMBF) Competence Network Asthma and COPD (ASCONET), grants from AstraZeneca GmbH, grants and non-financial support from Bayer Schering Pharma AG, grants, personal fees and non-financial support from Boehringer Ingelheim Pharma GmbH & Co. KG, grants and non-financial support from Chiesi GmbH, grants from GlaxoSmithKline, grants from Grifols Deutschland GmbH, grants from MSD Sharp & Dohme GmbH, grants and

personal fees from Mundipharma GmbH, grants, personal fees and non-financial support from Novartis Deutschland GmbH, grants from Pfizer Pharma GmbH, grants from Takeda Pharma Vertrieb GmbH & Co. KG, outside the submitted work. CFV reports grants and personal fees from AstraZeneca, grants and personal fees from Boehringer Ingelheim, grants and personal fees from Chiesi, grants and personal fees from GlaxoSmithKline, grants and personal fees from Grifols, grants and personal fees from Novartis, personal fees from Berlin Chemie/Menarini, personal fees from CSL Behring, grants from German Federal Ministry of Education and Research (BMBF) Competence Network Asthma and COPD (ASCONET), personal fees from Nuvaira, personal fees from MedUpdate, outside the submitted work. HUK reports grants from Siemens, non-financial support from Bayer, during the conduct of the study; grants from Siemens, grants and personal fees from Philips, personal fees from Boehringer Ingelheim, personal fees from Merck Sharp Dohme, personal fees from Astra Zeneca, outside the submitted work. R.B. reports grants and personal fees from AstraZeneca, grants and personal fees from Boehringer Ingelheim, personal fees from GlaxoSmithKline, personal fees from Grifols, grants and personal fees from Novartis, personal fees from CSL Behring, grants from German Federal Ministry of Education and Research (BMBF) Competence Network Asthma and COPD (ASCONET), grants from Sander Stiftung, grants from Schwieta Stiftung, grants from Krebshilfe, grants from Mukoviszidose eV, outside the submitted work. He is Editor in Chief of Respiratory Research. FJF received personal money for adboard activities and lecture fees from Pulmonx, BTG, Olympus and Uptake. RJ, HW, ST, MD, TW, JB, KK, RB, CH, CPC, JB, OvS, SF, EFMW, BW, KFR, VP.

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

supplementary info

Publication types, MeSH terms, Substances, Associated dataexpand

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

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Evid Based Nurs

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. 2024 Jul 18:ebnurs-2024-104111.

doi: 10.1136/ebnurs-2024-104111. Online ahead of print.

## Multimorbidity is highly prevalent in adults with severe mental illness

James Hill <sup>1</sup>, Emma Hill <sup>2</sup>

Affiliations expand

- PMID: 39025660
- DOI: [10.1136/ebnurs-2024-104111](https://doi.org/10.1136/ebnurs-2024-104111)

*No abstract available*

Conflict of interest statement

Competing interests: None declared.

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JMIR Public Health Surveill

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. 2024 Jul 18:10:e52353.

doi: 10.2196/52353.

[A Multimorbidity Analysis of Hospitalized Patients With COVID-19 in Northwest Italy: Longitudinal Study Using Evolutionary Machine Learning and Health Administrative Data](#)

Dayana Benny <sup>1,2</sup>, Mario Giacobini <sup>3</sup>, Alberto Catalano <sup>1,4</sup>, Giuseppe Costa <sup>1</sup>, Roberto Gnani <sup>5</sup>, Fulvio Ricceri <sup>1</sup>

Affiliations expand

- PMID: 39024001

- DOI: [10.2196/52353](https://doi.org/10.2196/52353)

Free article

## Abstract

**Background:** Multimorbidity is a significant public health concern, characterized by the coexistence and interaction of multiple preexisting medical conditions. This complex condition has been associated with an increased risk of COVID-19. Individuals with multimorbidity who contract COVID-19 often face a significant reduction in life expectancy. The postpandemic period has also highlighted an increase in frailty, emphasizing the importance of integrating existing multimorbidity details into epidemiological risk assessments. Managing clinical data that include medical histories presents significant challenges, particularly due to the sparsity of data arising from the rarity of multimorbidity conditions. Also, the complex enumeration of combinatorial multimorbidity features introduces challenges associated with combinatorial explosions.

**Objective:** This study aims to assess the severity of COVID-19 in individuals with multiple medical conditions, considering their demographic characteristics such as age and sex. We propose an evolutionary machine learning model designed to handle sparsity, analyzing preexisting multimorbidity profiles of patients hospitalized with COVID-19 based on their medical history. Our objective is to identify the optimal set of multimorbidity feature combinations strongly associated with COVID-19 severity. We also apply the Apriori algorithm to these evolutionarily derived predictive feature combinations to identify those with high support.

**Methods:** We used data from 3 administrative sources in Piedmont, Italy, involving 12,793 individuals aged 45-74 years who tested positive for COVID-19 between February and May 2020. From their 5-year pre-COVID-19 medical histories, we extracted multimorbidity features, including drug prescriptions, disease diagnoses, sex, and age. Focusing on COVID-19 hospitalization, we segmented the data into 4 cohorts based on age and sex. Addressing data imbalance through random resampling, we compared various machine learning algorithms to identify the optimal classification model for our evolutionary approach. Using 5-fold cross-validation, we evaluated each model's performance. Our evolutionary algorithm, utilizing a deep learning classifier, generated prediction-based fitness scores to pinpoint multimorbidity combinations associated with COVID-19 hospitalization risk. Eventually, the Apriori algorithm was applied to identify frequent combinations with high support.

**Results:** We identified multimorbidity predictors associated with COVID-19 hospitalization, indicating more severe COVID-19 outcomes. Frequently occurring morbidity features in the final evolved combinations were age>53, R03BA (glucocorticoid inhalants), and N03AX (other antiepileptics) in cohort 1; A10BA (biguanide or metformin) and N02BE (anilides) in cohort 2; N02AX (other opioids) and M04AA (preparations inhibiting uric acid production) in cohort 3; and G04CA (Alpha-adrenoreceptor antagonists) in cohort 4.

**Conclusions:** When combined with other multimorbidity features, even less prevalent medical conditions show associations with the outcome. This study provides insights beyond COVID-19, demonstrating how repurposed administrative

data can be adapted and contribute to enhanced risk assessment for vulnerable populations.

**Keywords:** ATC; COVID-19; ICD; Italy; SARS-CoV-2; big data; coronavirus; data; data analysis; data mining; epidemiology; evolutionary algorithm; feature bins; feature engineering; health data; long COVID; longitudinal analyses; longitudinal analysis; longitudinal study; machine learning; multimorbidity; polypharmacy; public health; risk assessment; risk assessments; severity; sparse binary data.

©Dayana Benny, Mario Giacobini, Alberto Catalano, Giuseppe Costa, Roberto Gnani, Fulvio Ricceri. Originally published in JMIR Public Health and Surveillance (<https://publichealth.jmir.org>), 18.07.2024.

supplementary info

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BMC Public Health

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. 2024 Jul 16;24(1):1910.

doi: 10.1186/s12889-024-19457-y.

[Association of cigarette smoking, smoking cessation with the risk of cardiometabolic multimorbidity in the UK Biobank](#)

[Shuo Zhang](#) <sup>#1</sup>, [Zhou Jiang](#) <sup>#1</sup>, [Hao Zhang](#) <sup>1</sup>, [Yuxin Liu](#) <sup>1</sup>, [Jike Qi](#) <sup>1</sup>, [Yu Yan](#) <sup>1</sup>, [Ting Wang](#) <sup>1</sup>, [Ping Zeng](#) <sup>2 3</sup>

Affiliations expand

- PMID: 39014423
- PMCID: [PMC11253396](#)

- DOI: [10.1186/s12889-024-19457-y](https://doi.org/10.1186/s12889-024-19457-y)

## Abstract

**Background:** To investigate the association between cigarette smoking, smoking cessation and the trajectory of cardiometabolic multimorbidity (CMM), and further to examine the association of age at smoking initiation and smoking cessation with CMM.

**Methods:** This study included 298,984 UK Biobank participants without cardiometabolic diseases (CMDs) (including type 2 diabetes, coronary heart diseases, stroke, and hypertension) at baseline. Smoking status was categorized into former, current, and never smokers, with age at smoking initiation and smoking cessation as a proxy for current and former smokers. The multi-state model was performed to evaluate the association between cigarette smoking, smoking cessation and CMM.

**Results:** During a median follow-up of 13.2 years, 59,193 participants developed first cardiometabolic disease (FCMD), 14,090 further developed CMM, and 16,487 died. Compared to former smokers, current smokers had higher risk at all transitions, with hazard ratio (95% confidence interval) = 1.59 (1.55 ~ 1.63) vs. 1.18 (1.16 ~ 1.21) ( $P = 1.48 \times 10^{-118}$ ) from health to FCMD, 1.40 (1.33 ~ 1.47) vs. 1.09 (1.05 ~ 1.14) ( $P = 1.50 \times 10^{-18}$ ) from FCMD to CMM, and 2.87 (2.72 ~ 3.03) vs. 1.38 (1.32 ~ 1.45) ( $P < 0.001$ ) from health, 2.16 (1.98 ~ 2.35) vs. 1.25 (1.16 ~ 1.34) ( $P = 1.18 \times 10^{-46}$ ) from FCMD, 2.02 (1.79 ~ 2.28) vs. 1.22 (1.09 ~ 1.35) ( $P = 3.93 \times 10^{-17}$ ) from CMM to death; whereas quitting smoking reduced the risk attributed to cigarette smoking by approximately 76.5% across all transitions. Reduced risks of smoking cessation were also identified when age at quitting smoking was used as a proxy for former smokers.

**Conclusions:** Cigarette smoking was associated with a higher risk of CMM across all transitions; however, smoking cessation, especially before the age of 35, was associated with a significant decrease in CMM risk attributed to cigarette smoking.

**Keywords:** Cardiometabolic multimorbidity; Cigarette smoking; Multi-state model; Smoking cessation; UK Biobank.

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## Conflict of interest statement

The authors declare no competing interests.

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

[supplementary info](#)

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. 2024 Jul 16;13(14):e032589.

doi: 10.1161/JAHA.123.032589. Epub 2024 Jul 9.

### [Optimizing Prediction of In-Hospital Mortality in Elderly Patients With Acute Myocardial Infarction: A Nomogram Approach Using the Age-Adjusted Charlson Comorbidity Index Score](#)

[He Lin](#)<sup>1,2</sup>, [Ying-Bin Xi](#)<sup>1,2,3</sup>, [Zhi-Cheng Yang](#)<sup>4</sup>, [Zhou-Jie Tong](#)<sup>5</sup>, [Guihua Jiang](#)<sup>5</sup>, [Jihong Gao](#)<sup>1,2</sup>, [Baoxu Kang](#)<sup>1,2</sup>, [Ying Ma](#)<sup>6</sup>, [Wei Zhang](#)<sup>1,2</sup>, [Zhi-Hao Wang](#)<sup>1,2</sup>

Affiliations expand

- PMID: 38979832
- DOI: [10.1161/JAHA.123.032589](#)

Free article

Abstract

**Background:** To study the age-adjusted Charlson comorbidity index (ACCI) scale, which is a comprehensive quantification of multimorbidity coexistence, for the assessment of the risk of acute myocardial infarction death in elderly people.

**Methods and results:** A total of 502 older patients with acute myocardial infarction were studied at Qilu Hospital from September 2017 to March 2022. They were categorized on the basis of ACCI into low ( $\leq 5$ ), intermediate (6, 7), and high ( $\geq 8$ ) risk groups. Hospitalization duration was observed, with death as the end point. least absolute shrinkage and selection operator regression was used to screen variables, 10-fold cross-validation was performed to validate the screened variables, a Cox regression nomogram predicting the risk of patient death was prepared, hazard ratio with 95% CI was calculated, a nomogram calibration curve was constructed, and a receiver operating characteristic curve, decision curve analysis, and a clinical impact curve were established. From 62 potential factors in a least absolute shrinkage and selection operator regression, 12 were selected via 10-fold cross-validation. Retain variables with significant statistical differences in the Cox regression. A nomogram of the risk of death from acute infarction was constructed,

and risk factors included ventricular tachycardia/fibrillation, atrial fibrillation, nicorandil, angiotensin-converting enzyme inhibitors/angiotensin-converting enzyme inhibitors,  $\beta$  blockers, and ACCI score, carbon dioxide combining power, and blood calcium concentration.

**Conclusions:** The ACCI score effectively assesses multimorbidity in the older patients. As ACCI rises, the death risk from acute myocardial infarction grows. The study's nomogram is valid and clinically applicable.

**Keywords:** acute myocardial infarction; arrhythmia; death; elderly; multimorbidity coexistence; surgery.

supplementary info

MeSH termsexpand

full text links

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Thorax

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. 2024 Jul 16;79(8):770-777.

doi: 10.1136/thorax-2023-220485.

[Lung function trajectories from school age to adulthood and their relationship with markers of cardiovascular disease risk](#)

[Raquel Granell](#) <sup>#1</sup>, [Sadia Haider](#) <sup>#2</sup>, [Matea Deliu](#) <sup>2</sup>, [Anhar Ullah](#) <sup>2</sup>, [Osama Mahmoud](#) <sup>3 4</sup>, [Sara Fontanella](#) <sup>2</sup>, [Lesley Lowe](#) <sup>5</sup>, [Angela Simpson](#) <sup>5</sup>, [James William Dodd](#) <sup>6 7</sup>, [Seyed Hasan Arshad](#) <sup>8</sup>, [Clare S Murray](#) <sup>9</sup>, [Graham Roberts](#) <sup>10 11</sup>, [Alun Hughes](#) <sup>12</sup>, [Chloe Park](#) <sup>12</sup>, [John W Holloway](#) <sup>#10</sup>, [Adnan Custovic](#) <sup>#2</sup>; [STELAR/UNICORN investigators](#)

Collaborators, Affiliations expand

- PMID: 38697843
- DOI: [10.1136/thorax-2023-220485](#)

## Free article

### Abstract

**Rationale:** Lung function in early adulthood is associated with subsequent adverse health outcomes.

**Objectives:** To ascertain whether stable and reproducible lung function trajectories can be derived in different populations and investigate their association with objective measures of cardiovascular structure and function.

**Methods:** Using latent profile modelling, we studied three population-based birth cohorts with repeat spirometry data from childhood into early adulthood to identify trajectories of forced expiratory volume in 1 s (FEV<sub>1</sub>)/forced vital capacity (FVC). We used multinomial logistic regression models to investigate early-life predictors of the derived trajectories. We then ascertained the extent of the association between the derived FEV<sub>1</sub>/FVC trajectories and blood pressure and echocardiographic markers of increased cardiovascular risk and stroke in ~3200 participants at age 24 years in one of our cohorts.

**Results:** We identified four FEV<sub>1</sub>/FVC trajectories with strikingly similar latent profiles across cohorts (pooled N=6377): above average (49.5%); average (38.3%); below average (10.6%); and persistently low (1.7%). Male sex, wheeze, asthma diagnosis/medication and allergic sensitisation were associated with trajectories with diminished lung function in all cohorts. We found evidence of an increase in cardiovascular risk markers ascertained by echocardiography (including left ventricular mass indexed to height and carotid intima-media thickness) with decreasing FEV<sub>1</sub>/FVC (with p values for the mean crude effects per-trajectory ranging from 0.10 to p<0.001). In this analysis, we considered trajectories as a pseudo-continuous variable; we confirmed the assumption of linearity in all the regression models.

**Conclusions:** Childhood lung function trajectories may serve as predictors in the development of not only future lung disease, but also the cardiovascular disease and multimorbidity in adulthood.

**Keywords:** Respiratory Measurement.

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### Conflict of interest statement

**Competing interests:** RG, SH, MD, AU, OM, SF, LL, AS, CP, CSM and GR declare no conflicts of interest. AS has received research grants. JWD has received research and charity grants and declares pharmaceutical support for lectures and attending conferences/meetings. AH has received support from Research Institutions and declares an unpaid fiduciary role. JWH has received research grant and support for travel to congress. AC has received research grants, consulting fees, honoraria for lectures and declares unpaid fiduciary role.

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## J Affect Disord

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. 2024 Jul 15:362:560-568.

doi: [10.1016/j.jad.2024.07.053](https://doi.org/10.1016/j.jad.2024.07.053). Online ahead of print.

[Multimorbidity, lifestyle, and cognitive function: A cross-cultural study on the role of diabetes, cardiovascular disease, cancer, and chronic respiratory diseases](#)

[Huifen Ma](#)<sup>1</sup>, [Xiaomin Mu](#)<sup>2</sup>, [Yinzi Jin](#)<sup>3</sup>, [Yanan Luo](#)<sup>3</sup>, [Min Wu](#)<sup>2</sup>, [Zhiyan Han](#)<sup>4</sup>

## Affiliations expand

- PMID: 39019233
- DOI: [10.1016/j.jad.2024.07.053](https://doi.org/10.1016/j.jad.2024.07.053)

## Abstract

**Background:** The effect of lifestyle factors on cognitive function related to four major noncommunicable diseases (NCDs) including diabetes, cardiovascular disease, cancer, and chronic respiratory diseases, and the relationship between these NCDs and cognitive function have not been fully studied. We aimed to investigate the longitudinal associations between these NCDs and cognitive function in middle-aged and older people, and the combined effects of lifestyle factors.

**Methods:** By employing the data from three large-scale cohort studies from the U.S. Health and Retirement Study (2010-2019), English Longitudinal Study of Aging (2014-2019), and China Health and Retirement Longitudinal Study (2011-2019), this study carried out a multi-cohort analysis to 77, 210 participants. Fixed-effects regression models were used to examine associations between NCD status and cognitive function. Margin plots were used to illustrate the effect of lifestyle factors.

**Results:** Our findings revealed the dose-dependent association between mounting these NCDs and declining cognitive performance, ranging from one NCD ( $\beta = -0.05$ , 95 % CI: -0.08 to -0.02) to four NCDs ( $\beta = -0.51$ , 95 % CI: -0.75 to -0.28). Decline in cognitive function associated with NCDs was exacerbated with physical inactivity, current smoking status, and an increase in unhealthy lifestyle behaviors.

**Limitations:** The observational study design precludes causal interrogation of lifestyles and four NCDs on cognitive function.

**Conclusions:** An increasing number of these NCDs were dose-dependently associated with the decline in cognitive function score. Unhealthy lifestyle factors expedite decline in cognitive function linked to these NCDs.

**Keywords:** Aging; Cognitive dysfunction; Cross-cultural comparison; Life style; Multimorbidity; Noncommunicable diseases.

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**Conflict of interest statement**

**Declaration of competing interest** None.

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**Fam Med Community Health**

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. 2024 Jul 14;12(3):e002834.

doi: 10.1136/fmch-2024-002834.

[Effectiveness of post-COVID-19 primary care attendance in improving survival in very old patients with multimorbidity: a territory-wide target trial emulation](#)

[Cuiling Wei<sup>1</sup>, Vincent Ka Chun Yan<sup>1</sup>, Camille Maringe<sup>2</sup>, Wenxin Tian<sup>1</sup>, Rachel Yui Ki Chu<sup>1</sup>, Wenlong Liu<sup>1</sup>, Boyan Liu<sup>1</sup>, Yuqi Hu<sup>1</sup>, Lingyue Zhou<sup>1</sup>, Celine Sze Ling Chui<sup>3 4 5 6</sup>, Xue Li<sup>1 6 7</sup>, Eric Yuk Fai Wan<sup>1 5 6 8</sup>, Ching Lung Cheung<sup>1 5 6</sup>, Esther Wai Yin Chan<sup>1 5 9</sup>, William Chi Wai Wong<sup>8</sup>, Ian Chi Kei Wong<sup>10 5 6 9 11 12</sup>, Francisco Tsz Tsun Lai<sup>10 5 6 8</sup>](#)

## Affiliations expand

- PMID: 39004436
- PMCID: [PMC11253766](#)
- DOI: [10.1136/fmch-2024-002834](#)

## Abstract

**Objectives:** Older individuals with multimorbidity are at an elevated risk of infection and complications from COVID-19. Effectiveness of post-COVID-19 interventions or care models in reducing subsequent adverse outcomes in these individuals have rarely been examined. This study aims to examine the effectiveness of attending general outpatient within 30 days after discharge from COVID-19 on 1-year survival among older adults aged 85 years or above with multimorbidity.

**Design:** Retrospective cohort study emulating a randomised target trial using electronic health records.

**Setting:** We used data from the Hospital Authority and the Department of Health in Hong Kong, which provided comprehensive electronic health records, COVID-19 confirmed case data, population-based vaccination records and other individual characteristics for the study.

**Participants:** Adults aged 85 years or above with multimorbidity who were discharged after hospitalisation for COVID-19 between January 2020 and August 2022.

**Interventions:** Attending a general outpatient within 30 days of last COVID-19 discharge defined the exposure, compared to no outpatient visit.

**Main outcome measures:** Primary outcome was all-cause mortality within one year. Secondary outcomes included mortality from respiratory, cardiovascular and cancer causes.

**Results:** A total of 6183 eligible COVID-19 survivors were included in the analysis. The all-cause mortality rate following COVID-19 hospitalisation was lower in the general outpatient visit group (17.1 deaths per 100 person-year) compared with non-visit group (42.8 deaths per 100 person-year). After adjustment, primary care consultations within 30 days after discharge were associated with a significantly greater 1-year survival (difference in 1-year survival: 11.2%, 95% CI 8.1% to 14.4%). We also observed significantly better survival from respiratory diseases in the general outpatient visit group (difference in 1-year survival: 6.3%, 95% CI 3.5% to 8.9%). In a sensitivity analysis for different grace period lengths, we found that the earlier participants had a general outpatient visit after COVID-19 discharge, the better the survival.

**Conclusions:** Timely primary care consultations after COVID-19 hospitalisation may improve survival following COVID-19 hospitalisation among older adults aged 85 or above with multimorbidity. Expanding primary care services and implementing

follow-up mechanisms are crucial to support this vulnerable population's recovery and well-being.

**Keywords:** COVID-19; General Practice; Geriatrics; Primary Health Care.

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#### **Conflict of interest statement**

**Competing interests:** CSLC has received grants from the Health Bureau of the Hong Kong Government, Hong Kong Research Grant Council, Hong Kong Innovation and Technology Commission, Pfizer, IQVIA, MSD, and Amgen; and personal fees from PrimeVigilance; and grants from Research Grants Council (RGC/ECS, Hong Kong), outside the submitted work. XL has received research grants from the Health Bureau of the Government of the Hong Kong Special Administrative Region; research and educational grants from Janssen and Pfizer; internal funding from the University of Hong Kong; consultancy fees from Merck Sharp & Dohme; and grants from Research Grants Council (RGC/ECS, Hong Kong), unrelated to this work. EYFW has received research grants from the Health Bureau of the Government of the Hong Kong Special Administrative Region, and the Hong Kong Research Grants Council, outside the submitted work. EWYC reports honorarium from Hospital Authority; and grants from Research Grants Council (RGC, Hong Kong), Research Fund Secretariat of the Health Bureau, National Natural Science Fund of China, Wellcome Trust, Bayer, Bristol-Myers Squibb, Pfizer, Janssen, Amgen, Takeda, and Narcotics Division of the Security Bureau of the Hong Kong Special Administrative Region, outside the submitted work. ICKW reports research funding outside the submitted work from Amgen, Bristol-Myers Squibb, Pfizer, Janssen, Bayer, GSK, Novartis, the Hong Kong Research Grants Council, the Health Bureau of the Government of the Hong Kong Special Administrative Region, National Institute for Health Research in England, European Commission, and the National Health and Medical Research Council in Australia; has received speaker fees from Janssen and Medicine in the previous 3 years; and is an independent non-executive director of Jacobson Medical in Hong Kong. FTTL has been supported by the RGC Postdoctoral Fellowship under the Hong Kong Research Grants Council and has received research grants from the Health Bureau of the Government of the Hong Kong Special Administrative Region, outside the submitted work. The remaining authors declare no competing interests.

- [40 references](#)
- [4 figures](#)

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

## Review

## Pediatr Pulmonol

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. 2024 Jul 19.

doi: 10.1002/ppul.27177. Online ahead of print.

**Looking beyond LCI: Multiple breath washout phase III slope derived indices and their application in chronic respiratory disease in children**

**Mollie Riley<sup>1,2</sup>, Michele Arigliani<sup>1,3</sup>, Gwyneth Davies<sup>2,4</sup>, Paul Aurora<sup>1,2</sup>**

## Affiliations expand

- PMID: 39031489
- DOI: [10.1002/ppul.27177](https://doi.org/10.1002/ppul.27177)

## Abstract

The multiple breath washout (MBW) test is widely reported in the context of Lung Clearance Index (LCI). LCI reflects global ventilation inhomogeneity but does not provide information regarding the localization of disease along the respiratory tree. The MBW-derived normalized phase III slope ( $S_{nIII}$ ) indices ( $S_{cond}$  and  $S_{acin}$ ), instead, can distinguish between convective-dependent and diffusion-convection-dependent ventilation inhomogeneity considered to occur within the conductive and acinar airways, respectively. In cystic fibrosis,  $S_{cond}$  tends to become abnormal even earlier than LCI and spirometry. The value of  $S_{cond}$  and  $S_{acin}$  in clinical practice has been recently explored in other respiratory conditions, including asthma, primary ciliary dyskinesia, bronchopulmonary dysplasia, bronchiolitis obliterans, and sickle cell disease. In this narrative review we offer an overview on the theoretical background, potentialities, and limitations of  $S_{nIII}$  analysis in children, including challenges and feasibility aspects. Moreover, we summarize current evidence on the use of  $S_{nIII}$ -derived indices across different groups of pediatric chronic respiratory disease and we highlight the gaps in knowledge that need to be addressed in future studies.

**Keywords:** children; cystic fibrosis; multiple breath washout; phase III slope analysis; ventilation inhomogeneity.

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**Int J Nurs Pract**

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. 2024 Jul 19:e13288.

doi: 10.1111/ijn.13288. Online ahead of print.

[The effect of web-designed education on medication adherence, asthma control and fatigue in patients with asthma: A randomized controlled trial](#)

[Eylül Gülnur Erdoğan<sup>1</sup>, Özlem Örsal<sup>2</sup>](#)

**Affiliations** expand

- PMID: 39031297
- DOI: [10.1111/ijn.13288](#)

**Abstract**

**Aims:** This study aimed to determine the effect of web-designed education developed for asthma patients on drug adherence, asthma control and fatigue.

**Methods:** This randomized controlled trial was conducted between August 2021 and January 2022 with 200 individuals suffering from poor asthma control who participated in web-designed education. After the intervention, the asthma patients were followed up for 6 weeks to measure Medication Adherence Report Scale (MARS), Chronic Obstructive Pulmonary Disease and Asthma Fatigue Scale (CAFS), Asthma Control Test (ACT) and Inhalation Devices Usage Techniques Knowledge Test (IDUSTKT). Data were analysed in the Statistical Package for the Social Sciences program using the Chi-square test, Independent t-test, Man-Whitney U test, Wilcoxon test, Paired t-test, Greenhouse-Geisser (F) test and Linear regression.

**Results:** The web-designed education had a statistically significant effect on the total scores of CAFS, ACT and IDUSTKT for individuals with asthma ( $p < 0.001$ ). This intervention decreased fatigue levels, improved asthma control and enhanced knowledge of inhalation device usage techniques. Although there was an improvement in medication adherence, this difference was not statistically significant.

**Conclusion:** These results suggest that web-based educational programs can be an effective tool in asthma management and may improve patients' quality of life. Future research should examine the long-term effects of such educational programs and their effectiveness across different demographic groups in more detail.

**Keywords:** asthma; asthma control; fatigue; medication adherence; web-designed education.

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[Medicine \(Baltimore\)](#)

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. 2024 Jul 19;103(29):e38998.

doi: 10.1097/MD.00000000000038998.

[Examining the effectiveness of artificial intelligence applications in asthma and COPD outpatient support in terms of patient health and public cost: SWOT analysis](#)

[Seha Akduman<sup>1</sup>, Kadir Yilmaz<sup>2</sup>](#)

[Affiliations expand](#)

- PMID: 39029048

- DOI: [10.1097/MD.00000000000038998](https://doi.org/10.1097/MD.00000000000038998)

## Abstract

This research aimed to examine the effectiveness of artificial intelligence applications in asthma and chronic obstructive pulmonary disease (COPD) outpatient treatment support in terms of patient health and public costs. The data obtained in the research using semiotic analysis, content analysis and trend analysis methods were analyzed with strengths, weakness, opportunities, threats (SWOT) analysis. In this context, 18 studies related to asthma, COPD and artificial intelligence were evaluated. The strengths of artificial intelligence applications in asthma and COPD outpatient treatment stand out as early diagnosis, access to more patients and reduced costs. The points that stand out among the weaknesses are the acceptance and use of technology and vulnerabilities related to artificial intelligence. Opportunities arise in developing differential diagnoses of asthma and COPD and in examining prognoses for the diseases more effectively. Malicious use, commercial data leaks and data security issues stand out among the threats. Although artificial intelligence applications provide great convenience in the outpatient treatment process for asthma and COPD diseases, precautions must be taken on a global scale and with the participation of international organizations against weaknesses and threats. In addition, there is an urgent need for accreditation for the practices to be carried out in this regard.

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## Conflict of interest statement

The authors have no conflicts of interest to disclose.

- [43 references](#)

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[Medicine \(Baltimore\)](#)

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2024 Jul 19;103(29):e38842.

doi: 10.1097/MD.00000000000038842.

## Research progress of airway inflammation in asthma: A bibliometric analysis

Lang Liye<sup>1</sup>, Zhao Hui, Huang Fuchun, Liu Hua

Affiliations expand

- PMID: 39029036
- DOI: [10.1097/MD.00000000000038842](https://doi.org/10.1097/MD.00000000000038842)

### Abstract

**Background:** In recent years, the prevalence of asthma has gradually increased and the number of asthmatics worldwide has reached 358 million, which has caused huge economic loss. Airway inflammation is an important feature of asthma, and international research in this field has a high degree of heat. Therefore, this paper uses the bibliometric method to systematically review and visualize the literature in this field, aiming to provide some reference value for follow-up related research.

**Methods:** To retrieve the research literature on airway inflammation in asthma from 2003 to 2022 in the Web of Science Core Collection database. The bibliometric method was used to systematically analyze the included literature data by using visualization analysis software such as CiteSpace (6.2. R4) and VOSviewer (1.6.19).

**Results:** A total of 1892 articles published in 423 journals were included in this study, from 1912 institutions in 62 countries/regions. The number of articles published between 2003 and 2022 showed a trend of fluctuating growth. The country with the largest number of articles published was China (558,29.49 %), followed by the United States (371,19.61 %) and Korea (212,11.21 %). Gibson, Peter G is the author with the highest number of publications, and Journal of Allergy and Clinical Immunology is the most published journal.

**Conclusion subsections:** This study systematically reveals the state of the literature in the field of airway inflammation in asthma over the past 20 years. The exploration of inflammatory cell components, pathway molecules and biological agents are research hotspots in this field and should be further studied.

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### Conflict of interest statement

The authors declare no conflict of interest.

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Review

NPJ Prim Care Respir Med

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. 2024 Jul 18;34(1):21.

doi: [10.1038/s41533-024-00381-y](https://doi.org/10.1038/s41533-024-00381-y).

[Change is in the air: key questions on the 'Treatable Traits' model for chronic airway diseases in primary care](#)

[Alvar Agusti](#)<sup>1 2 3 4</sup>, [Peter G Gibson](#)<sup>5</sup>, [Liam G Heaney](#)<sup>6</sup>, [Mike Thomas](#)<sup>7</sup>

Affiliations expand

- PMID: [39025870](https://pubmed.ncbi.nlm.nih.gov/39025870/)
- PMCID: [PMC11258123](https://pubmed.ncbi.nlm.nih.gov/PMC11258123/)
- DOI: [10.1038/s41533-024-00381-y](https://doi.org/10.1038/s41533-024-00381-y)

Abstract

Despite great advancements in the treatment of chronic airway diseases, improvements in morbidity and mortality have stalled in recent years. Asthma and chronic obstructive pulmonary disease are complex and heterogeneous diseases that require tailored management based on individual patient characteristics and needs. The Treatable Traits (TTs) approach aims to personalise and improve patient care through the identification and targeting of clinically relevant and modifiable pulmonary, extra-pulmonary and behavioural traits. In this article, we outline the rationale for TTs-based management and provide practical guidance for its application in primary care. To aid implementation, seven potential 'prime' traits are

proposed: airflow obstruction, eosinophilic inflammation, adherence, inhaler technique, smoking, low body mass index/obesity and anxiety and depression-selected for their prevalence, recognisability and feasibility of use. Some of the key questions among healthcare professionals, that may be roadblocks to widespread application of a TTs model of care, are also addressed.

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#### Conflict of interest statement

AA has research grants from AstraZeneca, GSK and Menarini; is a lector for AstraZeneca, Chiesi, Cipla, GSK, Menarini, Sanofi and Zambon; and is a member of scientific boards for AstraZeneca, Chiesi, GSK, Menarini and Sanofi. PGG has research grants from AstraZeneca and GSK; consulting lecturing and advisory board honoraria from AstraZeneca, Chiesi, GSK, Novartis and Sanofi; and is a respiratory physician at John Hunter Hospital, New South Wales, Australia. LGH has research grants from Aerocrine, Amgen, AstraZeneca, Genentech (Roche), GSK, MedImmune, Novartis and Vitalograph; consulting lecturing and advisory board honoraria from AstraZeneca, Boehringer Ingelheim, Chiesi, Circassia, Evelo Biosciences, GSK, Napp Pharmaceuticals, Novartis, Roche, Teva and Theravance; and is a clinical professor a Queens University and Belfast City Hospital, Belfast, UK. MT has consulting lecturing honoraria from GSK and is an Emeritus Professor of Primary Care Research at the University of Southampton, UK. All authors have no non-financial competing interests.

- [70 references](#)

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Prev Chronic Dis

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. 2024 Jul 18:21:E53.

doi: 10.5888/pcd21.240005.

## The Status of Asthma in the United States

Cynthia A Pate<sup>1,2</sup>, Hatice S Zahran<sup>1</sup>

Affiliations expand

- PMID: 39025120
- DOI: [10.5888/pcd21.240005](https://doi.org/10.5888/pcd21.240005)

### Abstract

**Introduction:** Asthma imposes a substantial health and economic burden on patients and their families and on the health care system. An assessment of the status of asthma in the US may lead to effective strategies to improve health and quality of life among people with asthma. The objective of our study was to assess the historical trends and current state of asthma illness and death among children and adults in the US.

**Methods:** We assessed asthma-related emergency department visits and hospitalizations among children and adults by using data from the 2010-2021 National Health Interview Survey (NHIS), the 2010-2020 Nationwide Emergency Department Sample (NEDS), the National (Nationwide) Inpatient Sample (NIS), the Healthcare Cost and Utilization Project (HCUP), and the Agency for Healthcare Research and Quality (AHRQ). Asthma death rates were calculated by using 2010-2021 National Vital Statistics System data.

**Results:** Asthma prevalence increased significantly among adults from 2013 through 2021 ( $P = .04$  for the annual percentage change [APC] slope) and decreased among children from 2010 through 2021 ( $P$  values for slopes: 2010-2017,  $P = .03$ ; 2017-2021,  $P = .03$ ). Prevalence of current asthma was higher among non-Hispanic Black people (children, 12.5%; adjusted prevalence ratio [APR] = 2.19; 95% CI, 1.68-2.84 and adults, 10.6%; APR = 1.25; 95% CI, 1.09-1.43) compared with non-Hispanic White people (children, 5.7%; adults, 8.2%). Prevalence of asthma attacks and use of asthma-related health care declined among adults and children. Asthma prevalence and asthma-related emergency department visits, hospitalization, and death rates differed by select characteristics.

**Conclusions:** Although asthma attacks, ED visits, hospitalizations, and deaths have declined since 2010 among all ages, current asthma prevalence declined only among children, and significant disparities in health and health care use still exist.

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Review

Arch Dis Child

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. 2024 Jul 18;109(8):616-619.

doi: [10.1136/archdischild-2023-325548](https://doi.org/10.1136/archdischild-2023-325548).

[Near-fatal and fatal asthma and air pollution: are we missing an opportunity to ask key questions?](#)

[Deepa Varghese](#)<sup>1,2</sup>, [Tom Clemens](#)<sup>3</sup>, [Ann McMurray](#)<sup>4</sup>, [Hilary Pinnock](#)<sup>2,5</sup>, [Jonathan Grigg](#)<sup>6</sup>, [Steve Cunningham](#)<sup>7</sup>

Affiliations expand

- PMID: [37949644](#)
- DOI: [10.1136/archdischild-2023-325548](https://doi.org/10.1136/archdischild-2023-325548)

Abstract

There is an increasing body of evidence supporting the link between asthma attacks and air pollution in children. To our knowledge, there has only been one reported case of a fatal asthma attack in a child associated with air pollution and this was in the UK. This article considers why there is a lack of evidence on fatal/near-fatal asthma and air pollution. We also explore three challenges. First, fatal and near-fatal asthma events are rare and not yet well understood. Second, measuring and interpreting personal exposure to air pollution with sufficient temporal and spatial detail are challenging to interpret in the context of individual fatal or near-fatal asthma attacks. Third, current studies are not designed to answer the question of whether or to what extent air pollution is associated with fatal/near-fatal asthma attacks in children. Conclusive evidence is not yet available and systems of data collection for both air pollution and fatal and near-fatal asthma attacks should be enhanced to ensure risk can be determined and impact minimised.

Keywords: Child Health; Paediatrics; Respiratory Medicine.

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## Conflict of interest statement

Competing interests: None declared.

## supplementary info

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## Review

## Am J Med Sci

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. 2024 Jul 17:S0002-9629(24)01357-0.

doi: 10.1016/j.amjms.2024.07.023. Online ahead of print.

## [COPD Overlap Conditions: Clinical and Therapeutic Implications](#)

[Abdullah Jarrah](#)<sup>1</sup>, [Mohammed T Awad](#)<sup>2</sup>, [Cassandra Cramer-Bour](#)<sup>3</sup>, [Ayman O Soubani](#)<sup>3</sup>

## Affiliations expand

- PMID: 39029738
- DOI: [10.1016/j.amjms.2024.07.023](#)

## Abstract

Chronic Obstructive Pulmonary Disease (COPD) is a complex pulmonary condition characterized by chronic airflow limitation. Within the spectrum of COPD, distinct overlap conditions exist, including Asthma-COPD Overlap (ACO), COPD-Obstructive Sleep Apnea (COPD-OSA), Combined Pulmonary Fibrosis and Emphysema (CPFE), and Bronchiectasis-COPD Overlap (BCO). This review provides a comprehensive

overview of the clinical and therapeutic implications of these conditions, highlighting the differences in complications compared with COPD alone in addition to the diagnostic challenges of identifying these conditions. Therapeutically tailored approaches are necessary for COPD overlap conditions considering the unique complications that may arise. Optimal pharmacological management, disease-specific interventions, and comprehensive patient-centered care are crucial components of treatment strategies. This review provides insights for healthcare professionals by enhancing their understanding and management of these conditions. This emphasizes the importance of accurate diagnosis and individualized treatment plans, considering the specific complications associated with each COPD overlap condition.

**Keywords:** Asthma; Asthma COPD Overlap; COPD; Emphysema; OSA.

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**Conflict of interest statement**

**Declaration of competing interest** No conflicts of interest or relationship with the industry to disclose by any of the authors. No funding or financial interests.

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**Observational Study**

**BMJ Open Respir Res**

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. 2024 Jul 17;11(1):e001740.

doi: 10.1136/bmjresp-2023-001740.

[Risk factors of acute exacerbation and disease progression in young patients with COPD](#)

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#### Affiliations expand

- PMID: 39019624
- PMCID: [PMC11256056](#)
- DOI: [10.1136/bmjresp-2023-001740](#)

#### Abstract

**Objective:** We aimed to elucidate the clinical factors associated with acute exacerbation and disease progression in young patients with chronic obstructive pulmonary disease (COPD).

**Methods:** This retrospective longitudinal observational study included patients with COPD aged between 20 and 50 years with post-bronchodilator forced expiratory volume in one second (FEV<sub>1</sub>)/forced vital capacity (FVC)<0.7. Eligible patients were followed up with  $\geq 2$  spirometry examinations at 1 year interval after COPD diagnosis. The primary outcome was moderate-to-severe acute exacerbation in young patients with COPD. Secondary outcomes were early initiation of regular inhalation therapy and accelerated annual post-bronchodilator FEV<sub>1</sub> decline.

**Results:** A total of 342 patients were followed up during a median of 64 months. In multivariable analyses, risk factors for moderate-to-severe exacerbation were history of asthma (adjusted HR (aHR)=2.999, 95% CI=[2.074-4.335]), emphysema (aHR=1.951, 95% CI=[1.331-2.960]), blood eosinophil count >300/ $\mu$ L (aHR=1.469, 95% CI=[1.038-2.081]) and low FEV<sub>1</sub> (%) (aHR=0.979, 95% CI=[0.970-0.987]). A history of asthma, sputum, blood eosinophil count >300/ $\mu$ L, low FEV<sub>1</sub> (%) and low diffusing capacity of the lung for carbon monoxide (DL<sub>CO</sub>) (%) were identified as clinical factors associated with the early initiation of regular inhalation therapy. The risk factors associated with worsened FEV<sub>1</sub> decline were increasing age, female sex, history of pulmonary tuberculosis, sputum, low FEV<sub>1</sub> (%) and low DL<sub>CO</sub> (%).

**Conclusions:** In young COPD patients, specific high-risk features of acute exacerbation and disease progression need to be identified, including a history of previous respiratory diseases, current respiratory symptoms, blood eosinophil counts, and structural or functional pulmonary impairment.

**Keywords:** COPD Exacerbations; COPD Pharmacology; Emphysema; Pulmonary Disease, Chronic Obstructive.

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#### Conflict of interest statement

Competing interests: None declared.

- [42 references](#)

- [1 figure](#)

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Pediatr Pulmonol

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. 2024 Jul 17.

doi: 10.1002/ppul.27167. Online ahead of print.

[Dupilumab 200 mg was efficacious in children \(6-11 years\) with moderate-to-severe asthma for up to 2 years: EXCURSION open-label extension study](#)

[Wanda Phipatanakul](#)<sup>1 2</sup>, [Christian Vogelberg](#)<sup>3</sup>, [Leonard B Bacharier](#)<sup>4</sup>, [Sharon Dell](#)<sup>5 6</sup>, [Arman Altincatal](#)<sup>7</sup>, [Rebecca Gall](#)<sup>8</sup>, [Oliver Ledanois](#)<sup>9</sup>, [Harry Sacks](#)<sup>8</sup>, [Juby A Jacob-Nara](#)<sup>10</sup>, [Yamo Deniz](#)<sup>8</sup>, [Paul J Rowe](#)<sup>10</sup>

Affiliations expand

- PMID: 39016623
- DOI: [10.1002/ppul.27167](#)

Abstract

**Background:** The phase 3 VOYAGE ([NCT02948959](#)) and open-label extension EXCURSION ([NCT03560466](#)) studies evaluated dupilumab in children (6-11 years) with uncontrolled moderate-to-severe asthma. This post hoc analysis assessed the efficacy and safety of add-on dupilumab 200 mg every 2 weeks (q2w), the largest dose cohort in both studies, in children from VOYAGE who participated in EXCURSION.

**Methods:** Annualized rate of severe asthma exacerbations (AERs), change in prebronchodilator percent predicted forced expiratory volume in 1 s (ppFEV<sub>1</sub>), and

treatment-emergent adverse events were assessed in children with moderate-to-severe asthma who received dupilumab 200 mg q2w in VOYAGE and EXCURSION (dupilumab/dupilumab arm) and those who received placebo in VOYAGE and dupilumab 200 mg q2w in EXCURSION (placebo/dupilumab arm). These endpoints were also assessed in children with moderate-to-severe type 2 asthma (defined as blood eosinophil count  $\geq 150$  cells/ $\mu\text{L}$  or FeNO  $\geq 20$  ppb at the parent study baseline [PSBL]).

**Results:** In the overall population, dupilumab reduced AER and improved prebronchodilator ppFEV<sub>1</sub> in the dupilumab/dupilumab arm (n = 158) for up to 2 years. Children receiving placebo/dupilumab (n = 85) showed similar reductions after initiation of dupilumab 200 mg q2w in EXCURSION. Similar results were observed for children with type 2 asthma at PSBL. The safety profile was consistent with the known safety profile of dupilumab.

**Conclusion:** In children (6-11 years) with uncontrolled moderate-to-severe type 2 asthma, dupilumab 200 mg reduced exacerbation rates and improved lung function for up to 2 years and showed safety consistent with the known dupilumab safety profile.

**Keywords:** Pediatric asthma; exacerbations; lung function; prebronchodilator FEV<sub>1</sub>.

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- [21 references](#)

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J Adolesc

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. 2024 Jul 17.

doi: 10.1002/jad.12373. Online ahead of print.

## The role of positive affect in asthma control and symptom severity in adolescents

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### Affiliations expand

- PMID: 39015022
- DOI: [10.1002/jad.12373](https://doi.org/10.1002/jad.12373)

### Abstract

**Introduction:** We test the effects of positive affect and its arousal subscale components of calm, wellbeing, and vigor on asthma control and symptom severity in adolescents with moderate to severe asthma. Additionally, we test whether positive affect (and its arousal components) moderate how stress impacts asthma control and symptom severity.

**Methods:** Adolescents with asthma (N = 66, ages 12-17) completed brief surveys 4 times a day for 7 days reporting on their positive affect, stress, and asthma symptom severity and conducted a morning peak expiratory flow assessment each day. Asthma control and psychological asthma triggers were assessed at the end of the 7 days.

**Results:** Positive affect moderated the association between stress and asthma control (b = -0.33, p = 0.009) as well as the association between psychological triggers and asthma control (b = -0.74, p = 0.007). When assessing the positive affect arousal components, calm and wellbeing seemed to be driving these effects. Additionally, calm moderated the association between stress and asthma symptom severity (b = -0.33, p = 0.036) as well as the association between psychological triggers and asthma symptom severity (b = -0.75, p = 0.021).

**Conclusions:** When considering patient stress (e.g., general stress, psychological asthma triggers), positive affect and its arousal components of calm and wellbeing may be helpful for patients with higher levels of stress and/or for patients experiencing greater numbers of psychological triggers.

**Keywords:** asthma control; asthma symptoms; positive affect; stress.

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- [41 references](#)

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Review

Expert Rev Respir Med

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. 2024 Jul 17:1-14.

doi: [10.1080/17476348.2024.2380067](https://doi.org/10.1080/17476348.2024.2380067). Online ahead of print.

[Current technological advancement in asthma care](#)

[Ali Hakizimana](#)<sup>1</sup>, [Pooja Devani](#)<sup>1 2</sup>, [Erol A Gaillard](#)<sup>1 2</sup>

Affiliations expand

- PMID: 38992946
- DOI: [10.1080/17476348.2024.2380067](https://doi.org/10.1080/17476348.2024.2380067)

Abstract

**Introduction:** Asthma is a common chronic respiratory disease affecting 262 million people globally, causing half a million deaths each year. Poor asthma outcomes are frequently due to non-adherence to medication, poor engagement with asthma services, and a lack of objective diagnostic tests. In recent years, technologies have been developed to improve diagnosis, monitoring, and care.

**Areas covered:** Technology has impacted asthma care with the potential to improve patient outcomes, reduce healthcare costs, and provide personalized management. We focus on current evidence on home diagnostics and monitoring, remote asthma reviews, and digital smart inhalers. PubMed, Ovid/Embase, Cochrane Library, Scopus and Google Scholar were searched in November 2023 with no limit by year of publication.

**Expert opinion:** Advanced diagnostic technologies have enabled early asthma detection and personalized treatment plans. Mobile applications and digital therapeutics empower patients to manage their condition and improve adherence to treatments. Telemedicine platforms and remote monitoring devices have the

potential to streamline asthma care. AI algorithms can analyze patient data and predict exacerbations in proof-of-concept studies. Technology can potentially provide precision medicine to a wider patient group in the future, but further development is essential for implementation into routine care which in itself will be a major challenge.

**Keywords:** Review; artificial intelligence; digital smart inhalers; pediatric; technology; wheeze.

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Respir Investig

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. 2024 Jul 16;62(5):811-816.

doi: 10.1016/j.resinv.2024.07.006. Online ahead of print.

[Prevalence and clinical relevance of comorbid pertussis infection in adult patients with asthma: A prospective, cross-sectional study](#)

[Hirono Nishiyama<sup>1</sup>, Tomoko Tajiri<sup>2</sup>, Ryota Kurokawa<sup>1</sup>, Tatsuro Suzuki<sup>1</sup>, Keima Ito<sup>1</sup>, Yuta Mori<sup>1</sup>, Kensuke Fukumitsu<sup>1</sup>, Satoshi Fukuda<sup>1</sup>, Yoshihiro Kanemitsu<sup>1</sup>, Takehiro Uemura<sup>1</sup>, Hirotsugu Ohkubo<sup>1</sup>, Ken Maeno<sup>1</sup>, Yutaka Ito<sup>1</sup>, Tetsuya Oguri<sup>1</sup>, Masaya Takemura<sup>1</sup>, Akio Niimi<sup>1</sup>](#)

Affiliations expand

- PMID: 39018657
- DOI: [10.1016/j.resinv.2024.07.006](#)

Abstract

**Background:** Viral or atypical bacterial respiratory infections are involved in the new development and the pathogenesis of asthma. Though an association between pertussis and asthma has been expected, few studies have reported it consistently. We assessed the prevalence and clinical relevance of pertussis infection in adult patients with asthma.

**Methods:** In this prospective, cross-sectional study, newly referred, adult patients with asthma (n = 107) and with non-asthmatic subacute/chronic cough (n = 31) were enrolled. The prevalence of pertussis in patients with asthma and in those with non-asthmatic subacute/chronic cough was assessed. Next, the prevalence of newly diagnosed asthma was compared between asthmatic patients with and without pertussis. Finally, demographic characteristics of patients, blood test results, pulmonary function test results, and questionnaire scores were compared between the two patient groups.

**Results:** The prevalence of pertussis infection was significantly higher in patients with asthma than in those with non-asthmatic subacute/chronic cough (36% vs 10%;  $P = 0.004$ ). The prevalence of newly diagnosed asthma was significantly higher in asthmatic patients with pertussis than in those without (74.4% vs 50.0%;  $P = 0.014$ ). The physical, psychological, and total scores of the Leicester Cough Questionnaire were significantly lower in asthmatic patients with pertussis than in those without (all  $P < 0.05$ ). The acid-reflux, dyspeptic, and total scores of the Frequency Scale for Symptoms of Gastroesophageal Reflux Disease (GERD) (FSSG) were significantly higher in asthmatic patients with pertussis than in those without (all  $P \leq 0.05$ ). The FSSG acid-reflux score was negatively correlated with the cough-specific quality of life (QOL) score only in asthmatic patients with pertussis ( $\rho = -0.68$ ,  $P = 0.01$ ).

**Conclusions:** The prevalence of pertussis infection was significantly higher in adult patients with asthma than in those with non-asthmatic subacute/chronic cough. In patients with asthma, comorbid pertussis infection may play a role in newly diagnosed asthma and may contribute to impaired cough-specific QOL partly due to worsening acid-reflux symptoms of GERD.

**Keywords:** Asthma; Cough-specific quality of life; Gastroesophageal reflux disease; Pertussis; Prevalence.

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**Conflict of interest statement**

**Declaration of competing interest** The authors have no conflicts of interest.

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**Breathe (Sheff)**

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. 2024 Jul 16;20(2):240033.

doi: 10.1183/20734735.0033-2024. eCollection 2024 Jun.

**The role of radiological imaging in the management of severe and difficult-to-treat asthma**

**Joshua Aigbirior<sup>1</sup>, Amer Almaghrabi<sup>1</sup>, Monder Lafi<sup>2</sup>, Adel H Mansur<sup>1 3</sup>**

**Affiliations expand**

- PMID: 39015661
- PMCID: [PMC11249838](#)
- DOI: [10.1183/20734735.0033-2024](#)

**Abstract**

Radiological imaging has proven to be a useful tool in the assessment of asthma, its comorbidities and potential complications. Characteristic chest radiograph and computed tomography scan findings can be seen in asthma and in other conditions that can coexist with or be misdiagnosed as asthma, including chronic rhinosinusitis, inducible laryngeal obstruction, excessive dynamic airway collapse, tracheobronchomalacia, concomitant COPD, bronchiectasis, allergic bronchopulmonary aspergillosis, eosinophilic granulomatosis with polyangiitis, and eosinophilic pneumonia. The identification of the characteristic radiological findings of these conditions is often essential in making the correct diagnosis and provision of appropriate management and treatment. Furthermore, radiological imaging modalities can be used to monitor response to therapy.

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**Conflict of interest statement**

Conflict of interest: None declared.

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

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. 2024 Jul 16:1-10.

doi: 10.1080/17520363.2024.2366149. Online ahead of print.

[Linkage of serum ITIH4 with Th2 signature cytokine, inflammation, exacerbation risk and severity in childhood asthma](#)

[Weina Li](#)<sup>1</sup>, [Xiaoxue Wang](#)<sup>1</sup>, [Hong An](#)<sup>1</sup>

Affiliations expand

- PMID: 39011671
- DOI: [10.1080/17520363.2024.2366149](#)

Abstract

**Aim:** ITIH4 has anti-inflammatory properties toward eosinophilic/neutrophilic inflammation. This study aimed to explore clinical value of ITIH4 in childhood asthma. **Materials & methods:** Serum ITIH4 and inflammatory cytokines were determined in 120 childhood asthma patients by enzyme-linked immunosorbent assay. **Results:** In the entire and acute exacerbation patients, ITIH4 positively associated with IFN- $\gamma$ , but negatively related to proinflammatory cytokines. ITIH4 was lowest in patients with acute exacerbation, followed by chronic persistent, and highest in clinical remission. By receiver-operating characteristic analysis, ITIH4 potentially estimated acute exacerbation asthma risk. Moreover, ITIH4 negatively related to exacerbation severity in acute exacerbation patients. **Conclusion:** Serum ITIH4 negatively links with Th2 cell signature cytokine, proinflammatory cytokines, exacerbation risk and severity in childhood asthma.

**Keywords:** Childhood asthma; ITIH4; exacerbation risk; exacerbation severity; inflammatory cytokines.

**Plain language summary**

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**Review**

**Am J Physiol Lung Cell Mol Physiol**

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. 2024 Jul 16.

doi: 10.1152/ajplung.00121.2024. Online ahead of print.

**T cell and airway smooth muscle interaction: a key driver of asthmatic airway inflammation and remodelling**

**Muyang Zhou<sup>1</sup>, Rui Sun<sup>2</sup>, Joyce Jang<sup>3</sup>, James G Martin<sup>4</sup>**

**Affiliations expand**

- PMID: 39010821
- DOI: [10.1152/ajplung.00121.2024](https://doi.org/10.1152/ajplung.00121.2024)

**Abstract**

**Crosstalk between T cells and airway smooth muscle (ASM) may play a role in modulating asthmatic airway inflammation and remodelling. Infiltrating T cells have been observed within the ASM bundles of asthmatics, and a wide range of direct and indirect interactions between T cells and ASM have been demonstrated using various *in vitro* and *in vivo* model systems. Contact-dependent mechanisms such as ligation and activation of cellular adhesion and costimulatory molecules, as well**

as the formation of lymphocyte-derived membrane conduits, facilitate the adhesion, bidirectional communication and transfer of materials between T and ASM cells. T cell-derived cytokines, particularly of the Th1, Th2 and Th17 subsets, modulate the secretome, proliferation and contractility of ASM cells. This review summarizes the mechanisms governing T cell-ASM crosstalk in the context of asthma. Understanding the underlying mechanistic basis is important for directing future research and developing therapeutic interventions targeted towards this complex interaction.

**Keywords:** T cell; airway remodeling; airway smooth muscle; asthma; cell-cell interaction.

**supplementary info**

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**Thorax**

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. 2024 Jul 16;79(8):770-777.

doi: 10.1136/thorax-2023-220485.

[Lung function trajectories from school age to adulthood and their relationship with markers of cardiovascular disease risk](#)

[Raquel Granell](#) <sup>#1</sup>, [Sadia Haider](#) <sup>#2</sup>, [Matea Deliu](#) <sup>2</sup>, [Anhar Ullah](#) <sup>2</sup>, [Osama Mahmoud](#) <sup>3 4</sup>, [Sara Fontanella](#) <sup>2</sup>, [Lesley Lowe](#) <sup>5</sup>, [Angela Simpson](#) <sup>5</sup>, [James William Dodd](#) <sup>6 7</sup>, [Seyed Hasan Arshad](#) <sup>8</sup>, [Clare S Murray](#) <sup>9</sup>, [Graham Roberts](#) <sup>10 11</sup>, [Alun Hughes](#) <sup>12</sup>, [Chloe Park](#) <sup>12</sup>, [John W Holloway](#) <sup>#10</sup>, [Adnan Custovic](#) <sup>#2</sup>; [STELAR/UNICORN investigators](#)

**Collaborators, Affiliations** expand

- **PMID: 38697843**

- DOI: [10.1136/thorax-2023-220485](https://doi.org/10.1136/thorax-2023-220485)

Free article

## Abstract

**Rationale:** Lung function in early adulthood is associated with subsequent adverse health outcomes.

**Objectives:** To ascertain whether stable and reproducible lung function trajectories can be derived in different populations and investigate their association with objective measures of cardiovascular structure and function.

**Methods:** Using latent profile modelling, we studied three population-based birth cohorts with repeat spirometry data from childhood into early adulthood to identify trajectories of forced expiratory volume in 1 s (FEV<sub>1</sub>)/forced vital capacity (FVC). We used multinomial logistic regression models to investigate early-life predictors of the derived trajectories. We then ascertained the extent of the association between the derived FEV<sub>1</sub>/FVC trajectories and blood pressure and echocardiographic markers of increased cardiovascular risk and stroke in ~3200 participants at age 24 years in one of our cohorts.

**Results:** We identified four FEV<sub>1</sub>/FVC trajectories with strikingly similar latent profiles across cohorts (pooled N=6377): above average (49.5%); average (38.3%); below average (10.6%); and persistently low (1.7%). Male sex, wheeze, asthma diagnosis/medication and allergic sensitisation were associated with trajectories with diminished lung function in all cohorts. We found evidence of an increase in cardiovascular risk markers ascertained by echocardiography (including left ventricular mass indexed to height and carotid intima-media thickness) with decreasing FEV<sub>1</sub>/FVC (with p values for the mean crude effects per-trajectory ranging from 0.10 to p<0.001). In this analysis, we considered trajectories as a pseudo-continuous variable; we confirmed the assumption of linearity in all the regression models.

**Conclusions:** Childhood lung function trajectories may serve as predictors in the development of not only future lung disease, but also the cardiovascular disease and multimorbidity in adulthood.

**Keywords:** Respiratory Measurement.

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## Conflict of interest statement

**Competing interests:** RG, SH, MD, AU, OM, SF, LL, AS, CP, CSM and GR declare no conflicts of interest. AS has received research grants. JWD has received research and charity grants and declares pharmaceutical support for lectures and attending conferences/meetings. AH has received support from Research Institutions and declares an unpaid fiduciary role. JWH has received research grant and support for travel to congress. AC has received research grants, consulting fees, honoraria for lectures and declares unpaid fiduciary role.

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**Allergol Int**

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. 2024 Jul 15:S1323-8930(24)00055-8.

doi: 10.1016/j.alit.2024.05.004. Online ahead of print.

[Mucus plugging on computed tomography and the sputum microbiome in patients with asthma, chronic obstructive pulmonary disease, and asthma-COPD overlap](#)

[Naoya Tanabe](#)<sup>1</sup>, [Hisako Matsumoto](#)<sup>2</sup>, [Chie Morimoto](#)<sup>3</sup>, [Yusuke Hayashi](#)<sup>3</sup>, [Ryo Sakamoto](#)<sup>4</sup>, [Tsuyoshi Oguma](#)<sup>3</sup>, [Tadao Nagasaki](#)<sup>3</sup>, [Hironobu Sunadome](#)<sup>5</sup>, [Atsuyasu Sato](#)<sup>3</sup>, [Susumu Sato](#)<sup>5</sup>, [Kai Ohashi](#)<sup>6</sup>, [Takamitsu Tsukahara](#)<sup>6</sup>, [Toyohiro Hirai](#)<sup>3</sup>

**Affiliations expand**

- PMID: 39013753
- DOI: [10.1016/j.alit.2024.05.004](#)

**Free article**

**Abstract**

**Background:** Despite clinical implications, the pathogenesis of mucus plugging in asthma, chronic obstructive pulmonary disease (COPD), and asthma-COPD overlap (ACO) remains unclear. We hypothesized that distinct airway microbiomes might affect mucus plugging differently among ACO, asthma, and COPD and among different extents of airway eosinophilic inflammation.

**Methods:** The sputum microbiome, sputum cell differential count, and mucus plug score on computed tomography were cross-sectionally evaluated in patients with chronic airflow limitation.

**Results:** Patients with ACO, asthma, or COPD were enrolled (n = 56, 10, and 25). Higher mucus plug scores were associated with a greater relative abundance of the phylum Proteobacteria ( $\rho = 0.29$ ) only in patients with ACO and a greater relative abundance of the phylum Actinobacteria ( $\rho = 0.46$ ) only in patients with COPD. In multivariable models including only patients with ACO, the presence of mucus plugs was associated with a greater relative abundance of the phylum Proteobacteria and the genus Haemophilus, independent of smoking status, airflow limitation, and emphysema severity. Moreover, the mucus score was associated with a greater relative abundance of the genus Streptococcus ( $\rho = 0.46$ ) in patients with a high sputum eosinophil count (n = 22) and with that of the genus Haemophilus ( $\rho = 0.46$ ) in those with a moderate sputum eosinophil count (n = 26).

**Conclusions:** The associations between mucus plugging and the microbiome in ACO differed from those in COPD and asthma. Greater relative abundances of the phylum Proteobacteria and genus Haemophilus may be involved in mucus plugging in patients with ACO and moderate airway eosinophilic inflammation.

**Keywords:** Airway inflammation; Asthma-COPD overlap; Computed tomography; Microbiome; Mucus.

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. 2024 Jul 15;10(4):00982-2023.

doi: 10.1183/23120541.00982-2023. eCollection 2024 Jul.

[Long-term impact of COVID-19 hospitalisation among individuals with pre-existing airway diseases in the UK: a multicentre, longitudinal cohort study - PHOSP-COVID](#)

[Omer Elneima](#)<sup>1</sup>, [John R Hurst](#)<sup>2 3</sup>, [Carlos Echevarria](#)<sup>4 5</sup>, [Jennifer K Quint](#)<sup>6</sup>, [Samantha Walker](#)<sup>7</sup>, [Salman Siddiqui](#)<sup>8</sup>, [Petr Novotny](#)<sup>1</sup>, [Paul E Pfeffer](#)<sup>9 10</sup>, [Jeremy S Brown](#)<sup>2</sup>, [Manu Shankar-Hari](#)<sup>11</sup>, [Hamish J C McAuley](#)<sup>1</sup>, [Olivia C Leavy](#)<sup>1 12</sup>, [Aarti](#)

Shikotra<sup>1</sup>, Amisha Singapuri<sup>1</sup>, Marco Sereno<sup>1</sup>, Matthew Richardson<sup>1</sup>, Ruth M Saunders<sup>1</sup>, Victoria C Harris<sup>1</sup>, Linzy Houchen-Wolloff<sup>1 13</sup>, Neil J Greening<sup>1</sup>, Ewen M Harrison<sup>14</sup>, Annemarie B Docherty<sup>14</sup>, Nazir I Lone<sup>14</sup>, James D Chalmers<sup>15</sup>, Ling-Pei Ho<sup>16 17</sup>, Alex Horsley<sup>18 19</sup>, Michael Marks<sup>20 21</sup>, Krisnah Poinasamy<sup>7</sup>, Betty Raman<sup>17 22</sup>, Rachael A Evans<sup>1</sup>, Louise V Wain<sup>1 11</sup>, Aziz Sheikh<sup>14</sup>, Chris E Brightling<sup>1 23</sup>, Anthony De Soyza<sup>4 24 23</sup>, Liam G Heaney<sup>25 26 23</sup>

#### Affiliations expand

- PMID: 39010888
- PMCID: [PMC11247371](#)
- DOI: [10.1183/23120541.00982-2023](#)

#### Abstract

**Background:** The long-term outcomes of COVID-19 hospitalisation in individuals with pre-existing airway diseases are unknown.

**Methods:** Adult participants hospitalised for confirmed or clinically suspected COVID-19 and discharged between 5 March 2020 and 31 March 2021 were recruited to the Post-hospitalisation COVID-19 (PHOSP-COVID) study. Participants attended research visits at 5 months and 1 year post discharge. Clinical characteristics, perceived recovery, burden of symptoms and health-related quality of life (HRQoL) of individuals with pre-existing airway disease (*i.e.*, asthma, COPD or bronchiectasis) were compared to the non-airways group.

**Results:** A total of 615 out of 2697 (22.8%) participants had a history of pre-existing airway diseases (72.0% diagnosed with asthma, 22.9% COPD and 5.1% bronchiectasis). At 1 year, the airways group participants were less likely to feel fully recovered (20.4% *versus* 33.2%,  $p < 0.001$ ), had higher burden of anxiety (29.1% *versus* 22.0%,  $p = 0.002$ ), depression (31.2% *versus* 24.7%,  $p = 0.006$ ), higher percentage of impaired mobility using short physical performance battery  $\leq 10$  (57.4% *versus* 45.2%,  $p < 0.001$ ) and 27% had a new disability (assessed by the Washington Group Short Set on Functioning) *versus* 16.6%,  $p = 0.014$ . HRQoL assessed using EQ-5D-5L Utility Index was lower in the airways group (mean $\pm$ SD 0.64 $\pm$ 0.27 *versus* 0.73 $\pm$ 0.25,  $p < 0.001$ ). Burden of breathlessness, fatigue and cough measured using a study-specific tool was higher in the airways group.

**Conclusion:** Individuals with pre-existing airway diseases hospitalised due to COVID-19 were less likely to feel fully recovered, had lower physiological performance measurements, more burden of symptoms and reduced HRQoL up to 1 year post-hospital discharge.

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#### Conflict of interest statement

**Conflict of interest:** J.R. Hurst has received support to attend meetings, research grants, and personal payment and payment to his employer from pharmaceutical

companies that make medicines to treat airways diseases. J.K. Quint reports grants from Industrial Strategy Challenge Fund, the Medical Research Council, Health Data Research, GlaxoSmithKline (GSK), Boehringer Ingelheim (BI), Asthma+Lung UK and AstraZeneca (AZ), and consulting fees from GSK, Evidera, Chiesi, AZ and Insmmed outside the submitted work. P.E. Pfeffer reports grants from NIHR and GSK, Honoraria payments for lectures from AZ, GSK, Sanofi and Chiesi and travel fees from AZ, GSK, Sanofi outside the submitted work. N.J. Greening reports grants from GSK and BioAge, and personal fees and travel grants from Genentech, Roche, Chiesi, AZ, GSK, Pulmonx and Chiesi outside the submitted work. J.D. Chalmers is an associate editor of this journal. A. Horsley reports grants from UKRI, NIHR and NIHR Manchester BRC during the conduct of this study and unenumerated role as the chair of NIHR Translational Research Collaboration. A. Sheikh has served on AZ's thrombotic thrombocytopenic taskforce, and on a number of UK and Scottish Government COVID-19 advisory bodies; all these roles were unremunerated. B. Raman reports grant from BHF Oxford CRE and speaker fees from Axcella Therapeutics. R.A. Evans reports grants from UKRI/MRC, DHSC/NIHR, Wolfson Foundation and Genentec/Roche during the conduct of this study, travel and speaker fees from AZ/Evidera, Boehringer Ingelheim (BI), Moderna and Chiesi, and unremunerated leadership roles in ERS/ATS outside the submitted work. C.E. Brightling declares that their institute was awarded a grant from UKRI/NIHR to complete this work; the author reports grants from GSK, AZ, Sanofi, Regeneron, BI, Chiesi, Novartis, Roche, Genentech, Mologic and 4DPharma; and consultancy fees paid to their institution from GSK, AZ, Sanofi, BI, Chiesi, Novartis, Roche, Genentech, Mologic, 4DPharma and Areteia. A. De Soyza declares receiving personal consulting fees and travel grants from AZ, Bayer, GSK, Chiesi, Novartis, Pfizer, Insmmed, Gilead and 30T outside the submitted work. All other authors declare no competing interests.

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- [4 figures](#)

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. 2024 Jul 15;13(3):e002626.

doi: 10.1136/bmj-2023-002626.

## Service development project to pilot a digital technology innovation for video direct observation of therapy in adult patients with asthma

Katherine O'Neill<sup>1</sup>, Cairine Gormley<sup>2</sup>, Martin G Kelly<sup>2</sup>, Rachel Huey<sup>1</sup>, Glenda Fleming<sup>3</sup>, Michael Scott<sup>1</sup>, Michael Shields<sup>4,5</sup>, James C McElroy<sup>5,6</sup>

Affiliations expand

- PMID: 39009461
- DOI: [10.1136/bmj-2023-002626](https://doi.org/10.1136/bmj-2023-002626)

Free article

### Abstract

**Background:** Adherence to pharmacotherapy and use of the correct inhaler technique are important basic principles of asthma management. Video- or remote-direct observation of therapy (v-DOT) could be a feasible approach to facilitate monitoring and supervising therapy, supporting the delivery of standard care.

**Objective:** To explore the utility and the feasibility of v-DOT to monitor inhaler technique and adherence to treatment in adults attending the asthma outpatient service in a tertiary hospital in Northern Ireland.

**Method:** The project evaluated use of the technology with 10 asthma patients. Patient and clinician feedback was obtained, in addition to measures of patient engagement and disease-specific clinical markers to assess the feasibility and utility of v-DOT technology in this group of patients.

**Results:** The engagement rate with v-DOT for participating patients averaged 78% (actual video uploads vs expected video uploads) over a median 7 week usage period. Although 50% of patients reported a technical issue at some stage during the usage period, all patients and clinicians reported that the technology was easy to use and that they were satisfied with the outcomes. A range of positive impacts were observed, including optimised inhaler technique and an observed improvement in lung function. An increase in asthma control test scores aligned with clinical aims to promote adherence and alleviate symptoms.

**Conclusion:** The v-DOT technology was shown to be a feasible method of assessing inhaler technique and monitoring adherence in this small group of adult asthma patients. A range of positive impacts for participating patients and clinicians were observed. Not all patients invited to join the project agreed to participate or engage with using the technology, highlighting that in this setting, digital modes of delivering care provide only one of the approaches in the necessary "tool kit" for clinicians and patients.

**Keywords:** Asthma; Chronic disease management; Medication reconciliation.

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## Conflict of interest statement

Competing interests: None declared.

supplementary info

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Thorax

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. 2024 Jul 15:thorax-2023-221230.

doi: 10.1136/thorax-2023-221230. Online ahead of print.

[Nasal epithelial gene expression identifies relevant asthma endotypes in the ATLANTIS study](#)

[Tatiana Karp](#)<sup>1 2</sup>, [Alen Faiz](#)<sup>3</sup>, [Jos van Nijnatten](#)<sup>4 3</sup>, [Huib A M Kerstjens](#)<sup>4 2</sup>, [Ilse Boudewijn](#)<sup>4 2</sup>, [Monica Kraft](#)<sup>5</sup>, [Judith M Vonk](#)<sup>4 6</sup>, [Martijn C Nawijn](#)<sup>4 7</sup>, [Irene H Heijink](#)<sup>4 2 7</sup>, [Bianca Beghé](#)<sup>8</sup>, [Klaus F Rabe](#)<sup>9</sup>, [Alberto Papi](#)<sup>10</sup>, [Chris Brightling](#)<sup>11</sup>, [Dave Singh](#)<sup>12</sup>, [Thys van der Molen](#)<sup>4 13</sup>, [Salman Siddiqui](#)<sup>14</sup>, [Stephanie Christenson](#)<sup>15</sup>, [Victor Guryev](#)<sup># 4 16</sup>, [Maarten van den Berge](#)<sup># 4 2</sup>

Affiliations expand

- PMID: 39009441
- DOI: [10.1136/thorax-2023-221230](#)

Abstract

**Introduction:** Asthma is an inflammatory airways disease encompassing multiple phenotypes and endotypes. Several studies suggested gene expression in nasal epithelium to serve as a proxy for bronchial epithelium, being a non-invasive approach to investigate lung diseases. We hypothesised that molecular differences

in upper airway epithelium reflect asthma-associated differences in the lower airways and are associated with clinical expression of asthma.

**Methods:** We analysed nasal epithelial gene expression data from 369 patients with asthma and 58 non-asthmatic controls from the Assessment of Small Airways Involvement in Asthma study. Unsupervised hierarchical clustering was performed on asthma-associated genes. Asthma-associated gene signatures were replicated in independent cohorts with nasal and bronchial brushes data by comparing Gene Set Variation Analysis scores between asthma patients and non-asthmatic controls.

**Results:** We identified 67 higher expressed and 59 lower expressed genes in nasal epithelium from asthma patients compared with controls (false discovery rate < 0.05), including *CLCA1*, *CST1* and *POSTN*, genes well known to reflect asthma in bronchial airway epithelium. Hierarchical clustering revealed several molecular asthma endotypes with distinct clinical characteristics, including an endotype with higher blood and sputum eosinophils, high fractional exhaled nitric oxide, and more severe small airway dysfunction, as reflected by lower forced expiratory flow at 50%. In an independent cohort, we demonstrated that genes higher expressed in the nasal epithelium reflect asthma-associated changes in the lower airways.

**Conclusion:** Our results show that the nasal epithelial gene expression profile reflects asthma-related processes in the lower airways. We suggest that nasal epithelium may be a useful non-invasive tool to identify asthma endotypes and may advance personalised management of the disease.

**Keywords:** Airway Epithelium; Asthma; Asthma Genetics; Asthma Mechanisms.

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#### Conflict of interest statement

**Competing interests:** The ATLANTIS study is supported by Chiesi. MK has received grants or contracts or consulting fees or payment or honoraria or support for meetings from National Institutes of Health, American Lung Association, Synairgen, Janssen, Astra-Zeneca, Sanofi, Chiesi, GSK, Kinaset, Genentech, European Respiratory Society, has patents planned, issued or pending from CoFounder and Chief Medical Officer, RaeSedo, has participated on advisory boards for ALung DSMB and has received stock or stock options from Equity ownership in RaeSedo, and other financial or non-financial interests from Section Editor, UptoDate. MCN has received grants or contracts or support for meetings from Chan Zuckerberg Initiative, European commission, Lung Foundation Netherlands, Stichting Astma Bestrijding, Belgian Respiratory Society and has a leadership role in Lung Bionetwork of the Human Cell Atlas. IHH has received grants or contracts from Boehringer Ingelheim, Roche, Rousselot. BB has received payment or honoraria from AZ, GSK, Guidotti, Chiesi, Menarini. KFR has received payment or honoraria from Astra Zeneca, Boehringer Ingelheim, Chiesi Pharmaceuticals, Novartis, Sanofi & Regeneron, GlaxoSmithKline, Berlin Chemie, Roche Pharma, has participated in advisory boards for AstraZeneca, Boehringer Ingelheim, Sanofi & Regeneron, and has a leadership role in German Center for Lung Research (DZL), German Chest Society (DGP), American Thoracic Society (ATS). AP has received grants or contracts or consulting fees from Chiesi, AstraZeneca, GSK, Sanofi, Agenzia Italiana del farmaco (AIFA), Novartis, Avillion, ELPEN Pharmaceuticals, has received

payment or honoraria from Chiesi, AstraZeneca, GSK, Menarini, Novartis, Zambon, Mundipharma, Sanofi, Edmond Pharma, IQVIA, Avillion, ELPEN Pharmaceuticals, has participated on Advisory Board for Chiesi, AstraZeneca, GSK, MSD, Novartis, Sanofi, IQVIA, Avillion, ELPEN Pharmaceuticals. CB has received grants or contracts or consulting fees from GSK, AZ, Sanofi, Regeneron, Roche, Genentech, BI, Chiesi, Novartis, Mologic, Areteia. DS has received consulting fees from Aerogen, AstraZeneca, Boehringer Ingelheim, Chiesi, Cipla, CSL Behring, EpiEndo, Genentech, GlaxoSmithKline, Glenmark, Gossamer Bio, Kinaset Therapeutics, Menarini, Novartis, Orion, Pulmatrix, Sanofi, Synairgen, Teva, Theravance Biopharma, Verona Pharma. TvdM has received payment or honoraria or support for attending meetings from GSK, Chiesi. SS has received consulting fees or payment or honoraria from Chiesi, Astra Zeneca, GSK, Areteia therapeutics, CSL Behring, AZ, Medscape. SC has received grants or contracts or consulting fees from NIH, American Lung Association, Sanofi, Regeneron, GlaxoSmithKline, AstraZeneca, Glenmark Pharmaceuticals, Amgen, Axon Advisors, and has received payment or honoraria from Sanofi/Regeneron, MJH Holdings: Physicians' Education Resource, UpToDate, Wolters Kluwer Health, GlaxoSmithKline, has received support for attending meeting from AstraZeneca, GlaxoSmithKline, Sanofi/Regeneron, has participated on advisory boards for anofi/Regeneron, AstraZeneca, GlaxoSmithKline, and has leadership or fiduciary role in American Thoracic Society. MvdB has received grants or contracts from GlaxoSmithKline, Astra Zeneca, Novartis, Genentech, Roche.

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. 2024 Jul 15.

doi: 10.1007/s00408-024-00715-0. Online ahead of print.

[Real-Life Response to Biologics in Severe Asthma with Nasal Polyposis: Insights from the Belgian Severe Asthma Registry](#)

[Femke Demolder](#)<sup>1</sup>, [Eef Vanderhelst](#)<sup>2</sup>, [Sylvia Verbanck](#)<sup>2</sup>, [Florence Schleich](#)<sup>3</sup>, [Renaud Louis](#)<sup>4</sup>, [Guy Brusselle](#)<sup>5</sup>, [Carine Sohy](#)<sup>6</sup>, [Alain Michils](#)<sup>7</sup>, [Rudi Peché](#)<sup>8</sup>, [Charles Pilette](#)<sup>9</sup>, [Shane Hanon](#)<sup>2</sup>

## Affiliations expand

- PMID: 39007944
- DOI: [10.1007/s00408-024-00715-0](https://doi.org/10.1007/s00408-024-00715-0)

## Abstract

**Background:** Nasal polyposis (NP) is a comorbidity of type 2 severe asthma (SA) which could influence response to SA biologics.

**Methods:** We evaluated (super-) response in SA patients with (NP +) and without NP (NP-) enrolled in the Belgian Severe Asthma Registry (BSAR).

**Results:** 914 patients, of whom 31% NP + , were included. At enrollment, NP + patients had higher annual exacerbation rates, higher number of emergency room visits and more elevated type 2 biomarkers. In the longitudinal subanalysis of 104 patients, both groups had significant and similar asthma responses to asthma biologics, except for a greater increase in FEV<sub>1</sub> in the NP + group. Super-response was achieved in 33 patients (32%), irrespective of NP status or type of biologic.

**Conclusion:** In conclusion, both NP + and NP - patients had positive treatment responses, with some able to achieve super-response. In SA patients with NP, a greater FEV<sub>1</sub> improvement as compared to SA patients without NP was observed.

**Keywords:** Biologics; Nasal polyposis; Severe asthma; Super-response.

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## Respirology

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. 2024 Jul 14.

doi: 10.1111/resp.14792. Online ahead of print.

## [Asthma-COPD overlap and asthma progressing to COPD: A complementary perspective](#)

[Christine F McDonald](#)<sup>1 2 3</sup>, [Philip G Bardin](#)<sup>4</sup>, [Martin MacDonald](#)<sup>4</sup>

Affiliations expand

- PMID: 39004830
- DOI: [10.1111/resp.14792](#)

*No abstract available*

Keywords: COPD; COPDACO; asthma; asthma-overlap.

- [4 references](#)

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Asian Pac J Allergy Immunol

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. 2024 Jul 14.

doi: 10.12932/AP-180124-1770. Online ahead of print.

## [Level of asthma control in children and adolescents before and during the COVID-19 pandemic](#)

[Warinda Panichaporn](#)<sup>1</sup>, [Kantima Kanchanapoomi](#)<sup>1</sup>, [Witchaya Srisuwatchari](#)<sup>1</sup>, [Orathai Jirapongsananuruk](#)<sup>1</sup>, [Nualanong Visitsunthorn](#)<sup>1</sup>, [Punchama Pacharn](#)<sup>1</sup>

Affiliations expand

- PMID: 39003645

- DOI: [10.12932/AP-180124-1770](https://doi.org/10.12932/AP-180124-1770)

## Abstract

**Background:** During the COVID-19 pandemic, national lockdowns were implemented worldwide. Asthma control was reported to have improved. However, some patients lost follow-up from the clinic because they intended to avoid crowds at the hospital.

**Objective:** To evaluate the level of asthma control during the COVID-19 pandemic and explore factors influencing asthma outcomes.

**Methods:** Subjects 8-18 years old from our previous study in 2019 were recruited. The data during the pandemic period were collected between June 2021 - May 2023. The level of asthma control was compared before and during the pandemic. We also evaluated inhaled corticosteroid (ICS) adherence and factors related to poor asthma control during the COVID-19 pandemic.

**Results:** One hundred and three subjects were enrolled. Asthma control levels remained relatively stable during the pandemic. However, an asthma exacerbation was significantly decreased from 36 (36.3%) in 2019 to 19 (19.2%) and 15 (15.1%) in 2021 and 2022 ( $p = 0.012$ ,  $p < 0.001$ ), respectively. Spirometry results demonstrated improved pre-bronchodilator FEV1 ( $89.91 \pm 11.02$  vs.  $101.91 \pm 14.11$ ,  $p < 0.001$ ). The factors related to the poor asthma outcome were not wearing a face mask (aOR = 8.52, 95%CI 1.26-57.79) and previously poor-controlled by the ACT score (aOR = 2.55, 95%CI 1.41-4.63). The median adherence rate during the pandemic was 85%. The main reasons for poor adherence were hectic lifestyle and misunderstandings of disease.

**Conclusion:** Asthma exacerbation was significantly decreased during the lockdown. Not wearing a face mask and previously poorly controlled by the ACT score are related to poor asthma outcomes.

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## Heart Lung

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. 2024 Jul 13:68:166-174.

doi: 10.1016/j.hrtlng.2024.07.002. Online ahead of print.

## Weight-adjusted waist index is an independent predictor of all-cause and cause-specific mortality in patients with asthma

Shidong Wang<sup>1</sup>, Dai Li<sup>1</sup>, Liping Sun<sup>2</sup>

Affiliations expand

- PMID: 39003963
- DOI: [10.1016/j.hrtlng.2024.07.002](https://doi.org/10.1016/j.hrtlng.2024.07.002)

Free article

### Abstract

**Background:** There is a close relationship between obesity and the occurrence of asthma. The weight-adjusted waist index (WWI) is a relatively novel anthropometric parameter that reflects obesity.

**Objective:** We aimed to explore the association between WWI and mortality in the asthma population.

**Methods:** We included adult with asthma from NHANES 1999-2018. WWI = Waist circumference (cm)/square root of body weight (kg). Current asthma was determined by the participant's responses in standardized questionnaires. All-cause, cardiovascular disease (CVD), cancer, and respiratory disease mortality information was obtained by prospectively matching these data to the National Death Index. Multivariate-adjusted Cox proportional hazards regression analyses, Kaplan Meier survival analyses, restricted cubic spline (RCS) analyses, stratified analyses, and sensitivity analyses were used to clarify these associations.

**Results:** A total of 101,316 participants were included in the study, and 3223 were diagnosed with asthma. WWI was independently and positively associated with all-cause and all factor-specific mortality in asthma. In fully adjusted models, each unit increase in WWI was associated with 43 % (hazard ratio [HR] and 95 % confidence interval [CI] = 1.43 [1.25, 1.64],  $p < 0.0001$ ), 58 % (1.58 [1.25, 1.99],  $p < 0.001$ ), 50 % (1.50 [1.19, 1.90],  $p < 0.001$ ), and 79 % (1.79 [1.34, 2.39],  $p < 0.0001$ ) increased all-cause, CVD, cancer, and respiratory disease mortality, respectively. RCS analyses showed largely linear associations between WWI and all mortality risks. Stratified analyses indicated that these associations were influenced by multiple factors, and that age was consistently the effect modifier across all associations.

**Conclusions:** WWI is an independent predictor of all-cause, CVD, cancer, and respiratory-related mortality in the adult asthma population. These findings highlight that WWI may have novel prognostic value as a simple and easily accessible obesity parameter in asthma patients.

**Keywords:** Asthma; Mortality; Obesity; Prognosis; Weight-adjusted waist index.

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Conflict of interest statement

**Declaration of competing interest** The authors declare no conflict of interest in this study.

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

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**Review**

**Curr Med Res Opin**

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. 2024 Jul 19:1-13.

doi: 10.1080/03007995.2024.2378172. Online ahead of print.

**Why fexofenadine is considered as a truly non-sedating antihistamine with no brain penetration: a systematic review**

**Ignacio J Ansotegui<sup>1</sup>, Jean Bousquet<sup>2 3 4 5</sup>, Giorgio Walter Canonica<sup>6</sup>, Pascal Demolys<sup>7 8</sup>, Rene Maximiliano Gómez<sup>9 10</sup>, Eli O Meltzer<sup>11</sup>, Margarita Murrieta-Aguttes<sup>12</sup>, Robert M Naclerio<sup>13</sup>, Nelson Rosario Filho<sup>14</sup>, Glenis K Scadding<sup>15 16</sup>**

**Affiliations expand**

- PMID: 39028636
- DOI: [10.1080/03007995.2024.2378172](https://doi.org/10.1080/03007995.2024.2378172)

**Abstract**

**Objective:** Fexofenadine is a second-generation inverse agonist of H<sub>1</sub>-receptor of histamine which is highly selective with proven efficacy in relieving symptoms associated with allergic conditions. It has an additional benefit of not penetrating the blood-brain barrier and therefore do not induce sedation and not impair the cognitive function/psychomotor performance. This review aimed at providing evidence based on available controlled studies to reinforce the non-sedative property of fexofenadine for treating patients with allergic rhinitis and urticaria.

**Methods:** We performed an electronic literature search using keywords such as fexofenadine, drowsiness, somnolence, sedation, fatigue, cognitive, impairment, psychomotor, driving performances, sleep, rapid eye movement, alertness, clinical

study, *in vitro* study, *in vivo* study, and pharmacodynamics in the Embase search engine. The review included randomized controlled trials, review articles, systematic reviews, and meta-analyses, together with post-marketing analysis conducted in healthy subjects and patients with allergy and were focused on comparing the antihistaminic potential or safety of fexofenadine with other antihistamines or placebo.

**Results:** Positron emission tomography (PET) and proportional impairment ratio (PIR) data along with other objective tests from various studies confirmed the non-sedative property of fexofenadine. Results of brain H<sub>1</sub>-receptor occupancy (H<sub>1</sub>RO) obtained from PET showed no H<sub>1</sub>RO by fexofenadine, the receptor which is known to cause sedation of H<sub>1</sub> antihistamines. Most studies calculating PIR value as 0 showed fexofenadine to be a non-impairing oral antihistamine regardless of dose. Clinical trials in adults and children showed fexofenadine to be well tolerated without sedative effect or impairment of cognitive/psychomotor function even at higher than recommended doses.

**Conclusion:** Published literature based on various parameters and clinical trials conducted for evaluating the effect of fexofenadine on sedation and central nervous system shows fexofenadine is both clinically effective and non-sedating.

**Keywords:** Fexofenadine; allergy; antihistamines; clinical trials; drowsiness; non-drowsy; sedation.

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Panminerva Med

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. 2024 Jul 17.

doi: 10.23736/S0031-0808.24.05200-5. Online ahead of print.

[Budesonide aqueous nasal spray: an updated review in managing chronic rhinosinusitis with nasal polyps](#)

[Giorgio Ciprandi](#)<sup>1</sup>

Affiliations expand

- PMID: 39016712
- DOI: [10.23736/S0031-0808.24.05200-5](https://doi.org/10.23736/S0031-0808.24.05200-5)

Abstract

Chronic rhinosinusitis with nasal polyps (CRSwNP) is a frequent medical condition. Type 2 inflammation signs CRSwNP in western countries. Type 2 inflammation leads to nasal airflow limitation. Budesonide aqueous nasal spray (BANS) is an intranasal corticosteroid (INCS); it has been launched in the early 1980s. BANS is indicated for treating allergic rhinitis, nonallergic rhinitis, and nasal polyps (both as treatment and prevention after surgery). Consolidated evidence documented its efficacy in treating CRSwNP. In addition, BANS is safe with negligible local and systemic side effects. Recent guidelines for patients with CRSwNP recommend using INCS as the first line in many situations. In particular, patients may assess the perception of symptoms' severity using the Visual Analog Scale (VAS). A score >5/10 means uncontrolled symptoms in both diseases and requires adequate treatment. BANS could appropriately be used in patients with uncontrolled symptoms and/or moderate/severe nasal obstruction. In addition, BANS may adequately integrate surgery and biologics for CRSwNP management. In conclusion, BANS represents a valuable option in managing patients with type 2-mediated CRSwNP.

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World J Clin Cases

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. 2024 Jul 16;12(20):4041-4047.

doi: [10.12998/wjcc.v12.i20.4041](https://doi.org/10.12998/wjcc.v12.i20.4041).

[Risk factors and management countermeasures for obstructive sleep apnea hypoventilation syndrome in children](#)

Wen He <sup>1</sup>, Qi Cheng <sup>2</sup>

Affiliations expand

- PMID: 39015923
- PMCID: [PMC11235552](#)
- DOI: [10.12998/wjcc.v12.i20.4041](#)

Abstract

**Background:** Obstructive sleep apnea hypoventilation syndrome (OSAHS) in children is a sleep respiratory disorder characterized by a series of pathophysiologic changes. Statistics in recent years have demonstrated an increasing yearly incidence.

**Aim:** To investigate the risk factors for OSAHS in children and propose appropriate management measures.

**Methods:** This study had a case-control study design. Altogether, 85 children with OSAHS comprised the case group, and healthy children of the same age and sex were matched at 1:1 as the control group. Basic information, including age, sex, height, weight and family history, and medical history data of all study participants were collected. Polysomnography was used to detect at least 8 h of nocturnal sleep. All participants were clinically examined for the presence of adenoids, enlarged tonsils, sinusitis, and rhinitis.

**Results:** The analysis of variance revealed that the case group had a higher proportion of factors such as adenoid grading, tonsil indexing, sinusitis, and rhinitis than the control group.

**Conclusion:** A regression model was established, and glandular pattern grading, tonsil indexing, sinusitis, and pharyngitis were identified as independent risk factors affecting OSAHS development.

**Keywords:** Children; Obstructive sleep apnea hypoventilation syndrome; Risk factors; Sinusitis; Tonsil indexing.

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Conflict of interest statement

Conflict-of-interest statement: All authors have no conflicts of interest.

- [25 references](#)

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J Asthma

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. 2024 Jul 15:1-11.

doi: [10.1080/02770903.2024.2379410](https://doi.org/10.1080/02770903.2024.2379410). Online ahead of print.

**Clinical Efficacy and Safety Study of Loratadine Combined with Glucocorticoid Nasal Spray in the Treatment of Pediatric Bronchial Asthma with Seasonal Allergic Rhinitis**

**Fei Wang<sup>1</sup>, Qing Guo<sup>1</sup>, Jiusheng Chu<sup>1</sup>, Xiaojun Zhao<sup>1</sup>**

**Affiliations expand**

- PMID: 39007891
- DOI: [10.1080/02770903.2024.2379410](https://doi.org/10.1080/02770903.2024.2379410)

**Abstract**

To investigate the clinical efficacy and safety of Loratadine combined with Glucocorticoid nasal spray in the treatment of pediatric bronchial asthma with seasonal allergic rhinitis. A total of 100 pediatric patients with moderate to severe bronchial asthma and seasonal allergic rhinitis admitted to our hospital between January 2020 and January 2023 were included in this study. All patients met the complete inclusion and exclusion criteria. Based on different treatment interventions, they were divided into the control group (n = 50) and the observation group (n = 50). Patients in the control group received treatment with glucocorticoid nasal spray, while patients in the observation group received combined intervention with Loratadine in addition to the treatment received by the control group. The clinical treatment outcomes, incidence of adverse reactions, as well as the scores of nasal symptoms, asthma control, and peak expiratory flow rates at different treatment time points (baseline, T1: 30 days after treatment, T2: 60 days after treatment, T3: 90 days after treatment) were compared between the two groups. The combined treatment of Loratadine with Glucocorticoid nasal spray demonstrates significant clinical efficacy in the treatment of pediatric bronchial asthma with seasonal allergic rhinitis. It further promotes the recovery of peak expiratory flow rates, improves symptoms of rhinitis and asthma in pediatric patients. Importantly, the application of this combined treatment does not increase the risk of adverse

reactions in pediatric patients, indicating its high safety profile. This treatment approach is worthy of clinical application and further promotion.

**Keywords:** Bronchial Asthma; Clinical Efficacy; Glucocorticoid; Loratadine; Pediatric; Safety; Seasonal Allergic Rhinitis.

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## chronic cough

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Respir Med

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. 2024 Jul 17:107739.

doi: 10.1016/j.rmed.2024.107739. Online ahead of print.

### **A systematic review of the psychometric properties of the Leicester Cough Questionnaires based on the COSMIN Guidelines**

Anne Bottine<sup>1</sup>, Julien Grandjean<sup>2</sup>, Marie Standaert<sup>3</sup>, Aldjia Abdellaoui<sup>4</sup>, Gregory Reyhler<sup>5</sup>

Affiliations expand

- PMID: 39029808
- DOI: [10.1016/j.rmed.2024.107739](https://doi.org/10.1016/j.rmed.2024.107739)

### **Abstract**

**Background:** Chronic cough affects around 10% of the general adult population, impairing all aspects of quality of life.

**Research question:** What are the Leicester Cough Questionnaire's psychometric properties?

**Study design and methods:** Electronic searches of PubMed, CINAHL, and ScienceDirect databases were conducted from inception until October 1st 2022. All full-text articles, published in French or English, aimed at evaluating the LCQ's content validity or

psychometric properties were included. The COSMIN Risk of Bias checklist was applied to assess their methodological quality and results. Results were qualitatively summarised and rated by a modified GRADE approach.

**Results:** 40 studies were included accounting for 8,731 adults, subject to cough or a respiratory condition. Chronic cough (> 8 weeks) was the most represented. The LCQ's total score is relevant and comprehensible for the assessment of the impact of cough on QoL. The original 3-factor model showed a satisfactory model fit. Good convergent validity was found for the total and physical domain scores. These scores demonstrate good internal consistency and test retest reliability, with some variability noted and they are responsive to change. Recent estimates of MID thresholds were 1.7 and 0.4 for total and domain scores respectively. The quality of the studies is globally poor.

**Interpretation:** The LCQ is a valid outcome to assess the intra-individual impact of cough on QoL and to detect large changes in quality of life mainly in a short-term clinical trial setting.

**Clinical trial registration:** The protocol was registered with PROSPERO (CRD42XXXXX).

**Keywords:** LCQ; cough; properties; systematic review.

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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.  The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

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Respir Investig

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. 2024 Jul 16;62(5):811-816.

doi: 10.1016/j.resinv.2024.07.006. Online ahead of print.

## **Prevalence and clinical relevance of comorbid pertussis infection in adult patients with asthma: A prospective, cross-sectional study**

Hirono Nishiyama<sup>1</sup>, Tomoko Tajiri<sup>2</sup>, Ryota Kurokawa<sup>1</sup>, Tatsuro Suzuki<sup>1</sup>, Keima Ito<sup>1</sup>, Yuta Mori<sup>1</sup>, Kensuke Fukumitsu<sup>1</sup>, Satoshi Fukuda<sup>1</sup>, Yoshihiro Kanemitsu<sup>1</sup>, Takehiro Uemura<sup>1</sup>, Hirotsugu Ohkubo<sup>1</sup>, Ken Maeno<sup>1</sup>, Yutaka Ito<sup>1</sup>, Tetsuya Oguri<sup>1</sup>, Masaya Takemura<sup>1</sup>, Akio Niimi<sup>1</sup>

Affiliations expand

- PMID: 39018657
- DOI: [10.1016/j.resinv.2024.07.006](https://doi.org/10.1016/j.resinv.2024.07.006)

### **Abstract**

**Background:** Viral or atypical bacterial respiratory infections are involved in the new development and the pathogenesis of asthma. Though an association between pertussis and asthma has been expected, few studies have reported it consistently. We assessed the prevalence and clinical relevance of pertussis infection in adult patients with asthma.

**Methods:** In this prospective, cross-sectional study, newly referred, adult patients with asthma (n = 107) and with non-asthmatic subacute/chronic cough (n = 31) were enrolled. The prevalence of pertussis in patients with asthma and in those with non-asthmatic subacute/chronic cough was assessed. Next, the prevalence of newly diagnosed asthma was compared between asthmatic patients with and without pertussis. Finally, demographic characteristics of patients, blood test results, pulmonary function test results, and questionnaire scores were compared between the two patient groups.

**Results:** The prevalence of pertussis infection was significantly higher in patients with asthma than in those with non-asthmatic subacute/chronic cough (36% vs 10%; P = 0.004). The prevalence of newly diagnosed asthma was significantly higher in asthmatic patients with pertussis than in those without (74.4% vs 50.0%; P = 0.014). The physical, psychological, and total scores of the Leicester Cough Questionnaire were significantly lower in asthmatic patients with pertussis than in those without (all P < 0.05). The acid-reflux, dyspeptic, and total scores of the Frequency Scale for Symptoms of Gastroesophageal Reflux Disease (GERD) (FSSG) were significantly higher in asthmatic patients with pertussis than in those without (all P ≤ 0.05). The FSSG acid-reflux score was negatively correlated with the cough-specific quality of life (QOL) score only in asthmatic patients with pertussis (rho = -0.68, P = 0.01).

**Conclusions:** The prevalence of pertussis infection was significantly higher in adult patients with asthma than in those with non-asthmatic subacute/chronic cough. In patients

with asthma, comorbid pertussis infection may play a role in newly diagnosed asthma and may contribute to impaired cough-specific QOL partly due to worsening acid-reflux symptoms of GERD.

**Keywords:** Asthma; Cough-specific quality of life; Gastroesophageal reflux disease; Pertussis; Prevalence.

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### **Conflict of interest statement**

Declaration of competing interest The authors have no conflicts of interest.

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J Asthma

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. 2024 Jul 13:1-9.

doi: 10.1080/02770903.2024.2376230. Online ahead of print.

### **[Londrina Activities of Daily Living Protocol: validity, reliability, minimal detectable change, and standard error of measurement in adults with asthma](#)**

[Vitória Cavalheiro Puzzi<sup>1,2</sup>](#), [Joice Mara de Oliveira<sup>1,2</sup>](#), [Thainá Bessa Alves<sup>1,2</sup>](#), [Jessica Priscila da Conceição Silva<sup>1,2</sup>](#), [Fabio Pitta<sup>1,2</sup>](#), [Karina Couto Furlanetto<sup>1,2</sup>](#)

Affiliations expand

- PMID: 38958952
- DOI: [10.1080/02770903.2024.2376230](https://doi.org/10.1080/02770903.2024.2376230)

## Abstract

**Introduction:** Asthma symptoms are dyspnea, chronic cough, wheezing, chest tightness, or chest discomfort, which can directly limit the activities of daily living (ADL), which is frequently reported by adults with asthma. Evaluating ADL with a reliable protocol at the usual speed is necessary.

**Objectives:** To investigate the validity, reliability, minimal detectable change (MDC), and standard error of measurement (SEM) of the Londrina ADL Protocol (LAP) for adults with asthma.

**Methods:** Adults with asthma were evaluated with the LAP test. Spearman's correlation coefficient was used to verify validity with the 6-min walk test (6MWT), Glittre-ADL test, and London Chest Activity of Daily Living (LCADL). To test the reliability, the test was reapplied in at least 30 min; the Wilcoxon test and Intraclass Correlation Coefficient (ICC), SEM, MDC, and learning effect were performed.

**Results:** Fifty-three individuals were included (26% men,  $43 \pm 15$  years, BMI  $28 \pm 8$  kg/m<sup>2</sup>, FEV<sub>1</sub>  $70 \pm 24\%$  predicted). For convergent validity, the LAP test was correlated with the 6MWT, Glittre-ADL, and LCADL scale ( $r = -0.49, 0.71, \text{ and } 0.30$ , respectively;  $p < 0.03$ ). There was a difference in test-retest ( $p < 0.0001$ ) and reliability analysis shows ICC<sub>3</sub> of 0.94, SEM of 14.88 s (22%), and MDC of 41.23 s (15%). Furthermore, the individuals performed the second test with  $-23 \pm 19$  (7.9%) s.

**Conclusion:** The LAP test is valid and reliable for assessing limitations during ADL in adults with asthma. Considerable learning effect was observed, therefore, the best of two measures may avoid underestimation.

**Keywords:** Result validity; activities of daily living; asthma; result reliability.

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

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Review

Am J Med Sci

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. 2024 Jul 17:S0002-9629(24)01357-0.

doi: 10.1016/j.amjms.2024.07.023. Online ahead of print.

## **COPD Overlap Conditions: Clinical and Therapeutic Implications**

**Abdullah Jarrah<sup>1</sup>, Mohammed T Awad<sup>2</sup>, Cassondra Cramer-Bour<sup>3</sup>, Ayman O Soubani<sup>3</sup>**

**Affiliations expand**

- PMID: 39029738
- DOI: [10.1016/j.amjms.2024.07.023](https://doi.org/10.1016/j.amjms.2024.07.023)

### **Abstract**

Chronic Obstructive Pulmonary Disease (COPD) is a complex pulmonary condition characterized by chronic airflow limitation. Within the spectrum of COPD, distinct overlap conditions exist, including Asthma-COPD Overlap (ACO), COPD-Obstructive Sleep Apnea (COPD-OSA), Combined Pulmonary Fibrosis and Emphysema (CPFE), and Bronchiectasis-COPD Overlap (BCO). This review provides a comprehensive overview of the clinical and therapeutic implications of these conditions, highlighting the differences in complications compared with COPD alone in addition to the diagnostic challenges of identifying these conditions. Therapeutically tailored approaches are necessary for COPD overlap conditions considering the unique complications that may arise. Optimal pharmacological management, disease-specific interventions, and comprehensive patient-centered care are crucial components of treatment strategies. This review provides insights for healthcare professionals by enhancing their understanding and management of these conditions. This emphasizes the importance of accurate diagnosis and individualized treatment plans, considering the specific complications associated with each COPD overlap condition.

**Keywords:** Asthma; Asthma COPD Overlap; COPD; Emphysema; OSA.

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**Conflict of interest statement**

**Declaration of competing interest** No conflicts of interest or relationship with the industry to disclose by any of the authors. No funding or financial interests.

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. 2024 Jul 17;25(1):283.

doi: [10.1186/s12931-024-02903-1](https://doi.org/10.1186/s12931-024-02903-1).

**Microbiological characteristics of the lower airway in adults with bronchiectasis: a prospective cohort study**

**Jie-Lin Duan<sup>#1</sup>, Cai-Yun Li<sup>#2</sup>, Ying Jiang<sup>#34</sup>, Chao Liu<sup>2</sup>, Pan-Rui Huang<sup>34</sup>, Li-Fen Gao<sup>34</sup>, Wei-Jie Guan<sup>34</sup>, Lin-Ling Cheng<sup>56</sup>**

**Affiliations expand**

- PMID: [39020401](https://pubmed.ncbi.nlm.nih.gov/39020401/)
- PMCID: [PMC11253380](https://pubmed.ncbi.nlm.nih.gov/PMC11253380/)
- DOI: [10.1186/s12931-024-02903-1](https://doi.org/10.1186/s12931-024-02903-1)

**Abstract**

**Background:** Microbial infection and colonization are frequently associated with disease progression and poor clinical outcomes in bronchiectasis. Identification of pathogen spectrum is crucial for precision treatment at exacerbation of bronchiectasis.

**Methods:** We conducted a prospective cohort study in patients with bronchiectasis exacerbation onset and stable state. Bronchoalveolar lavage fluid (BALF) was collected for conventional microbiological tests (CMTs) and metagenomic Next-Generation Sequencing (mNGS). Bronchiectasis patients were monitored for documenting the time to the next exacerbation during longitudinal follow-up.

**Results:** We recruited 168 eligible participants in the exacerbation cohorts, and 38 bronchiectasis patients at stable state at longitudinal follow-up. 141 bronchiectasis patients at exacerbation onset had definite or probable pathogens via combining CMTs with mNGS reports. We identified that *Pseudomonas aeruginosa*, non-tuberculous mycobacteria, *Haemophilus influenzae*, *Nocardia* spp, and *Staphylococcus aureus* were the top 5 pathogens with a higher detection rate in our

cohorts via combination of CMTs and mNGS analysis. We also observed strong correlations of *Pseudomonas aeruginosa*, *Haemophilus influenzae*, non-tuberculous mycobacteria with disease severity, including the disease duration, Bronchiectasis Severity Index, and lung function. Moreover, the adjusted pathogenic index of potential pathogenic microorganism negatively correlated ( $r = -0.7280$ ,  $p < 0.001$ ) with the time to the next exacerbation in bronchiectasis.

**Conclusion:** We have revealed the pathogenic microbial spectrum in lower airways and the negative correlation of PPM colonization with the time to the next exacerbation in bronchiectasis. These results suggested that pathogens contribute to the progression of bronchiectasis.

**Keywords:** *Pseudomonas aeruginosa*; Bronchiectasis; Metagenomic next-generation sequencing.

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**Conflict of interest statement**

The authors declare no competing interests.

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

**supplementary info**

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

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**Review**

**Breathe (Sheff)**

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. 2024 Jul 16;20(2):240033.

doi: 10.1183/20734735.0033-2024. eCollection 2024 Jun.

# The role of radiological imaging in the management of severe and difficult-to-treat asthma

Joshua Aigbirior<sup>1</sup>, Amer Almaghrabi<sup>1</sup>, Monder Lafi<sup>2</sup>, Adel H Mansur<sup>1 3</sup>

## Affiliations expand

- PMID: 39015661
- PMCID: [PMC11249838](#)
- DOI: [10.1183/20734735.0033-2024](#)

## Abstract

Radiological imaging has proven to be a useful tool in the assessment of asthma, its comorbidities and potential complications. Characteristic chest radiograph and computed tomography scan findings can be seen in asthma and in other conditions that can coexist with or be misdiagnosed as asthma, including chronic rhinosinusitis, inducible laryngeal obstruction, excessive dynamic airway collapse, tracheobronchomalacia, concomitant COPD, bronchiectasis, allergic bronchopulmonary aspergillosis, eosinophilic granulomatosis with polyangiitis, and eosinophilic pneumonia. The identification of the characteristic radiological findings of these conditions is often essential in making the correct diagnosis and provision of appropriate management and treatment. Furthermore, radiological imaging modalities can be used to monitor response to therapy.

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## Conflict of interest statement

Conflict of interest: None declared.

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. 2024 Jul 15;10(4):00982-2023.

doi: 10.1183/23120541.00982-2023. eCollection 2024 Jul.

**Long-term impact of COVID-19 hospitalisation among individuals with pre-existing airway diseases in the UK: a multicentre, longitudinal cohort study - PHOSP-COVID**

Omer Elneima<sup>1</sup>, John R Hurst<sup>2 3</sup>, Carlos Echevarria<sup>4 5</sup>, Jennifer K Quint<sup>6</sup>, Samantha Walker<sup>7</sup>, Salman Siddiqui<sup>8</sup>, Petr Novotny<sup>1</sup>, Paul E Pfeffer<sup>9 10</sup>, Jeremy S Brown<sup>2</sup>, Manu Shankar-Hari<sup>11</sup>, Hamish J C McAuley<sup>1</sup>, Olivia C Leavy<sup>1 12</sup>, Aarti Shikotra<sup>1</sup>, Amisha Singapuri<sup>1</sup>, Marco Sereno<sup>1</sup>, Matthew Richardson<sup>1</sup>, Ruth M Saunders<sup>1</sup>, Victoria C Harris<sup>1</sup>, Linzy Houchen-Wolloff<sup>1 13</sup>, Neil J Greening<sup>1</sup>, Ewen M Harrison<sup>14</sup>, Annemarie B Docherty<sup>14</sup>, Nazir I Lone<sup>14</sup>, James D Chalmers<sup>15</sup>, Ling-Pei Ho<sup>16 17</sup>, Alex Horsley<sup>18 19</sup>, Michael Marks<sup>20 21</sup>, Krisnah Poinasamy<sup>7</sup>, Betty Raman<sup>17 22</sup>, Rachael A Evans<sup>1</sup>, Louise V Wain<sup>1 11</sup>, Aziz Sheikh<sup>14</sup>, Chris E Brightling<sup>1 23</sup>, Anthony De Soyza<sup>4 24 23</sup>, Liam G Heaney<sup>25 26 23</sup>

Affiliations expand

- PMID: 39010888
- PMCID: [PMC11247371](#)
- DOI: [10.1183/23120541.00982-2023](#)

Abstract

**Background:** The long-term outcomes of COVID-19 hospitalisation in individuals with pre-existing airway diseases are unknown.

**Methods:** Adult participants hospitalised for confirmed or clinically suspected COVID-19 and discharged between 5 March 2020 and 31 March 2021 were recruited to the Post-hospitalisation COVID-19 (PHOSP-COVID) study. Participants attended research visits at 5 months and 1 year post discharge. Clinical characteristics, perceived recovery, burden of symptoms and health-related quality of life (HRQoL) of individuals with pre-existing airway disease (*i.e.*, asthma, COPD or bronchiectasis) were compared to the non-airways group.

**Results:** A total of 615 out of 2697 (22.8%) participants had a history of pre-existing airway diseases (72.0% diagnosed with asthma, 22.9% COPD and 5.1% bronchiectasis). At 1 year, the airways group participants were less likely to feel fully recovered (20.4% *versus* 33.2%,  $p < 0.001$ ), had higher burden of anxiety (29.1% *versus* 22.0%,  $p = 0.002$ ), depression (31.2% *versus* 24.7%,  $p = 0.006$ ), higher percentage of impaired mobility using short physical performance battery  $\leq 10$

(57.4% versus 45.2%,  $p < 0.001$ ) and 27% had a new disability (assessed by the Washington Group Short Set on Functioning) versus 16.6%,  $p = 0.014$ . HRQoL assessed using EQ-5D-5L Utility Index was lower in the airways group (mean $\pm$ SD 0.64 $\pm$ 0.27 versus 0.73 $\pm$ 0.25,  $p < 0.001$ ). Burden of breathlessness, fatigue and cough measured using a study-specific tool was higher in the airways group.

**Conclusion:** Individuals with pre-existing airway diseases hospitalised due to COVID-19 were less likely to feel fully recovered, had lower physiological performance measurements, more burden of symptoms and reduced HRQoL up to 1 year post-hospital discharge.

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#### Conflict of interest statement

**Conflict of interest:** J.R. Hurst has received support to attend meetings, research grants, and personal payment and payment to his employer from pharmaceutical companies that make medicines to treat airways diseases. J.K. Quint reports grants from Industrial Strategy Challenge Fund, the Medical Research Council, Health Data Research, GlaxoSmithKline (GSK), Boehringer Ingelheim (BI), Asthma+Lung UK and AstraZeneca (AZ), and consulting fees from GSK, Evidera, Chiesi, AZ and Insmmed outside the submitted work. P.E. Pfeffer reports grants from NIHR and GSK, Honoraria payments for lectures from AZ, GSK, Sanofi and Chiesi and travel fees from AZ, GSK, Sanofi outside the submitted work. N.J. Greening reports grants from GSK and BioAge, and personal fees and travel grants from Genentech, Roche, Chiesi, AZ, GSK, Pulmonx and Chiesi outside the submitted work. J.D. Chalmers is an associate editor of this journal. A. Horsley reports grants from UKRI, NIHR and NIHR Manchester BRC during the conduct of this study and unenumerated role as the chair of NIHR Translational Research Collaboration. A. Sheikh has served on AZ's thrombotic thrombocytopenic taskforce, and on a number of UK and Scottish Government COVID-19 advisory bodies; all these roles were unremunerated. B. Raman reports grant from BHF Oxford CRE and speaker fees from Axcella Therapeutics. R.A. Evans reports grants from UKRI/MRC, DHSC/NIHR, Wolfson Foundation and Genentec/Roche during the conduct of this study, travel and speaker fees from AZ/Evidera, Boehringer Ingelheim (BI), Moderna and Chiesi, and unremunerated leadership roles in ERS/ATS outside the submitted work. C.E. Brightling declares that their institute was awarded a grant from UKRI/NIHR to complete this work; the author reports grants from GSK, AZ, Sanofi, Regeneron, BI, Chiesi, Novartis, Roche, Genentech, Mologic and 4DPharma; and consultancy fees paid to their institution from GSK, AZ, Sanofi, BI, Chiesi, Novartis, Roche, Genentech, Mologic, 4DPharma and Areteia. A. De Soyza declares receiving personal consulting fees and travel grants from AZ, Bayer, GSK, Chiesi, Novartis, Pfizer, Insmmed, Gilead and 30T outside the submitted work. All other authors declare no competing interests.

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

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Observational Study

Respir Res

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. 2024 Jul 15;25(1):278.

doi: [10.1186/s12931-024-02904-0](https://doi.org/10.1186/s12931-024-02904-0).

**Phenotypical characteristics of nontuberculous mycobacterial infection in patients with bronchiectasis**

**Assaf Frajman** <sup>#1,2</sup>, **Shimon Izhakian** <sup>#3,4</sup>, **Ori Mekiten** <sup>1,2</sup>, **Ori Hadar** <sup>1,2</sup>, **Ariel Lichtenstadt** <sup>5</sup>, **Chen Hajaj** <sup>6</sup>, **Shon Shchori** <sup>6</sup>, **Moshe Heching** <sup>1,2</sup>, **Dror Rosengarten** <sup>1,2</sup>, **Mordechai R Kramer** <sup>1,2</sup>

**Affiliations expand**

- PMID: 39010067
- PMCID: [PMC11251292](https://pubmed.ncbi.nlm.nih.gov/PMC11251292/)
- DOI: [10.1186/s12931-024-02904-0](https://doi.org/10.1186/s12931-024-02904-0)

**Abstract**

**Background:** The global mortality and morbidity rates of bronchiectasis patients due to nontuberculous mycobacteria (NTM) pulmonary infection are on a concerning upward trend. The aims of this study to identify the phenotype of NTM-positive individuals with bronchiectasis.

**Methods:** A retrospective single-center observational study was conducted in adult patients with bronchiectasis who underwent bronchoscopy in 2007-2020. Clinical, laboratory, pulmonary function, and radiological data were compared between patients with a positive or negative NTM culture.

**Results:** Compared to the NTM-negative group (n=677), the NTM-positive group (n=94) was characterized (P ≤0.05 for all) by older age, greater proportion of females, and higher rates of gastroesophageal reflux disease and muco-active

medication use; lower body mass index, serum albumin level, and lymphocyte and eosinophil counts; lower values of forced expiratory volume in one second, forced vital capacity, and their ratio, and lower diffusing lung capacity for carbon monoxide; higher rates of bronchiectasis in both lungs and upper lobes and higher number of involved lobes; and more exacerbations in the year prior bronchoscopy. On multivariate analysis, older age (OR 1.05, 95% CI 1.02-1.07, P=0.001), lower body mass index (OR 1.16, 95% CI 1.16-1.07, P <0.001), and increased number of involved lobes (OR 1.26, 95% CI 1.01-1.44, P=0.04) were associated with NTM infection.

**Conclusions:** Patients with bronchiectasis and NTM pulmonary infection are more likely to be older and female with more severe clinical, laboratory, pulmonary function, and radiological parameters than those without NTM infection. This phenotype can be used for screening patients with suspected NTM disease.

**Keywords:** Bronchiectasis; Infection; Nontuberculous mycobacteria; Phenotype; Pulmonary infection.

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#### Conflict of interest statement

The authors declare no competing interests.

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

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Am J Respir Crit Care Med

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. 2024 Jul 15;210(2):248-249.

doi: 10.1164/rccm.202403-0476LE.

## Reply to Chen *et al.*: Reexamining Chronic Obstructive Pulmonary Disease in Bronchiectasis: Elucidating Overdiagnosis and Outcomes from EMBARC's ROSE Criteria

James D Chalmers<sup>1</sup>, Anthony De Soyza<sup>2</sup>, Stefano Aliberti<sup>3,4</sup>, Eva Polverino<sup>5,6</sup>

Affiliations expand

- PMID: 38579281
- DOI: [10.1164/rccm.202403-0476LE](https://doi.org/10.1164/rccm.202403-0476LE)

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Am J Respir Crit Care Med

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. 2024 Jul 15;210(2):247-248.

doi: [10.1164/rccm.202402-0289LE](https://doi.org/10.1164/rccm.202402-0289LE).

Reexamining Chronic Obstructive Pulmonary Disease in Bronchiectasis: Elucidating Overdiagnosis and Outcomes from EMBARC's ROSE Criteria

Yen-Fu Chen<sup>1,2,3</sup>, Jung-Yien Chien<sup>3,4</sup>, Hao-Chien Wang<sup>3,4,5</sup>, Chong-Jen Yu<sup>3,4,6</sup>

Affiliations expand

- PMID: 38579279
- DOI: [10.1164/rccm.202402-0289LE](https://doi.org/10.1164/rccm.202402-0289LE)

***No abstract available***

**supplementary info**

**Publication types, MeSH termsexpand**

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