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

BMC Public Health



. 2024 Jan 27;24(1):311.

doi: 10.1186/s12889-024-17804-7.

Sarcopenia in Thai community-dwelling older adults: a national, cross-sectional, epidemiological study of prevalence and risk factors

[Ekasame Vanitcharoenkul¹](#), [Aasis Unnanuntana¹](#), [Poichong Chotiyarnwong¹](#), [Panai Laohaprasitiporn¹](#), [Nath Adulkasem¹](#), [Apichat Asavamongkolkul¹](#), [Chandhanarat Chandhanayingyong²](#)

Affiliations expand

- PMID: 38281041
- DOI: [10.1186/s12889-024-17804-7](https://doi.org/10.1186/s12889-024-17804-7)

Abstract

Background: Sarcopenia is an age-related condition characterized by a progressive loss of skeletal muscle mass. It leads to declining physical performance, potentially culminating in a diminished quality of life or death. This study investigated the prevalence of sarcopenia and its associated risk factors among Thai community-dwelling individuals of advanced age.

Methods: Between March 2021 and August 2022, we conducted a nationwide community-based epidemiological survey across all six major regions of Thailand. Participants with sarcopenia were identified according to the 2019 criteria of the Asian Working Group for Sarcopenia (AWGS). The risk factors were examined using multivariable logistic regression.

Results: Of the 2456 participants, the overall prevalence of sarcopenia was 18.1%, with nearly two-thirds (66.9%) classified as having severe sarcopenia. Multivariate analysis identified six associated risk factors for sarcopenia. They are a lower body mass index (odds ratio [OR] = 11.7, 95% confidence interval [CI] = 7.8-17.4), suboptimal leg calf circumference (OR = 6.3, 95% CI = 4.3-9.5), male sex (OR = 2.8, 95% CI = 2.2-3.7), a history of chronic obstructive pulmonary disease (OR = 2.3, 95% CI = 2.3-5.0), advanced age (OR = 2.1, 95% CI = 1.3-3.3), and an increasing time in the timed up-and-go test (OR = 1.1, 95% CI = 1.0-1.1).

Conclusions: This is the first large-scale national study to represent the prevalence and risk factors for sarcopenia in Thai community-dwelling individuals of advanced age using the AWGS 2019 criteria. Interventions such as lifestyle modifications and appropriate nutrition should be promoted throughout adulthood to maintain muscle strength and delay the onset of sarcopenia, particularly in males.

Trial registration: The Central Research Ethics Committee of the National Research Council of Thailand authorized the study protocol (approval number COA-CREC023/2021).

Keywords: Elderly; National epidemiological survey; Prevalence; Risk factor; Sarcopenia.

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- [31 references](#)

SUPPLEMENTARY INFO

MeSH termsexpand

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Review

J Pain Symptom Manage

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. 2024 Jan 25:S0885-3924(24)00046-0.

doi: 10.1016/j.jpainsymman.2024.01.028. Online ahead of print.

Criteria for Enrollment of Patients with COPD in Palliative Care Trials: A Systematic Review

[Natalia Smirnova](#)¹, [Allison V Lange](#)², [Amanda Glickman](#)³, [Kristen Desanto](#)⁴, [Cara L McDermott](#)⁵, [Donald R Sullivan](#)⁶, [David B Bekelman](#)⁷, [Dio Kavalieratos](#)⁸

Affiliations expand

- PMID: 38280439
- DOI: [10.1016/j.jpainsymman.2024.01.028](https://doi.org/10.1016/j.jpainsymman.2024.01.028)

Abstract

Context: Use of palliative care interventions in chronic obstructive pulmonary disease (COPD) has increased in recent years and inclusion criteria used to identify patients with COPD appropriate for palliative care vary widely. We evaluated the inclusion criteria to identify ways to improve enrollment opportunities for patients with COPD.

Objectives: To determine inclusion criteria used to select patients with COPD for palliative care trials.

Methods: A systematic review was conducted to determine criteria used to select patients with COPD for palliative care randomized controlled trials. A narrative synthesis was conducted for all trials.

Results: Inclusion criteria were highly heterogeneous. Most studies (n=11, 79%) used a combination of criteria to identify patients with COPD. Commonly used criteria included hospitalization for an acute exacerbation of COPD (n=8, 57%), home supplemental oxygen use (n=8, 57%), and spirometry values confirming COPD (n=6, 43%). Three studies (21.4%) used Modified Medical Research Council score and two studies (21%) used physician prognosis or a performance scale.

Conclusion: The most common criteria, a hospitalization for acute exacerbation of COPD or supplemental oxygen use at home, both have the benefit of selecting patients who have a higher symptom burden or higher healthcare utilization who might therefore benefit more from palliative care. By describing the landscape and variability of previously used inclusion criteria, this article serves as a resource for clinicians and researchers. Developing a consistent set of inclusion criteria in the future would help generate generalizable results that can be translated into clinical practice to improve the lives of patients with COPD.

Prospero registration number: CRD42022306752.

Keywords: Chronic Obstructive Pulmonary Disease (COPD); Palliative care.

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Conflict of interest statement

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

SUPPLEMENTARY INFO

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Respir Med Res

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. 2024 Jan 25:85:101082.

doi: 10.1016/j.resmer.2023.101082. Online ahead of print.

Residual reversibility in COPD patients already on long-acting bronchodilator: The OscilloRevers Study

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Affiliations expand

- PMID: 38280281
- DOI: [10.1016/j.resmer.2023.101082](https://doi.org/10.1016/j.resmer.2023.101082)

Abstract

Background: Dyspnea is a complex symptom of chronic obstructive pulmonary disease (COPD) which is not strongly correlated with lung function measures. Long-acting bronchodilators (LAB) may reduce this dyspnea, but some patients report persistent chronic dyspnea despite this treatment. This study aims to assess residual reversibility and clinical response after short-acting bronchodilator (SAB) in COPD patients already treated by LAB and reporting persistent dyspnea.

Methods: COPD patients with a persistent dyspnea (modified Medical Research Council scale (mMRC) ≥ 1) despite current stable treatment with at least one LAB were included. Spirometry, plethysmography and impulse oscillometry (IOS) were performed at peak effect of their LAB and repeat 45 min after the intake of two SAB (400 μg of salbutamol and 80 μg of ipratropium). Dyspnea improvement was assessed at 45 min after SAB through a comparative two-sided VAS (-100 mm for maximal improvement; +100 mm for maximal degradation).

Results: Twenty-two COPD patients were analyzed, mainly men (59.1 %) with a mean age of 60.6 years and a median FEV1 of 54 % of predicted values. Fifty percent of patients reported a severe basal dyspnea (mMRC ≥ 2). After SAB, spirometric and plethysmographic measurements were statistically improved. For IOS measurement, reactance at 5 Hz (X5) and area of reactance (AX) were also improved. Fifty percent of patients reported a clinically relevant improvement of their resting dyspnea. However, no correlation was found between dyspnea improvement and functional measures.

Conclusions: Fifty percent of COPD patients regularly treated with one or two LAB still report a relevant improvement of resting dyspnea after the adjunctive intake of double short-acting bronchodilators. Physiological mechanisms associated with this improvement remain to be determined.

Clinical trial registration: [NCT02928744](https://www.clinicaltrials.gov/ct2/show/study/NCT02928744).

Keywords: Dyspnea; Oscillometry; Respiratory function tests.

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Conflict of interest statement

Declaration of Competing Interest OLR reports personal fees from AstraZeneca, Boehringer Ingelheim and GlaxoSmithKline, and non-financial supports from AstraZeneca, Boehringer Ingelheim, Chiesi, Correvio, GlaxoSmithKline, Mayoli, MSD, Mylan, Novartis, Pfizer, PulmonX, Santelys Association, Vertex and Zambon, unrelated to the submitted work. MP reports non-financial supports from Boehringer Ingelheim, GlaxoSmithKline, Sanofi Aventis France and Sysmed, unrelated to the submitted work. HS reports non-financial support from GlaxoSmithKline, LVL médical, Oxyvie, unrelated to the submitted work. NB reports personal fees from AstraZeneca, and non-financial support from AstraZeneca, Boehringer Ingelheim, GlaxoSmithKlein, Novartis, Santelys association, SOS oxygène and Teva, unrelated to the submitted work. PD reports personal fees and non-financial support from ALK, AstraZeneca, Boehringer Ingelheim, GlaxoSmithKline, Menarini, Novartis, Sanofi and Stallergènes, unrelated to the submitted work. TP reports grants from AstraZeneca, personal fees from AstraZeneca, Boehringer Ingelheim, Chiesi, GlaxoSmithKline and Novartis, and congress support from AstraZeneca, GlaxoSmithKlein, Novartis and Chiesi, unrelated to the submitted work.

SUPPLEMENTARY INFO

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. 2024 Jan 27:sxae007.

doi: 10.1093/stmcls/sxae007. Online ahead of print.

Human umbilical cord mesenchymal stem cells improve lung function in chronic obstructive pulmonary disease rat model through regulating lung microbiota

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Affiliations expand

- PMID: 38279981
- DOI: [10.1093/stmcls/sxae007](https://doi.org/10.1093/stmcls/sxae007)

Abstract

Background: The use of human umbilical cord mesenchymal stem cells (UC-MSCs) has shown promise in improving the pathophysiological characteristics of rats with chronic obstructive pulmonary disease (COPD). However, more research is needed to understand the exact mechanism behind their therapeutic effects and their impact on lung microbiota.

Methods: To investigate this, rats were randomly assigned to one of three groups: Control, COPD+vehicle, and COPD+UC-MSCs group. Lung function changes after UC-MSCs therapy were evaluated weekly for six weeks. Additionally, lactate dehydrogenase (LDH), TNF (tumor necrosis factor)- α , IL (interleukin)-6, and IL-1 β level in bronchoalveolar lavage fluid (BALF) were analyzed. Arterial blood gas and weight were recorded. Hematoxylin and eosin (HE) staining was used to examine lung pathology, while changes in the lung microbiota were evaluated through 16S rRNA sequencing.

Results: The administration of UC-MSCs in rats led to a progressive amelioration of COPD, as demonstrated by enhanced lung function and reduced inflammatory response. UC-MSCs treatment significantly altered the structure and diversity of the lung microbiota,

effectively preventing microbiota dysbiosis. This was achieved by increasing the abundance of Bacteroidetes and reducing the levels of Proteobacteria. Additionally, treatment with UC-MSCs reduced the activation of pathways associated with COPD, including microbial metabolism, ABC transporters, and Quorum sensing. The group of UC-MSCs showed increased metabolic pathways, such as amino acid biosynthesis, purine metabolism, starch and sucrose metabolism, and biosynthesis of secondary metabolites, compared to the COPD group.

Conclusions: The use of UC-MSCs was found to reduce inflammation and improve lung function in rats with COPD. The mechanism may be related to the lung microbiota, as UC-MSCs improved the communities of lung microbiota and regulated dysregulated metabolic pathways.

Keywords: COPD; Lung function; Microbiota; Therapeutic effect; UC-MSCs.

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Chronic Obstr Pulm Dis

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. 2024 Jan 25;11(1):1-2.

doi: 10.15326/jcopdf.2024.0497.

[Editorial-2014-2024: Celebrating 10 Years of Nonprofit, Open-Access Publishing Focused on COPD,](#)

Bronchiectasis, and Nontuberculous Mycobacteria Research

[Mark T Dransfield](#)^{1,2}

Affiliations expand

- PMID: 38277667
- DOI: [10.15326/jcopdf.2024.0497](https://doi.org/10.15326/jcopdf.2024.0497)

No abstract available

Keywords: 10th anniversary; Journal of the COPD Foundation; editorial.

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J Clin Med

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. 2024 Jan 21;13(2):609.

doi: 10.3390/jcm13020609.

Bronchial Progenitor Cells in Obstructive and Neoplastic Lung Disease: A Pilot Study

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Affiliations expand

- PMID: 38276115
- PMCID: [PMC10816161](#)
- DOI: [10.3390/jcm13020609](#)

Abstract

The alteration of progenitor/stem cells present in the airway epithelium has been observed in patients with COPD. Smoking exposure induces remodeling patterns in bronchial progenitor cells (BPCs), encompassing squamous metaplasia, hyperplasia of basal and of mucus-secreting cells, and the depletion of ciliated and non-mucous secretory cells. Our aim was to assess the expression of p63 and vimentin as potential markers of airway remodeling and the regulation of stem cell populations in obstructive and neoplastic lung disease patients. A retrospective single-center observational study was conducted, including patients undergoing bronchoscopy with bronchial biopsies for suspected lung cancer. p63 and vimentin expression were evaluated via immunohistochemical analysis. There were 25 patients, of which 21 with COPD were included, and 17 were diagnosed with lung cancer. We observed that FEV1% was negatively correlated with p63+ basal cell number ($r = -0.614$, $p = 0.019$) and positively correlated with vimentin expression ($r = 0.670$; $p = 0.008$). p63 was significantly higher in biopsies from the trachea and main bronchi compared to more distal areas ($p = 0.040$), whereas vimentin was prevalent in the more distal areas ($p = 0.042$). Our preliminary data suggest the initial evidence of structural changes in BPCs among patients with COPD and lung cancer. Further research efforts are warranted to investigate additional morphologic and functional respiratory parameters in these patients.

Keywords: airway fibrosis; airway remodeling; basal cells; bronchial progenitor cells; chronic obstructive pulmonary disease; epithelial–mesenchymal transition; lung cancer; neoplastic lung disease; p63; smoking.

Conflict of interest statement

The authors declare no conflicts of interest.

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

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Published Erratum

Cureus

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. 2024 Jan 24;16(1):c155.

doi: 10.7759/cureus.c155. eCollection 2024 Jan.

Correction: The Overlap Syndrome: A Combination of Chronic Obstructive Pulmonary Disease and Obstructive Sleep Apnea

[Mohammad A Alhajery](#)¹

Affiliations [expand](#)

- PMID: 38274599
- PMCID: [PMC10808775](#)

- DOI: [10.7759/cureus.c155](https://doi.org/10.7759/cureus.c155)

Abstract

[This corrects the article DOI: 10.7759/cureus.52349].

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Conflict of interest statement

No competing interests declared.

Erratum for

- The Overlap Syndrome: A Combination of Chronic Obstructive Pulmonary Disease and Obstructive Sleep Apnea.

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Trials

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. 2024 Jan 25;25(1):85.

doi: 10.1186/s13063-024-07920-5.

[Standard vs. targeted oxygen therapy prehospitally for chronic obstructive](#)

pulmonary disease (STOP-COPD): study protocol for a randomised controlled trial

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Affiliations expand

- PMID: 38273393
- PMCID: [PMC10809561](#)
- DOI: [10.1186/s13063-024-07920-5](#)

Abstract

Background: A high concentration of inspired supplemental oxygen may possibly cause hypercapnia and acidosis and increase mortality in patients with acute exacerbation of chronic obstructive pulmonary disease (AECOPD). Even so, patients with AECOPD are being treated with high oxygen flow rates when receiving inhalation drugs in the prehospital setting. A cluster-randomised controlled trial found that reduced oxygen delivery by titrated treatment reduced mortality—a result supported by observational studies—but the results have never been reproduced. In the STOP-COPD trial, we investigate the effect of titrated oxygen delivery compared with usual care consisting of high flow oxygen delivery in patients with AECOPD in the prehospital setting.

Methods: In this randomised controlled trial, patients will be blinded to allocation. Patients with suspected AECOPD (n = 1888) attended by the emergency medical service (EMS) and aged > 40 years will be allocated randomly to either standard treatment or titrated oxygen, targeting a blood oxygen saturation of 88–92% during inhalation therapy. The trial will be conducted in the Central Denmark Region and include all ambulance units. The power to detect a 3% 30-day mortality risk difference is 80%. The trial is approved as an emergency trial. Hence, EMS providers will include patients without prior consent.

Discussion: The results will provide evidence on whether titrated oxygen delivery outperforms standard high flow oxygen when used to nebulise inhaled bronchodilators in AECOPD treatment. The trial is designed to ensure unselected inclusion of patients with AECOPD needing nebulised bronchodilators—a group of patients that receives high oxygen

fractions when treated in the prehospital setting where the only compressed gas is generally pure oxygen. Conducting this trial, we aim to improve treatment for people with AECOPD while reducing their 30-day mortality.

Trial registration: European Union Clinical Trials (EUCT) number: 2022-502003-30-00 (authorised 06/12/2022), ClinicalTrials.gov number: [NCT05703919](#) (released 02/02/2023), Universal trial number: U1111-1278-2162.

Keywords: Acute exacerbation of COPD; COPD; Emergency medical services; Emergency medical technicians; Mortality; Paramedic; Prehospital; Titrated oxygen.

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Conflict of interest statement

The authors declare that they have no competing interests.

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

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Meta-Analysis

BMC Public Health

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. 2024 Jan 25;24(1):297.

Estimating the global prevalence of chronic obstructive pulmonary disease (COPD): a systematic review and meta-analysis

[Nadia Al Wachami](#)¹, [Morad Guennouni](#)^{2,3}, [Younes Iderdar](#)², [Karima Boumendil](#)², [Maryem Arraji](#)², [Yasmine Mourajid](#)², [Fatima Zahra Bouchachi](#)², [Mohamed Barkaoui](#)⁴, [Mohamed Lahbib Louerdi](#)⁵, [Abderraouf Hilali](#)², [Mohamed Chahboune](#)²

Affiliations expand

- PMID: 38273271
- PMCID: [PMC10811845](#)
- DOI: [10.1186/s12889-024-17686-9](#)

Abstract

Background: Chronic obstructive pulmonary disease (COPD) is a major public health problem. The present study aims to provide a global and regional estimate of the prevalence of COPD based on spirometry according to the two most widely used diagnostic criteria of COPD: fixed ratio (FR) and lower limit of normal (LLN).

Methods: We conducted a systematic review of the literature according to PRISMA guidelines. MEDLINE, Web of Sciences, and Scopus databases were searched to identify studies on the spirometry-based prevalence of COPD in individuals aged 40 years and older. The meta-analysis was performed using MedCalc 19 software.

Results: In total, 42 of the 3393 studies reviewed were eligible for inclusion. The overall prevalence of COPD in people aged 40 years and older was 12.64% (95% CI 10.75%-14.65%) and 7.38% (95% CI 5.47% - 9.55%) based on FR and LLN criteria, respectively. By gender, men had a higher prevalence of COPD compared to women (15.47%; 95% CI 12.22%-19.02% for men versus 8.79%; 95% CI 6.94%-10.82% for women). Using the LLN criteria, the prevalence of COPD in both sexes was almost identical (8.67%; 95% CI 8.44%-8.90% for men and 8.00%; 95% CI 6.42% - 9.73% for women). We reported a high prevalence of COPD among smokers and the elderly by both definitions of airway

obstruction. Regional prevalence estimates using the FR definition indicate that the highest COPD prevalence was recorded in the Americas and the lowest was recorded in the Eastern Mediterranean region. Using the LLN definition, the highest prevalence was recorded in the Southeast Asian region and the lowest prevalence was recorded in the American region. The most common COPD stage was stage II, with a prevalence of 50.46%. The results indicate a huge lack of prevalence data in the African and Eastern Mediterranean region. The results were given using a random-effect model due to the high heterogeneity between studies.

Conclusion: Results show that the prevalence of COPD differs according to the diagnostic criteria used. In addition, management and prevention strategies targeting risk factors for COPD are certainly needed to reduce the global burden of this chronic respiratory disease.

Keywords: Chronic obstructive pulmonary disease; Prevalence; Spirometry; meta-analysis.

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Conflict of interest statement

The authors declare no competing interests.

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

SUPPLEMENTARY INFO

Publication types, MeSH termsexpand

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Respir Med

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. 2024 Jan 23:107536.

Prognostic impact of chronic obstructive pulmonary disease in patients with heart failure with mildly reduced ejection fraction

[Felix Lau](#)¹, [Tobias Schupp](#)², [Alexander Schmitt](#)¹, [Marielen Reinhardt](#)¹, [Noah Abel](#)¹, [Mohammad Abumayyaleh](#)¹, [Kathrin Weidner](#)¹, [Daniel Duerschmied](#)¹, [Mohamed Ayoub](#)³, [Kambis Mashayekhi](#)⁴, [Muharrem Akin](#)⁵, [Niklas Ayasse](#)⁶, [Ibrahim Akin](#)¹, [Michael Behnes](#)¹

Affiliations expand

- PMID: 38272377
- DOI: [10.1016/j.rmed.2024.107536](https://doi.org/10.1016/j.rmed.2024.107536)

Abstract

Background: The aging population has led to a significant increase in heart failure (HF) patients. Related to demographic changes, the burden with comorbidities was shown to increase in patients with HF. Whereas chronic obstructive pulmonary disease (COPD) was yet demonstrated to be associated with adverse outcomes in patients with HF, the prognostic impact of COPD in HF with mildly reduced ejection fraction (HFmrEF) has not yet been clarified.

Objective: The study investigates the prognostic impact of COPD in patients hospitalized with HFmrEF.

Methods: Consecutive patients with HFmrEF were retrospectively included at one institution from 2016 to 2022. Patients with COPD were compared to patients without with regard to the primary endpoint all-cause mortality at 30 months (median follow-up). Secondary endpoints comprised in-hospital mortality, HF-related re-hospitalization, cardiac re-hospitalization and major adverse cardiac and cerebrovascular events (MACCE) at 30 months.

Results: A total of 2184 patients with HFmrEF were included with a prevalence of COPD of 12.0 %. Patients with COPD were older (median 77 vs. 75 years; $p = 0.025$), had increased burden of cardiovascular comorbidities and more advanced HF symptoms. At 30 months, patients with COPD had an increased risk of all-cause mortality compared to patients without (45 % vs. 30 %; HR = 1.667; 95 % CI 1.366-2.034; $p = 0.001$), alongside with a

higher risk of re-hospitalization for worsening HF (20 % vs. 12 %; HR = 1.658; 95 % CI 1.218-2.257; p = 0.001).

Conclusion: COPD is independently associated with adverse outcomes in patients hospitalized with HFmrEF.

Keywords: COPD; Chronic obstructive pulmonary disease; HFmrEF; Heart failure with mildly reduced ejection fraction.

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Conflict of interest statement

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

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Am J Respir Crit Care Med

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. 2024 Jan 25.

doi: 10.1164/rccm.202309-1614OC. Online ahead of print.

[The Association Between Bronchiectasis and Chronic Obstructive Pulmonary Disease: Data from the](#)

European Bronchiectasis Registry (EMBARC)

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Affiliations expand

- PMID: 38271696
- DOI: [10.1164/rccm.202309-1614OC](https://doi.org/10.1164/rccm.202309-1614OC)

Abstract

Rationale and objective: Bronchiectasis and COPD are associated conditions but misdiagnosis is believed to be common. A recently published international consensus definition of bronchiectasis (BE) and COPD association: The ROSE criteria (radiological bronchiectasis(R), obstruction: FEV1/FVC ratio<0.7 (O), symptoms (S) and exposure:≥10 pack year smoking (E) allows objective diagnosis of the BE-COPD association.

Methods: Analysis of the EMBARC registry, a prospective observational study of patients with CT confirmed bronchiectasis from 28 countries. The ROSE criteria were used to objectively defined BE-COPD association. Key outcomes during up to 5-years follow-up were exacerbations, hospitalization and mortality.

Measurement and main results: 16730 patients with bronchiectasis were included. 4336 had a co-diagnosis of COPD and these patients had more exacerbations, worse quality of life and higher severity scores. We observed marked overdiagnosis of COPD using the ROSE criteria: 22.2% of patients with a diagnosis of COPD did not have airflow obstruction and 31.9% did not have a history of ≥10 pack years smoking. Therefore the proportion meeting the ROSE criteria for COPD was 2157 (55.4%). Compared to patients without COPD, patients meeting ROSE criteria had increased risk of exacerbations and exacerbations resulting in hospitalisation during follow-up (IRR 1.25 95%CI 1.15-1.35 and 1.69 95%CI 1.51-1.90 respectively) but patients with a diagnosis of COPD who did not meet ROSE criteria also had increased risk of exacerbations.

Conclusions: The label of COPD is often applied to bronchiectasis patients without objective evidence of airflow obstruction and smoking history. Patients with a clinical label of COPD have worse clinical outcomes.

Keywords: COPD; bronchiectasis; exacerbations; mortality; spirometry.

FULL TEXT LINKS



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Review

Expert Rev Respir Med



. 2024 Jan 25:1-13.

doi: 10.1080/17476348.2024.2302940. Online ahead of print.

[Demystification of artificial intelligence for respiratory clinicians managing patients with obstructive lung diseases](#)

[Joana Antão](#)^{1,2,3,4}, [Jeroen de Mast](#)⁵, [Alda Marques](#)^{1,2}, [Frits M E Franssen](#)^{3,4}, [Martijn A Spruit](#)^{3,4}, [Qichen Deng](#)^{3,4}

Affiliations expand

- PMID: 38270524

- DOI: [10.1080/17476348.2024.2302940](https://doi.org/10.1080/17476348.2024.2302940)

Abstract

Introduction: Asthma and chronic obstructive pulmonary disease (COPD) are leading causes of morbidity and mortality worldwide. Despite all available diagnostics and treatments, these conditions pose a significant individual, economic and social burden. Artificial intelligence (AI) promises to support clinical decision-making processes by optimizing diagnosis and treatment strategies of these heterogeneous and complex chronic respiratory diseases. Its capabilities extend to predicting exacerbation risk, disease progression and mortality, providing healthcare professionals with valuable insights for more effective care. Nevertheless, the knowledge gap between respiratory clinicians and data scientists remains a major constraint for wide application of AI and may hinder future progress. This narrative review aims to bridge this gap and encourage AI deployment by explaining its methodology and added value in asthma and COPD diagnosis and treatment.

Areas covered: This review offers an overview of the fundamental concepts of AI and machine learning, outlines the key steps in building a model, provides examples of their applicability in asthma and COPD care, and discusses barriers to their implementation.

Expert opinion: Machine learning can advance our understanding of asthma and COPD, enabling personalized therapy and better outcomes. Further research and validation are needed to ensure the development of clinically meaningful and generalizable models.

Keywords: Artificial intelligence; asthma; chronic obstructive pulmonary disease; diagnosis; machine learning; management.

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Stud Health Technol Inform

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. 2024 Jan 25:310:589-593.

doi: 10.3233/SHTI231033.

NLP-Assisted Differential Diagnosis of Chronic Obstructive Pulmonary Disease Exacerbation

[Fatemeh Shah-Mohammadi](#)¹, [Joseph Finkelstein](#)¹

Affiliations expand

- PMID: 38269877
- DOI: [10.3233/SHTI231033](https://doi.org/10.3233/SHTI231033)

Abstract

Chronic Obstructive Pulmonary Disease (COPD) frequently coincides with other comorbidities such as congestive heart failure, hypertension, coronary artery disease, or atrial fibrillation. The exhibition of overlapping sets of symptoms associated with these conditions prevents early identification of an acute exacerbation upon admission to a hospital. Early identification of the underlying cause of exacerbation allows timely prescription of an optimal treatment plan as well as allows avoiding unnecessary clinical tests and specialist consultations. The aim of this study was to develop a predictive model for early identification of COPD exacerbation by using the clinical notes generated within 24 hours of admission to the hospital. The study cohort included patients with a prior diagnosis of COPD. Four predictive models have been developed, among which the support vector machine showed the best performance based on the resulting 80% F1 score.

Keywords: Chronic obstructive pulmonary disease (COPD); NLP; differential diagnosis.

SUPPLEMENTARY INFO

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Stud Health Technol Inform



. 2024 Jan 25:310:209-213.

doi: 10.3233/SHTI230957.

[Digital Therapeutics for COPD Patient Self-Management: Needs Analysis and Design Study](#)

[Samina Raza Abidi](#)¹, [Tracey Rickards](#)², [William Van Woensel](#)³, [Syed Sibte Raza Abidi](#)⁴

Affiliations expand

- PMID: 38269795
- DOI: [10.3233/SHTI230957](https://doi.org/10.3233/SHTI230957)

Abstract

Timely management of Chronic Obstructive Pulmonary Disease (COPD) exacerbations can improve recovery and reduce the risk of hospitalization. Digital therapeutics are digital interventions, based on best evidence, designed to provide home-based, patient-centered and pervasive self-management support to patients. Digital therapeutics can be effectively used to offer personalized and explainable self-management and behaviour modification resources to patients to reduce the burden of COPD, especially the prevention of acute COPD exacerbations. The functionalities of COPD specific digital therapeutics for self-management need to be grounded in clinical evidence and behavioral theories, in keeping with the self-management needs of COPD patients and their care providers. In this paper, we report the functionalities of a COPD digital therapeutic mobile application based on a needs analysis qualitative study involving both COPD patients and physicians, and, based

on the study's finding, we present a knowledge-driven digital therapeutic for COPD self-management.

Keywords: Chronic Obstructive Pulmonary Disease; digital therapeutics; knowledge-based systems; self-management.

SUPPLEMENTARY INFO

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EClinicalMedicine



. 2024 Jan 21:68:102423.

doi: 10.1016/j.eclinm.2024.102423. eCollection 2024 Feb.

[Prevalence of chronic cough, its risk factors and population attributable risk in the Burden of Obstructive Lung Disease \(BOLD\) study: a multinational cross-sectional study](#)

[Hazim Abozid](#)^{1,2}, [Jaymini Patel](#)³, [Peter Burney](#)³, [Sylvia Hartl](#)^{2,4}, [Robab Breyer-Kohansal](#)^{2,5}, [Kevin Mortimer](#)^{6,7}, [Asaad A Nafees](#)⁸, [Mohammed Al Ghobain](#)^{9,10}, [Tobias Welte](#)¹¹, [Imed Harrabi](#)¹², [Meriam Denguezli](#)¹³, [Li Cher Loh](#)¹⁴, [Abdul Rashid](#)¹⁴, [Thorarinn Gislason](#)^{15,16}, [Cristina Barbara](#)^{17,18}, [Joao Cardoso](#)^{19,20}, [Fatima Rodrigues](#)^{18,21}, [Terence Seemungal](#)²², [Daniel Obaseki](#)^{23,24}, [Sanjay Juvekar](#)²⁵, [Stefanni Nonna Paraguas](#)²⁶, [Wan C Tan](#)²⁷, [Frits M E Franssen](#)²⁸, [Filip Mejza](#)²⁹, [David](#)

[Mannino](#)^{30,31}, [Christer Janson](#)³², [Hamid Hacene Cherkaski](#)¹³, [Mahesh Padukudru Anand](#)³³, [Hasan Hafizi](#)³⁴, [Sonia Buist](#)³⁵, [Parvaiz A Koul](#)³⁶, [Asma El Sony](#)³⁷, [Marie-Kathrin Breyer](#)^{1,2}, [Otto C Burghuber](#)^{2,4}, [Emiel F M Wouters](#)^{2,28}, [Andre F S Amaral](#)^{3,38}, [BOLD Collaborative Research Group](#)

Collaborators, Affiliations expand

- PMID: 38268532
- PMCID: [PMC10807979](#)
- DOI: [10.1016/j.eclinm.2024.102423](#)

Abstract

Background: Chronic cough is a common respiratory symptom with an impact on daily activities and quality of life. Global prevalence data are scarce and derive mainly from European and Asian countries and studies with outcomes other than chronic cough. In this study, we aimed to estimate the prevalence of chronic cough across a large number of study sites as well as to identify its main risk factors using a standardised protocol and definition.

Methods: We analysed cross-sectional data from 33,983 adults (≥ 40 years), recruited between Jan 2, 2003 and Dec 26, 2016, in 41 sites (34 countries) from the Burden of Obstructive Lung Disease (BOLD) study. We estimated the prevalence of chronic cough for each site accounting for sampling design. To identify risk factors, we conducted multivariable logistic regression analysis within each site and then pooled estimates using random-effects meta-analysis. We also calculated the population attributable risk (PAR) associated with each of the identified risk factors.

Findings: The prevalence of chronic cough varied from 3% in India (rural Pune) to 24% in the United States of America (Lexington, KY). Chronic cough was more common among females, both current and passive smokers, those working in a dusty job, those with a history of tuberculosis, those who were obese, those with a low level of education and those with hypertension or airflow limitation. The most influential risk factors were current smoking and working in a dusty job.

Interpretation: Our findings suggested that the prevalence of chronic cough varies widely across sites in different world regions. Cigarette smoking and exposure to dust in the workplace are its major risk factors.

Funding: Wellcome Trust.

Keywords: Chronic cough; Epidemiology; Excess risk; Global health.

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Conflict of interest statement

Fatima Rodrigues declares grants and personal fees from A. Menarini, Boehringer Ingelheim, Teva Pharma, Novartis, GlaxoSmithKline, AstraZeneca, VitalAire and Nippon Gases outside the submitted work. Wan C. Tan received grants from the Canadian Institute of Health Research (CIHR/Rx&D Collaborative Research Program Operating Grants- 93,326) with industry partners Astra Zeneca Canada Ltd., Boehringer-Ingelheim Canada Ltd, GlaxoSmithKline Canada Ltd, Merck, Novartis Pharma Canada Inc., Nycomed Canada Inc., Pfizer Canada Ltd. for conducting the longitudinal population-based Canadian Cohort of Obstructive Lung Disease (CanCOLD) study on COPD. David Mannino is a consultant to GSK, AstraZeneca, Regeneron, Genentech, COPD Foundation, and expert witness on behalf of people suing Tobacco Industry (Schlesinger Law Firm). Sonia Buist is Chair of the Data Safety & Monitoring Board for the RELIANCE Clinical Trial. Frits Franssen declares personal fees from AstraZeneca, Chiesi, GlaxoSmithKline, MSD, Pieris, and Verona Pharma. Robab Breyer-Kohansal declares consulting fees from AstraZeneca, Boehringer Ingelheim, GlaxoSmithKline, Menarini, Novartis Pharma, and Sanofi, and participation on advisory boards for AstraZeneca, Menarini, and Sanofi. Thorarinn Gislason received a grant from the Icelandic Research Fund. Kevin Mortimer declares participation on advisory boards for AstraZeneca and GlaxoSmithKline. Sylvia Hartl declares grants from GSK, Chiesi Farma, Menarini Pharma, and AstraZeneca, and participation on advisory boards for Menarini Pharma and GSK. AFSA declares a grant from the COLT Foundation (CF/01/21).

- [53 references](#)
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ESC Heart Fail

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. 2024 Jan 24.

doi: 10.1002/ehf2.14674. Online ahead of print.

Exercise training and high-sensitivity cardiac troponin-I in patients with heart failure with reduced ejection fraction

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Affiliations [expand](#)

- PMID: 38268237
- DOI: [10.1002/ehf2.14674](https://doi.org/10.1002/ehf2.14674)

Abstract

Aims: The aims of this sub-study of the SMARTEx trial were (1) to evaluate the effects of a 12-week exercise training programme on serum levels of high sensitivity cardiac troponin I (hs-cTnI) in patients with moderate chronic heart failure (CHF), in New York Heart Association class II-III with reduced ejection fraction (HFrEF) and (2) to explore the associations with left ventricular remodelling, functional capacity and filling pressures measured with N-terminal pro brain natriuretic peptide (NT-proBNP).

Methods and results: In this sub-study, 196 patients were randomly assigned to high intensity interval training (HIIT, n = 70), moderate continuous training (MCT, n = 59) or recommendation of regular exercise (RRE), (n = 67) for 12 weeks. To reveal potential difference between structured intervention and control, HIIT and MCT groups were merged and named supervised exercise training (SET) group. The RRE group constituted the control group (CG). To avoid contributing factors to myocardial injury, we also evaluated changes in patients without additional co-morbidities (atrial fibrillation, hypertension, diabetes mellitus, and chronic obstructive pulmonary disease). The relationship between hs-cTnI and left ventricular end-diastolic diameter (LVEDD), VO_{2peak} , and NT-proBNP was analysed by linear mixed models. At 12 weeks, Hs-cTnI levels were modestly but

significantly reduced in the SET group from median 11.9 ng/L (interquartile ratio, IQR 7.1-21.8) to 11.5 ng/L (IQR 7.0-20.7), $P = 0.030$. There was no between-group difference (SET vs. CG, $P = 0.116$). There was a numerical but not significant reduction in hs-cTnI for the whole population ($P = 0.067$) after 12 weeks. For the sub-group of patients without additional co-morbidities, there was a significant between-group difference: SET group (delta -1.2 ng/L, IQR -2.7 to 0.1) versus CG (delta -0.1 ng/L, IQR -0.4 to 0.7), $P = 0.007$. In the SET group, hs-cTnI changed from 10.9 ng/L (IQR 6.0-22.7) to 9.2 ng/L (IQR 5.2-20.5) ($P = 0.002$), whereas there was no change in the CG (6.4 to 5.8 ng/L, $P = 0.64$). Changes in hs-cTnI (all patients) were significantly associated with changes in; LVEDD, VO_{2peak} , and NT-proBNP, respectively.

Conclusions: In patients with stable HFrEF, 12 weeks of structured exercise intervention was associated with a modest, but significant reduction of hs-cTnI. There was no significant difference between intervention group and control group. In the sub-group of patients without additional co-morbidities, this difference was highly significant. The alterations in hs-cTnI were associated with reduction of LVEDD and natriuretic peptide concentrations as well as improved functional capacity.

Keywords: Biomarkers; Cardiac rehabilitation; Chronic heart failure; HFrEF; Troponin I.

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Eur J Clin Pharmacol

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. 2024 Jan 25.

doi: 10.1007/s00228-024-03631-7. Online ahead of print.

The relationship between use of SGLT2is and incidence of respiratory and infectious diseases and site-specific fractures: a meta-analysis based on 32 large RCTs

[Yueping Wang](#)¹, [Xian Zhou](#)²

Affiliations expand

- PMID: 38267688
- DOI: [10.1007/s00228-024-03631-7](https://doi.org/10.1007/s00228-024-03631-7)

Abstract

Objectives: We aimed to evaluate the relationship between use of sodium-glucose cotransporter-2 inhibitors (SGLT2is) and incidence of various respiratory and infectious diseases and site-specific fractures.

Methods: Large randomized controlled trials (RCTs) of SGLT2is enrolling more than 400 subjects were included. Outcomes of interest were various serious adverse events regarding to respiratory and infectious disorders and site-specific fractures. Meta-analysis was done using risk ratio (RR) and 95% confidence interval (CI) as effect size.

Results: Thirty-two large RCTs were included in this meta-analysis. Use of SGLT2is was significantly associated with the lower incidences of 6 kinds of noninfectious respiratory diseases {e.g., Asthma (RR 0.64, 95% CI 0.43-0.96; P = 0.0299), Chronic obstructive pulmonary disease [COPD] (RR 0.75, 95% CI 0.62-0.91; P = 0.0027), and Respiratory failure (RR 0.78, 95% CI 0.61-0.99; P = 0.0447)} and 4 kinds of infectious respiratory diseases {e.g., Bronchitis (RR 0.61, 95% CI 0.46-0.81; P = 0.0007), and Pneumonia (RR 0.85, 95% CI 0.78-0.93; P = 0.0002)}. Use of SGLT2is was not significantly associated with the incidences of 31 kinds of site-specific fractures (e.g., Hip fracture, Femoral neck fracture, and Spinal fracture; P > 0.05).

Conclusions: Our meta-analysis confirmed the benefits of SGLT2is against 6 kinds of noninfectious respiratory diseases (e.g., Asthma, COPD, and Respiratory failure) and 4 kinds of infectious respiratory diseases (e.g., Bronchitis, and Pneumonia). These findings suggest a likelihood that SGLT2is might be used to prevent or treat these respiratory diseases. Moreover, our meta-analysis for the first time revealed no association between use of SGLT2is and incidence of various site-specific fractures.

Keywords: Asthma; Bronchitis; COPD; Hip fracture; Pneumonia; Respiratory failure; SGLT2is; Spinal fracture.

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Europace

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. 2024 Jan 24:euae021.

doi: 10.1093/europace/euae021. Online ahead of print.

[Impact of Chronic Obstructive Pulmonary Disease in Patients with Atrial Fibrillation. An Analysis from the GLORIA-AF Registry](#)

[Giulio Francesco Romiti](#)^{1,2}, [Bernadette Corica](#)^{1,2}, [Davide Antonio Mei](#)^{2,3}, [Frederick Frost](#)¹, [Arnaud Bisson](#)^{1,4}, [Giuseppe Boriani](#)³, [Tommaso Bucci](#)^{1,5}, [Brian Olshansky](#)⁶, [Tze-Fan Chao](#)^{7,8}, [Menno V Huisman](#)⁹, [Marco Proietti](#)^{10,11}, [Gregory Y H Lip](#)^{1,12}; [GLORIA-AF Investigators](#)

Collaborators, Affiliations expand

- PMID: 38266129
- DOI: [10.1093/europace/euae021](https://doi.org/10.1093/europace/euae021)

Abstract

Aims: Chronic Obstructive Pulmonary Disease (COPD) may influence management and prognosis of Atrial Fibrillation (AF), but this relationship has been scarcely explored in contemporary global cohorts. We aimed to investigate the association between AF and COPD, in relation to treatment patterns and major outcomes.

Methods: From the prospective, global GLORIA-AF Registry, we analysed factors associated with COPD diagnosis, as well as treatment patterns and risk of major outcomes in relation to COPD. Primary outcome was the composite of all-cause death and major adverse cardiovascular events (MACEs).

Results: 36,263 patients (mean age 70.1±10.5 years, 45.2% females) were included; 2,261 (6.2%) had COPD. Prevalence of COPD was lower in Asia, and higher in North America. Age, female sex, smoking, BMI, and cardiovascular comorbidities were associated with presence of COPD. COPD was associated with higher use of OAC (adjusted Odds Ratio [aOR] and 95% Confidence Interval [CI]: 1.29 [1.13-1.47]), and higher OAC discontinuation (adjusted Hazard Ratio [aHR] and 95%CI: 1.12 [1.01-1.25]). COPD was associated with less use of beta-blocker (aOR [95%CI]: 0.79 [0.72-0.87]), amiodarone and propafenone, and higher use of digoxin and verapamil/diltiazem. Patients with COPD had higher hazard of primary composite outcome (aHR [95%CI]: 1.78 [1.58-2.00]); no interaction was observed regarding beta-blocker use. COPD was also associated with all-cause death (aHR [95%CI]: 2.01 [1.77-2.28]), MACEs (aHR [95%CI]: 1.41 [1.18-1.68]) and major bleeding (aHR [95%CI]: 1.48 [1.16-1.88]).

Conclusions: In AF patients, COPD was associated with differences in OAC treatment and use of drugs. AF/COPD patients had worse outcomes, including higher mortality, MACE and major bleeding.

Keywords: Atrial Fibrillation; COPD; Chronic Obstructive Pulmonary Disease; Oral Anticoagulant; Prognosis.

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. 2024 Jan 24:1-3.

doi: 10.1017/S1478951524000063. Online ahead of print.

[COPD patients' accessibility to palliative care: Current challenges and opportunities for improvement](#)

[Barbara Gonçalves](#)^{1,2}, [Eileen Harkess-Murphy](#)³, [Audrey Cund](#)⁴, [Caroline Sime](#)⁵, [Joanne Lusher](#)⁶

Affiliations expand

- PMID: 38264901
- DOI: [10.1017/S1478951524000063](https://doi.org/10.1017/S1478951524000063)

No abstract available

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Tob Induc Dis



. 2024 Jan 23:22.

doi: 10.18332/tid/176228. eCollection 2024.

Neglecting the neglected: Tobacco cessation support is essential for the management of asthma and COPD

[Dilek Karadoğan](#)¹, [İlknur Kaya](#)², [Merve Yumrukuz Şenel](#)³, [Esin Bilgin Konyalıhatipoğlu](#)¹, [Tahsin Gökhan Telatar](#)⁴, [Metin Akgün](#)⁵

Affiliations expand

- PMID: 38264187
- PMCID: [PMC10804862](#)
- DOI: [10.18332/tid/176228](#)

Free PMC article

Abstract

Introduction: Asthma and COPD management have a broad framework, and smoking cessation plays an essential role. We examine the management of asthma and COPD patients not only for inhaler treatment options but also for essential interventions, such as smoking cessation support.

Methods: Data were collected cross-sectionally from pulmonology departments of three government hospitals in Türkiye between May and September 2022. Patients aged ≥ 18 years who had been diagnosed with asthma or COPD for at least a year, were included in the study. The demographic and clinical characteristics of the patients were investigated. Routine cessation interventions were implemented for current smokers, and they were

followed via phone calls after one month regarding their quit status and access to cessation clinics.

Results: Data from 145 patients with asthma and 148 patients with COPD were analyzed. The rate of current smoking among patients with asthma and COPD was 18.8% and 34.5%, respectively. Current smoking was negatively associated with age (<65 years) and disease duration (years) for both diseases ($p < 0.05$). In addition, for asthmatics, presence of pulmonary disease in the family (OR: 0.28, 95% CI: 0.10-0.79) and for COPD patients presence of hospitalization (OR: 0.26, 95% CI: 0.07-0.93) were negatively associated with current smoking. After one month, 85.1% of current asthmatic smokers had not tried to call a quitline, while 14.8% had tried to contact a quitline. Among current smoker COPD patients, only 1.9% had visited a smoking cessation clinic.

Conclusions: Tobacco cessation support seems to be neglected in asthma and COPD management. Instead, pulmonologists and patients focus on pharmaceutical treatments, which constitute the other component of care.

Keywords: COPD; asthma; management; smoking cessation.

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Conflict of interest statement

The authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest and none was reported.

- [29 references](#)

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BMC Pulm Med



. 2024 Jan 23;24(1):49.

doi: 10.1186/s12890-024-02867-4.

Clinical outcomes of long-term inhaled combination therapies in patients with bronchiectasis and airflow obstruction

[Hyo Jin Lee](#)¹, [Jung-Kyu Lee](#)¹, [Tae Yeon Park](#)¹, [Eun Young Heo](#)¹, [Deog Kyeom Kim](#)¹, [Hyun Woo Lee](#)^{2,3}

Affiliations [expand](#)

- PMID: 38263115
- PMCID: [PMC10804611](#)
- DOI: [10.1186/s12890-024-02867-4](#)

Abstract

in [English](#), [Panjabi](#)

Background and objectives: Few studies have reported which inhaled combination therapy, either bronchodilators and/or inhaled corticosteroids (ICSs), is beneficial in patients with bronchiectasis and airflow obstruction. Our study compared the efficacy and safety among different inhaled combination therapies in patients with bronchiectasis and airflow obstruction.

Methods: Our retrospective study analyzed the patients with forced expiratory volume in 1 s (FEV₁)/forced vital capacity < 0.7 and radiologically confirmed bronchiectasis in chest computed tomography between January 2005 and December 2021. The eligible patients underwent baseline and follow-up spirometric assessments. The primary endpoint was the development of a moderate-to-severe exacerbation. The secondary endpoints were the change in the annual FEV₁ and the adverse events. Subgroup analyses were performed according to the blood eosinophil count (BEC).

Results: Among 179 patients, the ICS/long-acting beta-agonist (LABA)/long-acting muscarinic antagonist (LAMA), ICS/LABA, and LABA/LAMA groups were comprised of 58 (32.4%), 52 (29.1%), and 69 (38.5%) patients, respectively. ICS/LABA/LAMA group had a higher severity of bronchiectasis and airflow obstruction, than other groups. In the subgroup with $\text{BEC} \geq 300/\mu\text{L}$, the risk of moderate-to-severe exacerbation was lower in the ICS/LABA/LAMA group (adjusted HR = 0.137 [95% CI = 0.034-0.553]) and the ICS/LABA group (adjusted HR = 0.196 [95% CI = 0.045-0.861]) compared with the LABA/LAMA group. The annual FEV_1 decline rate was significantly worsened in the ICS/LABA group compared to the LABA/LAMA group (adjusted β -coefficient = -197 [95% CI = -307--87]) in the subgroup with $\text{BEC} < 200/\mu\text{L}$.

Conclusion: In patients with bronchiectasis and airflow obstruction, the use of ICS/LABA/LAMA and ICS/LABA demonstrated a reduced risk of exacerbation compared to LABA/LAMA therapy in those with $\text{BEC} \geq 300/\mu\text{L}$. Conversely, for those with $\text{BEC} < 200/\mu\text{L}$, the use of ICS/LABA was associated with an accelerated decline in FEV_1 in comparison to LABA/LAMA therapy. Further assessment of BEC is necessary as a potential biomarker for the use of ICS in patients with bronchiectasis and airflow obstruction.

Keywords: Bronchiectasis; Bronchodilator agent; COPD; Exacerbation; FEV_1 ; Inhaled corticosteroid.

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Conflict of interest statement

The authors declare no competing interests.

All authors declare no conflicts of interest for the present study.

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

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. 2024 Jan 23;24(1):267.

doi: 10.1186/s12889-023-17619-y.

Epidemiology of multimorbidity associated with atherosclerotic cardiovascular disease in the United States, 1999–2018

[Ying Tian](#)^{#1}, [Dongna Li](#)^{#2}, [Haoliang Cui](#)³, [Xin Zhang](#)¹, [Xiaoyan Fan](#)², [Feng Lu](#)⁴

Affiliations expand

- PMID: 38262992
- PMCID: [PMC10804461](#)
- DOI: [10.1186/s12889-023-17619-y](#)

Abstract

Background: The multimorbidity of Atherosclerotic cardiovascular disease (ASCVD) and many other chronic conditions is becoming common. This study aimed to assess multimorbidity distribution in ASCVD among adults in the United States from 1999 to 2018.

Methods: This cross-sectional survey from the National Health and Nutrition Examination Survey (NHANES) 1999–2018 using stratified multistage probability design. Among the 53,083 survey respondents during the study period, 5,729 US adults aged ≥ 20 years with ASCVD. Joinpoint regression was used to assess the statistical significance of prevalence trends in the prevalence of ASCVD stratified by multimorbidity. The Apriori association rule mining algorithm was used to identify common multimorbidity association patterns in ASCVD patients.

Results: Overall, 5,729 of 53,083 individuals had ASCVD, and the prevalence showed a slow declining trend (biannual percentage change = -0.81%, $p = 0.035$, average 7.71%). The prevalence of ASCVD significantly decreased in populations without dyslipidemia, diabetes mellitus (DM), hypertension, asthma, chronic obstructive pulmonary disease (COPD), and arthritis (all groups, $p < 0.05$). Additionally, 65.6% of ASCVD patients had at least four of the 12 selected chronic conditions, with four and five being the most common numbers of conditions (17.9% and 17.7%, respectively). The five most common chronic conditions were (in order) dyslipidemia, hypertension, arthritis, chronic kidney disease, and DM. The coexistence of hypertension and dyslipidemia had the highest support in association rules (support = 0.63), while the coexistence of dyslipidemia, hypertension, metabolic syndrome, and DM had the highest lift (lift = 1.82).

Conclusions: During the 20-year survey period, there was a significant decrease in the overall prevalence of ASCVD. However, this reduction was primarily observed in individuals without dyslipidemia, DM, hypertension, asthma, COPD, and arthritis. Among populations with any of the evaluated chronic conditions, the prevalence of ASCVD remained unchanged. Most of ASCVD patients had four or more concurrent chronic conditions.

Keywords: Atherosclerotic cardiovascular disease; Multimorbidity; National Health and Nutrition Examination Survey.

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Conflict of interest statement

The authors declare no competing interests.

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

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MeSH termsexpand

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. 2024 Jan 23.

doi: 10.1164/rccm.202311-2060OC. Online ahead of print.

Extracorporeal Carbon Dioxide Removal to Avoid Invasive Ventilation During Exacerbations of Chronic Obstructive Pulmonary Disease: VENT-AVOID Trial

[Abhijit Duggal](#)¹, [Steven A Conrad](#)², [Nicholas A Barrett](#)³, [Mohamed Saad](#)⁴, [Tariq Cheema](#)⁵, [Sonal Pannu](#)⁶, [Ramiro Saavedra Romero](#)⁷, [Laurent Brochard](#)^{8,9}, [Stefano Nava](#)¹⁰, [V Marco Ranieri](#)^{11,12}, [Alexandra May](#)¹³, [Daniel Brodie](#)¹⁴, [Nicholas S Hill](#)¹⁵; [VENT-AVOID Investigators](#)

Affiliations expand

- PMID: 38261630
- DOI: [10.1164/rccm.202311-2060OC](https://doi.org/10.1164/rccm.202311-2060OC)

Abstract

Rationale: It is unclear whether extracorporeal CO₂ removal (ECCO₂R) can reduce the rate of intubation or the total time on invasive mechanical ventilation (IMV) in adults experiencing an exacerbation of COPD. **Objective:** To determine whether ECCO₂R increases the number of ventilator-free days within the first 5 days following randomization (VFD-5) in exacerbation of COPD patients who are either failing non-invasive ventilation (NIV) or who are failing to wean from IMV. **Methods:** This randomized, clinical trial was conducted in 41 US institutions (2018-2022) ([NCT03255057](#)). Subjects were randomized to receive either standard care with venovenous ECCO₂R (NIV stratum: n= 26; IMV stratum: n= 32) or standard care alone (NIV stratum: n= 22; IMV stratum: n= 33). **Measurements and Main Results:** The trial was stopped early due to slow enrollment and enrolled 113 subjects of the planned sample size of 180. There was no significant difference in the median VFD-5 between the arms controlled by strata (p=0.36). In the NIV stratum, the median VFD-5 for

both arms was 5.00 days (median shift (95%CI) = 0.0 (0.0-0.0)). In the IMV stratum, the median VFD-5 in the standard care and ECCO2R arms were 0.25 and 2.00 days, respectively (median shift (95%CI): 0.00 (0.00-1.25)). In the NIV stratum, all-cause in-hospital mortality was significantly higher in the ECCO₂R arm (22% vs 0%, p=0.02) with no difference in the IMV stratum (17% vs. 15%, p=0.73). **Conclusion:** In subjects with exacerbation of COPD the use of ECCO₂R compared with standard care did not improve ventilator-free days at Day 5. Clinical trial registration available at www.clinicaltrials.gov, ID: [NCT03255057](https://www.clinicaltrials.gov/ct2/show/study/NCT03255057).

Keywords: COPD; ECCO₂R; mechanical ventilation.

SUPPLEMENTARY INFO

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. 2024 Jan 22;10(1):00870-2023.

doi: 10.1183/23120541.00870-2023. eCollection 2024 Jan.

[Current smoking reduces small airway eosinophil counts in COPD](#)

[Augusta Beech](#)^{1,2}, [Sophie Booth](#)^{1,2}, [Andrew Higham](#)^{1,3}, [Dave Singh](#)^{1,2,3}

Affiliations expand

- PMID: 38259811

- PMID: [PMC10801758](#)
- DOI: [10.1183/23120541.00870-2023](#)

Free PMC article

Abstract

Current smoking reduces small airway intraepithelial eosinophil counts in COPD patients and controls. This provides evidence of an attenuation of type-2 related inflammation in the small airways imposed by current smoking, which may affect ICS response. <https://bit.ly/49YSKwG>.

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Conflict of interest statement

Conflict of interest: A. Higham has received personal fees from Chiesi. Conflict of interest: D. Singh has received personal fees from Aerogen, AstraZeneca, Boehringer Ingelheim, Chiesi, Cipla, CSL Behring, Epidendo, Genentech, GlaxoSmithKline, Glenmark, Gossamerbio, Kinaset, Menarini, Novartis, Orion, Pulmatrix, Sanofi, Synairgen, Teva, Theravance and Verona. Conflict of interest: A. Beech and S. Booth have no conflicts of interest to declare.

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. 2024 Jan 22;10(1):00735-2023.

doi: 10.1183/23120541.00735-2023. eCollection 2024 Jan.

Utility of rehabilitation prior to bronchoscopic lung volume reduction: *post hoc* analysis of the VENT trial

[Judith Maria Brock](#)^{1,2}, [Konstantina Kontogianni](#)^{1,2}, [Frank C Scirba](#)³, [Gerard J Criner](#)⁴, [Felix Herth](#)^{1,2}

Affiliations expand

- PMID: 38259808
- PMCID: [PMC10801745](#)
- DOI: [10.1183/23120541.00735-2023](#)

Free PMC article

Abstract

Background and objective: Rehabilitation programmes are a valuable treatment modality for patients with COPD to increase exercise capacity and quality of life. The utility of pulmonary rehabilitation prior to bronchoscopic lung volume reduction (BLVR) is unclear.

Methods: We performed a *post hoc* analysis of the Valve for Emphysema Palliation Trial (VENT) trial, the first multicentre randomised trial comparing the safety and efficacy of BLVR. Patients completed a pulmonary rehabilitation programme prior to BLVR over 6-10 weeks and maintained by daily practice, consisting of endurance training, strength training and upper/lower limb exercise. Lung function and exercise parameters (6-min walk distance (6MWD)) were assessed before and after rehabilitation and we tried to identify predictors for pulmonary rehabilitation benefit.

Results: Lung function and exercise capacity of 403 patients (mean±sd age 63.3±7.4 years, 37.5% female, mean±sd forced expiratory volume in 1 s 30.1±7.6 L) were analysed. Exercise

capacity significantly improved from 331.6 ± 98.8 m to 345.6 ± 95.3 m ($p < 0.001$) in 6-min walk testing (6MWT), with 40.3% showing clinically meaningful improvements. Patients also experienced less dyspnoea after 6MWT, while pulmonary function parameters did not change significantly overall. Patients with lower exercise capacity at screening (6MWD < 250 m) benefited more from pulmonary rehabilitation. The indication and prerequisites for BLVR were still present in all patients after pulmonary rehabilitation.

Conclusion: The national mandatory requirements for rehabilitation prior to BLVR, which apply to all COPD patients, should be reconsidered and specified for COPD patients who really benefit.

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Conflict of interest statement

Conflicts of interest: J.M. Brock has received honoraria and consultation fees from Boehringer Ingelheim, AstraZeneca, streamed up!, Intuitive Surgical Inc., Berlin Chemie and Olympus. There is no conflict of interest regarding this manuscript. Conflicts of interest: K. Kontogianni has received honoraria for teaching courses from Olympus, for lectures from Berlin-Chemie and Boston Scientific, and for attending meetings from AstraZeneca. She has no conflicts of interest regarding this manuscript. Conflicts of interest: F.C. Scirba reports institutional grant supports from Sanofi/Regeneron, AstraZeneca, Verona Pharma, Nuaira and Gala Therapeutics, and personal payments for advisory boards of Sanofi/Regeneron, AstraZeneca, Verona Pharma, GlaxoSmithKline and Boehringer Ingelheim. Conflicts of interest: G.J. Criner reports grants from Pulmonx and honorarium for teaching activities. All activities are outside the submitted work. Conflicts of interest: F. Herth reports consulting fees from Pulmonx outside the submitted work. Conflicts of interest: All authors confirm no conflicts of interest regarding this manuscript.

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ERJ Open Res



. 2024 Jan 22;10(1):00403-2023.

doi: 10.1183/23120541.00403-2023. eCollection 2024 Jan.

Use of infection control measures in people with chronic lung disease: mixed methods study

[Arwel W Jones](#)¹, [Bill E King](#)¹, [Andrew Cumella](#)², [Nicholas S Hopkinson](#)³, [John R Hurst](#)⁴, [Anne E Holland](#)^{1,5}

Affiliations expand

- PMID: 38259806
- PMCID: [PMC10801757](#)
- DOI: [10.1183/23120541.00403-2023](#)

Free PMC article

Abstract

Background: The introduction of community infection control measures during the COVID-19 pandemic was associated with a reduction in acute exacerbations of lung disease. We aimed to understand the acceptability of continued use of infection control measures among people with chronic lung disease and to understand the barriers and facilitators of use.

Methods: Australian adults with chronic lung disease were invited to an online survey (last quarter of 2021) to specify infection control measures they would continue themselves post-pandemic and those they perceived should be adopted by the community. A subset of survey participants were interviewed (first quarter of 2022) with coded transcripts deductively mapped to the COM-B model and Theoretical Domains Framework.

Results: 193 people (COPD 84, bronchiectasis 41, interstitial lung disease 35, asthma 33) completed the survey. Physical distancing indoors (83%), handwashing (77%), and avoidance of busy places (71%) or unwell family and friends (77%) were measures most

likely to be continued. Policies for the wider community that received most support were those during the influenza season including hand sanitiser being widely available (84%), wearing of face coverings by healthcare professionals (67%) and wearing of face coverings by the general population on public transport (66%). Barriers to use of infection control measures were related to physical skills, knowledge, environmental context and resources, social influences, emotion, beliefs about capabilities and beliefs about consequences.

Conclusions: Adults with chronic lung diseases in Australia are supportive of physical distancing indoors, hand hygiene, and avoidance of busy places or unwell family and friends as long-term infection control measures.

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Conflict of interest statement

Conflict of interest: Authors disclose the following: leadership or fiduciary role in other board, society, committee or advocacy group, paid or unpaid (A.E. Holland: Thoracic Society of Australia and NZ; N.S. Hopkinson: ASH, Asthma+Lung UK); consulting fees (J.R. Hurst: AstraZeneca, GSK); payment or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events (J.R. Hurst: Boehringer Ingelheim, Chiesi, Sanofi and Takeda); support for attending meetings and/or travel (J.R. Hurst: AstraZeneca); participation on a data safety monitoring or advisory board (J.R. Hurst: AstraZeneca); receipt of equipment, materials, drugs, medical writing, and gifts or other services (J.R. Hurst: Nonin). Conflict of interest: The other co-authors have nothing to declare.

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

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Editorial

Eur Radiol

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. 2024 Jan 23.

doi: 10.1007/s00330-024-10601-1. Online ahead of print.

COPD: artificial intelligence detects and quantifies anomalies on chest CT enabling prediction of disease severity

[Philippe A Grenier](#)¹

Affiliations [expand](#)

- PMID: 38253906
- DOI: [10.1007/s00330-024-10601-1](https://doi.org/10.1007/s00330-024-10601-1)

No abstract available

Comment on

- [Prediction of disease severity in COPD: a deep learning approach for anomaly-based quantitative assessment of chest CT.](#)
Almeida SD, Norajitra T, Lüth CT, Wald T, Weru V, Nolden M, Jäger PF, von Stackelberg O, Heußel CP, Weinheimer O, Biederer J, Kauczor HU, Maier-Hein K. *Eur Radiol.* 2023 Dec 27. doi: 10.1007/s00330-023-10540-3. Online ahead of print. PMID: 38150075
- [10 references](#)

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. 2024 Jan 22:1-9.

doi: 10.1159/000535989. Online ahead of print.

Blood Eosinophil Count and Its Determinants in a Chinese Population-Based Cohort

[Mei Yang](#)¹, [Yao Lv](#)^{1,2}, [Shijie Tang](#)¹, [Dan Xu](#)³, [Diandian Li](#)¹, [Zenglin Liao](#)¹, [Xiaoou Li](#)¹, [Lei Chen](#)¹

Affiliations expand

- PMID: 38253034
- DOI: [10.1159/000535989](https://doi.org/10.1159/000535989)

Abstract

Introduction: Blood eosinophil count has been shown markedly variable across different populations. However, its distribution in Chinese general population remains unclear. We aimed to investigate blood eosinophil count and its determinants in a Chinese general population.

Methods: In this population-based study, general citizens of Sichuan province in China were extracted from the China Pulmonary Health study. Data on demographics, personal and family history, living condition, lifestyle, spirometry, and complete blood count test were obtained and analyzed. A stepwise multivariate binary logistic regression analysis was performed to identify determinants of high blood eosinophils (>75th percentile).

Results: A total of 3,310 participants were included, with a mean age (standard deviation) of 47.0 (15.6) years. In total population, the median blood eosinophil count was 110.0 (interquartile range [IQR]: 67.2-192.9) cells/ μ L, lower than that in smokers (133.4 cells/ μ L, IQR: 79.3-228.4) and patients with asthma (140.7 cells/ μ L, IQR: 79.6-218.2) or post-

bronchodilator airflow limitation (141.5 cells/ μ L, IQR: 82.6-230.1), with a right-skewed distribution. Multivariate analyses revealed that oldness (aged ≥ 60 years) (odds ratio [OR]: 1.66, 95% confidence interval [CI]: 1.11-2.48), smoking ≥ 20 pack-years (OR: 1.90, 95% CI: 1.20-3.00), raising a dog/cat (OR: 1.72, 95% CI: 1.17-2.52), and occupational exposure to dust, allergen, and harmful gas (OR: 1.58, 95% CI: 1.15-2.15) were significantly associated with high blood eosinophils.

Conclusion: This study identifies a median blood eosinophil count of 110.0 cells/ μ L and determinants of high blood eosinophils in a Chinese general population, including oldness (aged ≥ 60 years), smoking ≥ 20 pack-years, raising a dog/cat, and occupational exposure to dust, allergen, and harmful gas.

Keywords: Blood eosinophil; Chinese general population; Chronic obstructive pulmonary disease; Epidemiology; Smoking.

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Ann Am Thorac Soc

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. 2024 Jan 22.

doi: 10.1513/AnnalsATS.202308-668RL. Online ahead of print.

[Association Between Neighborhood Socioeconomic Disadvantage and Chronic Obstructive Pulmonary Disease Prevalence Among U.S. Veterans](#)

[Sophia Hayes](#)^{1,2}, [Kevin I Duan](#)^{1,3}, [Travis Hee Wai](#)⁴, [Fernando Picazo](#)^{1,4}, [Lucas M Donovan](#)^{1,4}, [Laura J Spece](#)^{1,4}, [Robert Plumley](#)⁴, [Christopher G Slatore](#)^{5,6}, [Neeta Thakur](#)⁷, [Kristina Crothers](#)^{8,9}, [David H Au](#)^{1,4}, [Laura C Feemster](#)^{1,4}

Affiliations expand

- PMID: 38252425
- DOI: [10.1513/AnnalsATS.202308-668RL](https://doi.org/10.1513/AnnalsATS.202308-668RL)

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Chronic Obstr Pulm Dis

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. 2024 Jan 25;11(1):68-82.

doi: 10.15326/jcopdf.2023.0422.

[Relationship Between Tobacco Product Use and Health-Related Quality of Life Among Individuals With COPD in Waves 1-5 \(2013-2019\) of the Population Assessment of Tobacco and Health Study](#)

[Laura M Paulin](#)¹, [Michael J Halenar](#)², [Kathryn C Edwards](#)², [Kristin Lauten](#)², [Kristie Taylor](#)², [Mary Brunette](#)¹, [Susanne Tanski](#)¹, [Todd MacKenzie](#)¹, [Cassandra A Stanton](#)², [Dorothy Hatsukami](#)³, [Andrew Hyland](#)⁴, [Martin C Mahoney](#)⁴, [Ray Niaura](#)⁵, [Dennis Trinidad](#)⁶, [Carlos Blanco](#)⁷, [Wilson Compton](#)⁷, [Lisa D Gardner](#)⁸, [Heather L Kimmel](#)⁷, [K Michael Cummings](#)⁹, [Dana Lauterstein](#)⁸, [Ester J Roh](#)⁸, [Daniela Marshall](#)^{7,10}, [James D Sargent](#)¹

Affiliations expand

- PMID: 38113525
- DOI: [10.15326/jcopdf.2023.0422](https://doi.org/10.15326/jcopdf.2023.0422)

Free article

Abstract

Introduction: We examined the association between tobacco product use and health-related quality of life (HRQoL) among individuals with chronic obstructive pulmonary disease (COPD) in Waves 1-5 of the Population Assessment of Tobacco and Health (PATH) Study.

Methods: Adults ≥ 40 years with an ever COPD diagnosis were included in cross-sectional (Wave 5) and longitudinal (Waves 1 to 5) analyses. Tobacco use included 13 mutually exclusive categories of past 30-day (P30D) single use and polyuse with P30D exclusive cigarette use and ≥ 5 -year cigarette cessation as reference groups. Multivariable linear regression and generalized estimating equations (GEE) were used to examine the association between tobacco use and HRQoL as measured by the Patient-Reported Outcomes Measurement Information System (PROMIS) Global-10 questionnaire.

Results: Of 1670 adults, 79.4% ever used cigarettes; mean (standard error [SE]) pack years was 30.9 (1.1). In cross-sectional analysis, P30D exclusive cigarette use, and e-cigarette/cigarette dual use were associated with worse HRQoL compared to ≥ 5 -year cigarette cessation. Compared to P30D exclusive cigarette use, never tobacco use and ≥ 5 -year cigarette cessation were associated with better HRQoL, while e-cigarette/cigarette dual use had worse HRQoL. Longitudinally (n=686), e-cigarette/cigarette dual use was associated with worsening HRQoL compared to both reference groups. Only never tobacco use was associated with higher HRQoL over time compared to P30D exclusive cigarette use.

Conclusions: E-cigarette/cigarette dual use was associated with worse HRQoL compared to ≥ 5 -year cigarette cessation and exclusive cigarette use. Never use and ≥ 5 -year cigarette cessation were the only categories associated with higher HRQoL compared to exclusive cigarette use. Findings highlight the importance of complete smoking cessation for individuals with COPD.

Keywords: COPD; cigarette; e-cigarette; epidemiology; prevention.

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. 2024 Jan 25;11(1):106-113.

doi: 10.15326/jcopdf.2023.0391.

[Any Decrease in Lung Function is Associated With Worse Clinical Outcomes: Post Hoc Analysis of the IMPACT Interventional Trial](#)

[MeiLan K Han](#)¹, [Gerard J Criner](#)², [David M G Halpin](#)³, [Edward M Kerwin](#)⁴, [Lee Tombs](#)⁵, [David A Lipson](#)^{6,7}, [Fernando J Martinez](#)⁸, [Robert A Wise](#)⁹, [Dave Singh](#)¹⁰

Affiliations expand

- PMID: 38081161
- DOI: [10.15326/jcopdf.2023.0391](https://doi.org/10.15326/jcopdf.2023.0391)

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No abstract available

Keywords: chronic obstructive pulmonary disease; exacerbations; forced expiratory volume in 1 second; health status; triple therapy.

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. 2024 Jan 25;11(1):101-105.

doi: 10.15326/jcopdf.2023.0423.

[Associations Between Coronary Artery Calcium Score and Exacerbation Risk in BLOCK-COPD](#)

[R Chad Wade](#)^{1,2,3,4}, [Sharon X Ling](#)⁵, [Erika S Helgeson](#)⁵, [Helen Voelker](#)⁵, [Wassim W Labaki](#)⁶, [Daniel Meza](#)⁷, [Oisín O'Corragain](#)⁸, [Jennifer Y So](#)⁹, [Gerard J Criner](#)⁸, [MeiLan K Han](#)⁶, [Ravi Kalhan](#)⁷, [Robert M Reed](#)⁹, [Mark T Dransfield](#)^{1,2,3,4}, [J Michael Wells](#)^{1,2,3,4}

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- PMID: 37963303

- DOI: [10.15326/jcopdf.2023.0423](https://doi.org/10.15326/jcopdf.2023.0423)

Free article

Abstract

Introduction: In 2019, the Beta-Blockers for the Prevention of Acute Exacerbations of Chronic Obstructive Pulmonary Disease study (BLOCK-COPD) evaluated the effect of metoprolol on exacerbation risk and mortality in a COPD population without indications for beta-blocker use. We hypothesized that an imaging metric of coronary artery disease (CAD), the coronary artery calcium (CAC) score, would predict exacerbation risk and identify a differential response to metoprolol treatment.

Methods: The study population includes participants in the BLOCK-COPD study from multiple study sites. Participants underwent clinically indicated thoracic computed tomography (CT) scans \pm 12 months from enrollment. The Weston scoring system quantified CAC. Adjusted Cox proportional hazards models evaluated for associations between CAC and time to exacerbation.

Results: Data is included for 109 participants. The mean CAC score was 5.1 ± 3.7 , and 92 participants (84%) had CAC scores greater than 0. Over a median (interquartile range) follow-up time of 350 (280 to 352) days, there were 61 mild exacerbations and 19 severe/very severe exacerbations. No associations were found between exacerbations of any severity and $CAC > 0$ or total CAC. Associations were observed between total CAC and $CAC > 0$ in the left circumflex (LCx) and time to exacerbation of any severity (adjusted hazard ratio [aHR]=1.39, confidence interval [CI]: 1.08-1.79, $p=0.01$) and (aHR=1.96, 95% CI: 1.04-3.70, $p=0.04$), respectively.

Conclusions: CAD is a prevalent comorbidity in COPD accounting for significant mortality. Our study confirms the high prevalence of CAD using the CAC score; however, we did not discover an association between CAC and exacerbation risk. We did find novel associations between CAC in the LCx and exacerbation risk which warrant further investigation in larger cohorts.

Keywords: COPD; acute exacerbations; beta-blockers; coronary artery calcium.

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. 2024 Jan 25;11(1):37-46.

doi: 10.15326/jcopdf.2023.0425.

Inhaler Formulary Change in COPD and the Association with Exacerbations, Health Care Utilization, and Costs

[Kevin I Duan](#)^{1,2}, [Lucas M Donovan](#)^{2,3}, [Laura J Spece](#)^{2,3}, [Edwin S Wong](#)^{2,3,4}, [Laura C Feemster](#)^{2,3}, [Alexander D Bryant](#)⁵, [Robert Plumley](#)³, [Kristina Crothers](#)^{2,3}, [David H Au](#)^{2,3}

Affiliations expand

- PMID: 37931593
- DOI: [10.15326/jcopdf.2023.0425](https://doi.org/10.15326/jcopdf.2023.0425)

Free article

Abstract

Rationale: Prescription formularies specify which medications are available to patients. Formularies change frequently, potentially forcing patients to switch medications for nonclinical indications (nonmedical switching). Nonmedical switching is known to impact disease control and adherence. The consequences of nonmedical switching have not been rigorously studied in COPD.

Methods: We conducted a cohort study of Veterans with COPD on inhaler therapy in January 2016 when formoterol was removed from the Department of Veterans Affairs (VA) national formulary. A 2-point difference-in-differences analysis using multivariable

negative binomial and generalized linear models was performed to estimate the association of the formulary change with patient outcomes in the 6 months before and after the change. Our primary outcome was the number of COPD exacerbations in 6 months, with secondary outcomes of total health care encounters and encounter-related costs in 6 months.

Results: We identified 10,606 Veterans who met our inclusion criteria, of which 409 (3.9%) experienced nonmedical switching off formoterol. We did not identify a change in COPD exacerbations (-0.04 exacerbations; 95% confidence interval [CI] -0.12, 0.03) associated with the formulary change. In secondary outcome analysis, we did not observe a change in the number of health care encounters (-0.12 visits; 95% CI -1.00, 0.77) or encounter-related costs (\$369; 95% CI -\$1141, \$1878).

Conclusions: Among COPD patients on single inhaler therapy, nonmedical inhaler switches due to formulary discontinuation of formoterol were not associated with changes in COPD exacerbations, encounters, or encounter-related costs. Additional research is needed to confirm our findings in more severe disease and other settings.

Keywords: chronic obstructive; health care costs; health care utilization; pulmonary disease.

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. 2024 Jan 25;11(1):26-36.

Lung Structure and Risk of Sleep Apnea in SPIROMICS

[Abigail L Koch](#)¹, [Tracie L Shing](#)², [Andrew Namen](#)³, [David Couper](#)², [Benjamin Smith](#)⁴, [R Graham Barr](#)⁴, [Surya Bhatt](#)⁵, [Nirupama Putcha](#)⁶, [Aaron Baugh](#)⁷, [Amit K Saha](#)³, [Michelle Ziedler](#)⁸, [Alejandro Comellas](#)⁹, [Christopher B Cooper](#)⁸, [Igor Barjaktarevic](#)⁸, [Russell P Bowler](#)¹⁰, [Meilan K Han](#)¹¹, [Victor Kim](#)¹², [Robert Paine 3rd](#)¹³, [Richard E Kanner](#)¹³, [Jerry A Krishnan](#)¹⁴, [Fernando J Martinez](#)¹⁵, [Prescott G Woodruff](#)⁷, [Nadia N Hansel](#)⁶, [Eric A Hoffman](#)⁹, [Stephen P Peters](#)³, [Victor E Ortega](#)¹⁶; [SubPopulations and InteRmediate Outcome Measures in COPD Study \(SPIROMICS\) Investigators](#)

Affiliations expand

- PMID: 37931592
- DOI: [10.15326/jcopdf.2023.0411](https://doi.org/10.15326/jcopdf.2023.0411)

Free article

Abstract

Rationale: The SubPopulations and InteRmediate Outcome Measures in COPD Study (SPIROMICS) is a prospective cohort study that enrolled 2981 participants with the goal of identifying new chronic obstructive pulmonary disease (COPD) subgroups and intermediate markers of disease progression. Individuals with COPD and obstructive sleep apnea (OSA) experience impaired quality of life and more frequent exacerbations. COPD severity also associates with computed tomography scan-based emphysema and alterations in airway dimensions.

Objectives: The objective was to determine whether the combination of lung function and structure influences the risk of OSA among current and former smokers.

Methods: Using 2 OSA risk scores, the Berlin Sleep Questionnaire (BSQ), and the DOISNORE50 (*Diseases, Observed apnea, Insomnia, Snoring, Neck circumference > 18 inches, Obesity with body mass index [BMI] > 32, R = are you male, Excessive daytime sleepiness, 50 = age ≥ 50*) (DIS), 1767 current and former smokers were evaluated for an association of lung structure and function with OSA risk.

Measurements and main results: The study cohort's mean age was 63 years, BMI was 28 kg/m², and forced expiratory volume in 1 second (FEV1) was 74.8% predicted. The majority were male (55%), White (77%), former smokers (59%), and had COPD (63%). A high-risk OSA score was reported in 36% and 61% using DIS and BSQ respectively. There was a 9%

increased odds of a high-risk DIS score (odds ratio [OR]=1.09, 95% confidence interval [CI]:1.03-1.14) and nominally increased odds of a high-risk BSQ score for every 10% decrease in FEV1 %predicted (OR=1.04, 95%CI: 0.998-1.09). Lung function-OSA risk associations persisted after additionally adjusting for lung structure measurements (%emphysema, %air trapping, parametric response mapping for functional small airways disease, , mean segmental wall area, tracheal %wall area, dysanapsis) for DIS (OR=1.12, 95%CI:1.03-1.22) and BSQ (OR=1.09, 95%CI:1.01-1.18).

Conclusions: Lower lung function independently associates with having high risk for OSA in current and former smokers. Lung structural elements, especially dysanapsis, functional small airways disease, and tracheal %wall area strengthened the effects on OSA risk.

Keywords: COPD; CT-scan measurements; DOISNORE50; lung function.

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. 2024 Jan 25;11(1):83-94.

doi: 10.15326/jcopdf.2023.0453.

[The Long-Term Impact of Frailty After an Intensive Care Unit Admission Due](#)

to Chronic Obstructive Pulmonary Disease

[Matthew T Donnan](#)^{1,2}, [Shailesh Bihari](#)^{3,4}, [Ashwin Subramaniam](#)^{5,6,7}, [Eli J Dabscheck](#)^{2,8}, [Brooke Riley](#)¹, [David V Pilcher](#)^{1,7,9}

Affiliations expand

- PMID: 37931590
- DOI: [10.15326/jcopdf.2023.0453](https://doi.org/10.15326/jcopdf.2023.0453)

Free article

Abstract

Rationale: Frailty is an increasingly recognized aspect of chronic obstructive pulmonary disease (COPD). The impact of frailty on long-term survival after admission to an intensive care unit (ICU) due to an exacerbation of COPD has not been described.

Objective: The objective was to quantify the impact of frailty on time to death up to 4 years after admission to the ICU in Australia and New Zealand for an exacerbation of COPD.

Methods: We performed a multicenter retrospective cohort study of adult patients admitted to 179 ICUs with a primary diagnosis of an exacerbation of COPD using the Australian and New Zealand Intensive Care Society Adult Patient Database from January 1, 2018, through December 31, 2020, in New Zealand, and March 31, 2022, in Australia. Frailty was measured using the clinical frailty scale (CFS). The primary outcome was survival up to 4 years after ICU admission. The secondary outcome was readmission to the ICU due to an exacerbation of COPD.

Measurements and main results: We examined 7126 patients of which 3859 (54.1%) were frail (CFS scores of 5-8). Mortality in not-frail individuals versus frail individuals at 1 and 4 years was 19.8% versus 40.4%, and 56.8% versus 77.3% respectively (both $p < 0.001$). Frailty was independently associated with a shorter time to death (adjusted hazard ratio 1.66; 95% confidence interval 1.54-1.80). There was no difference in the proportion of survivors with or without frailty who were readmitted to the ICU during a subsequent hospitalization.

Conclusions: Frailty was independently associated with poorer long-term survival in patients admitted to the ICU with an exacerbation of COPD.

Keywords: COPD; frailty; intensive care; mortality; readmission.

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Review

Respir Care

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. 2024 Jan 24;69(2):238-249.

doi: 10.4187/respcare.10553.

[The Current State of Health Inequities in COPD](#)

[Jack Rea](#)¹, [Jay Tyler Babek](#)², [Reece M Anderson](#)², [Rigel Bacani](#)², [Jordan Staggs](#)², [Matt Vassar](#)^{2,3}

Affiliations expand

- PMID: 37848254
- DOI: [10.4187/respcare.10553](https://doi.org/10.4187/respcare.10553)

Abstract

An understanding of the health inequities that surround the treatment and prevention of COPD is required to address the barriers that hinder improvement of care for underserved

populations. This scoping review was conducted to identify the existing evidence of social factors that affect the health, health-care access, and health-care quality of patients with COPD within the United States, and to identify gaps in knowledge to help direct future research. We followed the guidelines from the Joanna Briggs Institute and Preferred Reporting Items for Systematic reviews and Meta Analyses Extension for Scoping Reviews. In July 2022, a literature search by using Ovid (Embase) and MEDLINE (PubMed) databases was conducted to identify articles on COPD, published between 2016 and 2021, written in English, and that investigated at least one health inequity as defined by the National Institutes of Health. All studies were screened for inclusion criteria and were extracted in a masked, duplicate manner. Each health inequity was investigated, extracted, and summarized. Thirty articles were screened in full text, and 19 were found to meet inclusion criteria. Common social factors investigated in the COPD literature included race/ethnicity, income, and education. Since the implementation of the National Institutes of Health's sex and gender minority category in 2016, only one study within our sample examined LGBTQ+ (lesbian, gay, bisexual, transgender, queer [or sometimes questioning], and others) patients with COPD. The least commonly investigated social factors that affect patients with COPD were rural/under-resourced (geography), sex and gender, and LGBTQ+ affiliation. In addition, occupational status was not investigated by any included studies in our sample. Our scoping review underlines the lack of research with regard to inequities that affect patients with COPD. We propose researching hormone replacement therapy's impact on lung function in transgender and nonbinary patients with COPD. Implementation science studies are suggested to enhance intervention for COPD medication adherence among racial/ethnic minority groups, given the intersectionalities of social factors that disproportionately affect this population. We, also recommend developing telemedicine pulmonary rehabilitation technology for rurally located patients with COPD.

Keywords: COPD; LGBTQ+; ethnicity; gender; inequities; race; sex.

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Conflict of interest statement

Dr Vassar discloses funding from the National Institute on Drug Abuse, the National Institute on Alcohol Abuse and Alcoholism, the United States Office of Research Integrity, Oklahoma Center for Advancement of Science and Technology, and internal grants from Oklahoma State University Center for Health Sciences; all outside of the present work. The other authors have disclosed no conflicts of interest.

SUPPLEMENTARY INFO

Publication types, MeSH termsexpand

FULL TEXT LINKS



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Eur Heart J



. 2024 Jan 27;45(4):247-249.

doi: 10.1093/eurheartj/ehad669.

[Exacerbating the burden of cardiovascular disease: how can we address cardiopulmonary risk in individuals with chronic obstructive pulmonary disease?](#)

[Dinesh Shrikrishna](#)¹, [Clare J Taylor](#)², [Carol Stonham](#)^{3,4}, [Chris P Gale](#)^{5,6,7}

Affiliations [expand](#)

- PMID: 37832033
- PMCID: [PMC10821359](#)
- DOI: [10.1093/eurheartj/ehad669](#)

Free PMC article

No abstract available

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MeSH termsexpand

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Chronic Obstr Pulm Dis

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. 2024 Jan 25;11(1):114-120.

doi: 10.15326/jcopdf.2023.0449.

[Integrating Artificial Intelligence in the Diagnosis of COPD Globally: A Way Forward](#)

[Nicole M Robertson¹](#), [Connor S Centner^{2,3}](#), [Trishul Siddharthan⁴](#)

Affiliations expand

- PMID: 37828644
- DOI: [10.15326/jcopdf.2023.0449](https://doi.org/10.15326/jcopdf.2023.0449)

Free article

Abstract

The advancement of artificial intelligence (AI) capabilities has paved the way for a new frontier in medicine, which has the capability to reduce the burden of COPD globally. AI may reduce health care-associated expenses while potentially increasing diagnostic specificity, improving access to early COPD diagnosis, and monitoring COPD progression and subsequent disease management. We evaluated how AI can be integrated into COPD diagnosing globally and leveraged in resource-constrained settings. AI has been explored in diagnosing and phenotyping COPD through auscultation, pulmonary function testing, and imaging. Clinician collaboration with AI has increased the performance of COPD diagnosing and highlights the important role of clinical decision-making in AI integration. Likewise, AI analysis of computer tomography (CT) imaging in large population-based cohorts has increased diagnostic ability, severity classification, and prediction of outcomes related to COPD. Moreover, a multimodality approach with CT imaging, demographic data, and spirometry has been shown to improve machine learning predictions of the progression to COPD compared to each modality alone. Prior research has primarily been conducted in high-income country settings, which may lack generalization to a global population. AI is a World Health Organization priority with the potential to reduce health care barriers in low- and middle-income countries. We recommend a collaboration between clinicians and an AI-supported multimodal approach to COPD diagnosis as a step towards achieving this goal. We believe the interplay of CT imaging, spirometry, biomarkers, and sputum analysis may provide unique insights across settings that could provide a basis for clinical decision-making that includes early intervention for those diagnosed with COPD.

Keywords: COPD; artificial intelligence; computer tomography; machine learning; prediction.

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Chronic Obstr Pulm Dis

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. 2024 Jan 25;11(1):56-67.

doi: 10.15326/jcopdf.2023.0433.

[COPD and Smoking Status - It Does Matter: Characteristics and Prognosis of COPD According to Smoking Status](#)

[Anne O Nielsen](#)¹, [Peter Lange](#)², [Ole Hilberg](#)^{3,4}, [Ingeborg Farver-Vestergaard](#)^{3,4}, [Rikke Ibsen](#)⁴, [Anders Løkke](#)^{3,4}

Affiliations [expand](#)

- PMID: 37828634
- DOI: [10.15326/jcopdf.2023.0433](https://doi.org/10.15326/jcopdf.2023.0433)

Free article

Abstract

Background: Chronic obstructive pulmonary disease is a chronic, often progressive disease, which in most patients is caused by tobacco smoking. Our study focuses on differences in COPD-related outcomes between never smokers, former smokers, and current smokers.

Methods: A nationwide, population-based cohort study utilizing Danish health registries. Clinical and socioeconomic variables including smoking status, comorbidities, and dyspnea were obtained. Poisson and Cox Regression were used to calculate the impact of these clinical parameters on the risk of moderate and severe exacerbations and mortality during 12 months of follow-up.

Results: A total of 49,826 patients ≥ 40 years of age, with a hospital diagnosis of COPD in 2008-2017, were identified (mean age 69.2 years, 52% females). A total of 2127 (4%) were never smokers, 29,854 (60%) were former smokers and 17,845 (36%) current smokers. Compared to former and current smokers, never smokers reported a lower modified Medical Research Council score and had a milder COPD stage according to the Global Initiative for Chronic Obstructive Lung Disease classification. During follow-up, never smokers had a significantly lower risk of severe exacerbations (hazard ratio 0.87, 95%

confidence interval [CI] 0.78-0.97) and a lower rate of death (mortality ratio 0.75, 95% CI 0.70-0.81) compared to patients with a smoking history.

Discussion: Our nationwide study showed that COPD in never smokers is characterized by a lower level of dyspnea, milder lung function impairment, and a lower risk of exacerbations and death. At the same time, we found active smokers to have the highest risk. These findings highlight the need for campaigns to prevent smoking and may help general practitioners as well as other health care professionals to motivate patients with COPD to stop smoking.

Keywords: COPD; exacerbations; never-smokers; prognosis; smoking.

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Chronic Obstr Pulm Dis

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. 2024 Jan 25;11(1):121-132.

doi: 10.15326/jcopdf.2023.0434.

[Pulmonary Rehabilitation for Chronic Obstructive Pulmonary Disease Patients with Underlying Alpha-1 Antitrypsin Deficiency: A Systematic Review and Practical Recommendations](#)

[Fawaz A Alwadani](#)^{1,2}, [Kyrie Wheeler](#)³, [Harriet Pittaway](#)⁴, [Alice M Turner](#)¹

Affiliations expand

- PMID: 37813825
- DOI: [10.15326/jcopdf.2023.0434](https://doi.org/10.15326/jcopdf.2023.0434)

Free article

Abstract

Background: Alpha-1 antitrypsin deficiency (AATD) is an often-overlooked genetic condition that makes individuals susceptible to early onset of chronic obstructive pulmonary disease (COPD). The established benefits of exercise-based pulmonary rehabilitation (PR) for usual COPD patients are unclear for those with underlying AATD, especially given potentially differing muscle adaptations to exercise. This review seeks to compare PR outcomes between AATD and usual COPD patients and to consolidate current knowledge on exercise intervention outcomes for the AATD population.

Methods: A thorough search of 4 databases (Ovid, Medline, CINAHL, CENTRAL) was conducted based on 3 search concepts: (1) alpha-1 antitrypsin deficiency, (2) pulmonary rehabilitation OR exercise, and (3) muscle morphology. A dual review process and quality assessment were independently implemented throughout all stages of the review.

Results: Four studies highlighted modest exercise capacity and quality of life in AATD patients undergoing PR. However, one study reported unique muscle and mitochondrial responses compared to usual COPD patients. Additionally, a moderate exercise session did not alter pro-inflammatory cytokine levels in AATD patients, despite higher levels of tumor necrosis factor- α levels in muscle biopsies compared to usual COPD patients.

Conclusions: The current literature base insufficiently addresses the efficacy of PR on AATD, with indications that exercise adaptation may deviate from that of usual COPD patients. Further research is needed to optimize PR, particularly in identifying the most suitable exercise intensity, and delivery setting, and addressing specific educational needs for individuals with AATD.

Keywords: AATD; alpha-1 antitrypsin deficiency; chronic obstructive pulmonary disease; exercise therapy; pulmonary rehabilitation.

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Randomized Controlled Trial

Respir Care

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. 2024 Jan 24;69(2):157-165.

doi: 10.4187/respcare.11139.

Bronchodilator Efficacy of High-Flow Nasal Cannula in COPD: Vibrating Mesh Nebulizer Versus Jet Nebulizer

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Affiliations expand

- PMID: 37607815
- DOI: [10.4187/respcare.11139](https://doi.org/10.4187/respcare.11139)

Abstract

Background: Jet nebulizers are commonly used for bronchodilator therapy in COPD. High-flow nasal cannula with vibrating mesh nebulizer (HFNC-VMN) is a recently developed system; however, few studies have compared the efficacy of bronchodilator administration via HFNC-VMN to jet nebulizer in stable COPD. This study aimed to compare the effect of salbutamol administered via HFNC-VMN versus jet nebulizer on airway and lung function in subjects with stable COPD.

Methods: This randomized non-inferiority crossover physiologic study enrolled subjects with stable COPD. Salbutamol was nebulized via HFNC-VMN or jet nebulizer in random order with a 4-h washout period between crossover sequences. Spirometry, lung volume, and impulse oscillometry were performed at baseline and after each intervention. The primary outcome was change in FEV₁ from baseline. Secondary outcomes included changes in other respiratory-related parameters and nebulization time compared between the 2 devices.

Results: Seventeen subjects were enrolled. HFNC-VMN and jet nebulizer both significantly improved FEV₁ from baseline ($P = .005$ and $P = .002$, respectively). The difference between respiratory resistance at 5 Hz and 20 Hz significantly decreased after HFNC-VMN compared to baseline ($P = .02$), while no significant change was observed after jet nebulizer ($P = .056$). Area of reactance and resonant frequency of reactance were both significantly decreased ($P = .035$ and $P = .03$, respectively), and respiratory reactance at 5 Hz significantly increased ($P = .02$) in the HFNC-VMN group compared to baseline indicating improved lung mechanics, with no significant changes with the jet nebulizer. HFNC-VMN had a shorter nebulization time (6 [5-9] min vs 20 [16-22] min, respectively, $P < .001$).

Conclusions: Bronchodilator therapy via HFNC-VMN was not inferior to jet nebulizer for subjects with stable COPD and can significantly improve airway oscillometry mechanics and decrease nebulization time compared to jet nebulizer.

Keywords: COPD; aerosol therapy; high-flow nasal cannula; pulmonary function test; vibrating mesh nebulizer.

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Conflict of interest statement

Dr Brochard discloses relationships with Medtronic Covidien, Fisher & Paykel, Philips, Sentec, Air Liquide Medical Systems, GE Healthcare, and St. Michael's Hospital. Dr Chow discloses relationships with Thorasys Thoracic Medical Systems and AstraZeneca Canada. The remaining authors have disclosed no conflicts of interest.

SUPPLEMENTARY INFO

Publication types, MeSH terms, Substancesexpand

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Ann Thorac Cardiovasc Surg



. 2024 Jan 26;30(1).

doi: 10.5761/atcs.oa.23-00061. Epub 2023 Jul 28.

Surgery for Secondary Spontaneous Pneumothorax with Chronic Lung Diseases

[Kazuhiisa Tanaka](#)¹, [Hidemi Suzuki](#)¹, [Terunaga Inage](#)¹, [Takamasa Ito](#)¹, [Yuichi Sakairi](#)¹, [Ichiro Yoshino](#)¹

Affiliations expand

- PMID: 37518007
- DOI: [10.5761/atcs.oa.23-00061](https://doi.org/10.5761/atcs.oa.23-00061)

Free article

Abstract

Purposes: Secondary spontaneous pneumothorax (SSP) is occasionally observed in elderly patients suffering from diffuse lung diseases. The purpose of this study was to analyze the outcomes of surgical treatment of SSP patients with chronic lung diseases.

Methods: In total, 242 patients who underwent surgery for spontaneous pneumothorax at Chiba University Hospital from January 2006 to October 2016 were included in this study. The patients' records were reviewed retrospectively for data on their background, surgical treatment, morbidity, mortality, and recurrence.

Results: Of the spontaneous pneumothorax cohort, primary spontaneous pneumothorax (PSP) accounted for 144 patients. Among the 98 patients with SSP, 57 cases were caused

by chronic obstructive pulmonary disease (COPD) and 21 were caused by interstitial pneumonia (IP). The postoperative complication rate was 19.3% in the COPD group, 42.9% in the IP group, and 11.1% in the PSP group. The recurrence rate was 5.3% in the COPD group, 28.6% in the IP group, and 21.5% in the PSP group.

Conclusions: The morbidity and recurrence were comparable between PSP and SSP cases with COPD, whereas these values were unfavorable in SSP cases with IP compared with PSP ones. Surgical intervention should be carefully considered in SSP patients with IP.

Keywords: chronic obstructive pulmonary diseases; interstitial pneumonia; secondary spontaneous pneumothorax; surgery.

FULL TEXT LINKS



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

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BMC Geriatr

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. 2024 Jan 29;24(1):109.

doi: 10.1186/s12877-023-04654-y.

[Effects of an integrated ambulatory care program on healthcare utilization and costs in older patients with multimorbidity: a propensity score-matched cohort study](#)

[Yu-Tai Lo](#)^{1,2}, [Mei-Hua Chen](#)¹, [Tsung-Hsueh Lu](#)², [Ya-Ping Yang](#)³, [Chia-Ming Chang](#)^{1,4}, [Yi-Ching Yang](#)^{5,6}

Affiliations expand

- PMID: 38287245

- DOI: [10.1186/s12877-023-04654-y](https://doi.org/10.1186/s12877-023-04654-y)

Abstract

Background: Population aging has increased the prevalence of multimorbidity, jeopardizing the sustainability and efficiency of healthcare systems. This study aimed to evaluate the effects of an integrated ambulatory care program (IACP) on healthcare utilization and costs among older patients with multimorbidity while accounting for the confounding effects of frailty.

Methods: A retrospective cohort study using propensity matching including patients aged 65 or older with two or more chronic conditions attending the outpatient clinic at our hospital between June 1 and December 31, 2019, was conducted. Exposure was defined as receipt of IACP care. Patients not undergoing the IACP comprised the unexposed group and were matched at a ratio of 1:4 to patients undergoing the IACP group according to sex, age, Charlson Comorbidity Index score, multimorbidity frailty index score, and number of outpatient visits within 6 months before the index date. Outcomes were changes in healthcare utilization and related costs between 6 months before and after receiving IACP care. Multivariate regression analyses were used for data analysis and the Generalized Estimation Equation method was used to fit the regression models.

Results: A total of 166 (IACP) and 664 (non-exposed) patients were analyzed. The mean participant baseline ages were 77.15 ± 7.77 (IACP) and 77.28 ± 7.90 years (unexposed). In univariate analyses, the IACP group demonstrated greater reductions than the unexposed group in the frequency of outpatient visits (-3.16 vs. -1.36, $p < 0.001$), number of physicians visited (-0.99 vs. -0.17, $p < 0.001$), diagnostic fees (-1300 New Taiwan Dollar [NTD] vs. -520 NTD, $p < 0.001$), drug prescription fees (-250 NTD vs. -70 NTD, $p < 0.001$), and examination fees (-1620 NTD vs. -700 NTD, $p = 0.014$). Multivariate analyses demonstrated that patients in the IACP group experienced significant reduction in the frequency of outpatient visits (95% CI: -0.357 to -0.181, $p < 0.001$), number of physicians visited (95% CI: -0.334 to -0.199, $p < 0.001$), and overall outpatient costs (95% CI: -0.082 to -0.011, $p = 0.01$). However, emergency department utilization, hospitalization, and costs did not differ significantly.

Conclusions: Expanding IACPs may help patients with multimorbidity reduce their use of outpatient clinics at the 6-month follow-up, reduce care fragmentation, and promote sustainability of the healthcare system.

Keywords: Economics; Healthcare utilization; Integrated care; Multimorbidity; Taiwan.

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- [41 references](#)

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Child Abuse Negl

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. 2024 Jan 25:149:106653.

doi: 10.1016/j.chiabu.2024.106653. Online ahead of print.

[Adverse childhood experiences and trajectories of multimorbidity in individuals aged over 50: Evidence from the English Longitudinal Study of Ageing](#)

[Katherine Taylor](#)¹, [Panayotes Demakakos](#)²

Affiliations expand

- PMID: 38277873
- DOI: [10.1016/j.chiabu.2024.106653](https://doi.org/10.1016/j.chiabu.2024.106653)

Abstract

Background: Adverse childhood experiences (ACE) are important for chronic diseases yet their association with multimorbidity remains understudied. Few studies consider the complexity of multimorbidity or observe multimorbidity development over time.

Objective: We investigated whether ACE were associated with multimorbidity at baseline and over a 12-year follow-up period.

Participants and setting: 5326 participants aged over 50 were obtained from the English Longitudinal Study of Ageing (ELSA).

Methods: An ACE summary score was derived using eight ACE items measuring abuse, social care, and household dysfunction. From repeated measurements of 29 chronic conditions over a 12-year period (2008-2019) we derived two multimorbidity measures: number of chronic diseases and number of chronic disease categories. We used multinomial logistic regression to assess associations between ACE and both measures. Mixed effects models were estimated to examine trajectories of multimorbidity by ACE over time.

Results: Graded associations between ACE and multimorbidity were observed. Compared to those without ACE, participants with ≥ 3 ACE had three times the risk of having ≥ 3 chronic diseases (RRR 3.06, 95 % CI 1.85-5.05) and falling into ≥ 3 chronic disease categories (RRR 2.93 95 % CI 1.74-4.95). Graded associations persisted during 12-year follow-up, though differences in multimorbidity between those with ≥ 3 ACE and those without ACE remained constant (B 0.02, 95 % CI 0.01-0.03, and B -0.01, 95 % CI -0.02-0.00, number of chronic conditions and chronic condition categories respectively).

Conclusion: ACE are associated with multimorbidity risk and complexity, associations arising before the age of 50. Early intervention amongst those with ACE could attenuate this association.

Keywords: Adult health; Adverse childhood experience; Childhood maltreatment; Multimorbidity.

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Conflict of interest statement

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

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Sci Rep



. 2024 Jan 25;14(1):2186.

doi: 10.1038/s41598-024-51249-7.

[Learning prevalent patterns of co-morbidities in multichronic patients using population-based healthcare data](#)

[Chiara Seghieri](#)¹, [Costanza Tortù](#)¹, [Domenico Tricò](#)², [Simone Leonetti](#)³

Affiliations expand

- PMID: 38272953
- PMCID: [PMC10810806](#)
- DOI: [10.1038/s41598-024-51249-7](#)

Abstract

The prevalence of longstanding chronic diseases has increased worldwide, along with the average age of the population. As a result, an increasing number of people is affected by two or more chronic conditions simultaneously, and healthcare systems are facing the challenge of treating multimorbid patients effectively. Current therapeutic strategies are suited to manage each chronic condition separately, without considering the whole clinical condition of the patient. This approach may lead to suboptimal clinical outcomes and system inefficiencies (e.g. redundant diagnostic tests and inadequate drug prescriptions). We develop a novel methodology based on the joint implementation of data reduction and clustering algorithms to identify patterns of chronic diseases that are likely to co-occur

in multichronic patients. We analyse data from a large adult population of multichronic patients living in Tuscany (Italy) in 2019 which was stratified by sex and age classes. Results demonstrate that (i) cardio-metabolic, endocrine, and neuro-degenerative diseases represent a stable pattern of multimorbidity, and (ii) disease prevalence and clustering vary across ages and between women and men. Identifying the most common multichronic profiles can help tailor medical protocols to patients' needs and reduce costs. Furthermore, analysing temporal patterns of disease can refine risk predictions for evolutive chronic conditions.

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Conflict of interest statement

The authors declare no competing interests.

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

SUPPLEMENTARY INFO

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

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PLoS One

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. 2024 Jan 25;19(1):e0297422.

doi: 10.1371/journal.pone.0297422. eCollection 2024.

Longitudinal clustering of health behaviours and their association with multimorbidity in older adults in England: A latent class analysis

[Alisha Suhag](#)¹, [Thomas L Webb](#)², [John Holmes](#)³

Affiliations expand

- PMID: 38271435
- PMCID: [PMC10810435](#)
- DOI: [10.1371/journal.pone.0297422](#)

Abstract

Background: Health-risk behaviours such as smoking, unhealthy nutrition, alcohol consumption, and physical inactivity (termed SNAP behaviours) are leading risk factors for multimorbidity and tend to cluster (i.e. occur in specific combinations within distinct subpopulations). However, little is known about how these clusters change with age in older adults, and whether and how cluster membership is associated with multimorbidity.

Methods: Repeated measures latent class analysis using data from Waves 4-8 of the English Longitudinal Study of Ageing (ELSA; n = 4759) identified clusters of respondents with common patterns of SNAP behaviours over time. Disease status (from Wave 9) was used to assess disorders of eight body systems, multimorbidity, and complex multimorbidity. Multinomial and binomial logistic regressions were used to examine how clusters were associated with socio-demographic characteristics and disease status.

Findings: Seven clusters were identified: Low-risk (13.4%), Low-risk yet inactive (16.8%), Low-risk yet heavy drinkers (11.4%), Abstainer yet inactive (20.0%), Poor diet and inactive (12.9%), Inactive, heavy drinkers (14.5%), and High-risk smokers (10.9%). There was little evidence that these clusters changed with age. People in the clusters characterised by physical inactivity (in combination with other risky behaviours) had lower levels of education and wealth. People in the heavy drinking clusters were predominantly male. Compared to other clusters, people in the Low-risk and Low-risk yet heavy drinkers had a lower prevalence of all health conditions studied. In contrast, the Abstainer but inactive

cluster comprised mostly women and had the highest prevalence of multimorbidity, complex multimorbidity, and endocrine disorders. High-risk smokers were most likely to have respiratory disorders.

Conclusions: Health-risk behaviours tend to be stable as people age and so ought to be addressed early. We identified seven clusters of older adults with distinct patterns of behaviour, socio-demographic characteristics and multimorbidity prevalence. Intervention developers could use this information to identify high-risk subpopulations and tailor interventions to their behaviour patterns and socio-demographic profiles.

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Conflict of interest statement

The authors have declared that no competing interests exist.

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

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[Review](#)

BMC Public Health

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. 2024 Jan 24;24(1):292.

doi: 10.1186/s12889-024-17715-7.

Interventions for the detection, monitoring, and management of chronic non-communicable diseases in the prison population: an international systematic review

[Thomas Hewson](#)^{1,2}, [Matilda Minchin](#)³, [Kenn Lee](#)⁴, [Shiyao Liu](#)⁵, [Evelyn Wong](#)⁵, [Chantal Edge](#)⁶, [Jake Hard](#)⁷, [Katrina Forsyth](#)³, [Jane Senior](#)³, [Jennifer Shaw](#)^{3,8,9}

Affiliations expand

- PMID: 38267909
- PMCID: [PMC10809496](#)
- DOI: [10.1186/s12889-024-17715-7](#)

Abstract

Background: High rates of health inequalities and chronic non-communicable diseases exist amongst the prison population. This places people in and/or released from prison at heightened risk of multimorbidity, premature mortality, and reduced quality of life. Ensuring appropriate healthcare for people in prison to improve their health outcomes is an important aspect of social justice. This review examines the global literature on healthcare interventions to detect, monitor and manage chronic non-communicable diseases amongst the prison population and people recently released from prison.

Methods: Systematic searches of EMBASE, MEDLINE, CINAHL, Web of Science, Scopus, and the Cochrane Library were conducted and supplemented by citation searching and review of the grey literature. The literature searches attempted to identify all articles describing any healthcare intervention for adults in prison, or released from prison in the past 1 year, to detect, monitor, or manage any chronic non-communicable illness. 19,061 articles were identified, of which 1058 articles were screened by abstract and 203 articles were reviewed by full text.

Results: Sixty-five studies were included in the review, involving 18,311 participants from multiple countries. Most studies were quasi-experimental and/or low to moderate in quality. Numerous healthcare interventions were described in the literature including chronic disease screening, telemedicine, health education, integrated care systems, implementing specialist equipment and staff roles to manage chronic diseases in prisons, and providing enhanced primary care contact and/or support from community health workers for people recently released from prison. These interventions were associated with improvement in various measures of clinical and cost effectiveness, although comparison between different care models was not possible due to high levels of clinical heterogeneity.

Conclusions: It is currently unclear which interventions are most effective at monitoring and managing chronic non-communicable diseases in prison. More research is needed to determine the most effective interventions for improving chronic disease management in prisons and how these should be implemented to ensure optimal success. Future research should examine interventions for addressing multimorbidity within prisons, since most studies tested interventions for a singular non-communicable disease.

Keywords: Chronic disease; Health inequalities; Non-communicable disease; Prison health.

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Conflict of interest statement

The authors declare no competing interests.

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

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Publication types, MeSH terms [expand](#)

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Multimorbidity impacts cardiovascular disease risk following percutaneous coronary intervention: latent class analysis of the Melbourne Interventional Group (MIG) registry

[Chau Le Bao Ho](#)¹, [Si Si](#)², [Angela Brennan](#)^{1,2}, [Tom Briffa](#)³, [Dion Stub](#)², [Andrew Ajani](#)², [Christopher M Reid](#)^{4,5}

Affiliations expand

- PMID: 38262972
- PMCID: [PMC10804750](#)
- DOI: [10.1186/s12872-023-03636-7](#)

Abstract

Background: Multimorbidity is strongly associated with disability or functional decline, poor quality of life and high consumption of health care services. This study aimed (1) To identify patterns of multimorbidity among patients undergoing first recorded percutaneous coronary intervention (PCI); (2) To explore the association between the identified patterns of multimorbidity on length of hospital stay, 30-day and 12- month risk of major adverse cardiac and cerebrovascular events (MACCE) after PCI.

Methods: A retrospective cohort study of the Melbourne Interventional Group (MIG) registry. This study included 14,025 participants who underwent their first PCI from 2005 to 2015 in Victoria, Australia. Based on a probabilistic modelling approach, Latent class analysis was adopted to classify clusters of people who shared similar combinations and

magnitude of the comorbidity of interest. Logistic regression models were used to estimate odd ratios and 95% confidence interval (CI) for the 30-day and 12-month MACCE.

Results: More than two-thirds of patients had multimorbidity, with the most prevalent conditions being hypertension (59%) and dyslipidaemia (60%). Four distinctive multimorbidity clusters were identified each with significant associations for higher risk of 30-day and 12-month MACCE. The cluster B had the highest risk of 30-day MACCE event that was characterised by a high prevalence of reduced estimated glomerular filtration rate (92%), hypertension (73%) and reduced ejection fraction (EF) (57%). The cluster C, characterised by a high prevalence of hypertension (94%), dyslipidaemia (88%), reduced eGFR (87%), diabetes (73%) and reduced EF (65%) had the highest risk of 12-month MACCE and highest length of hospital stay.

Conclusion: Hypertension and dyslipidaemia are prevalent in at least four in ten patients undergoing coronary angioplasty. This study showed that clusters of patients with multimorbidity had significantly different risk of 30-day and 12-month MACCE after PCI. This suggests the necessity for treatment approaches that are more personalised and customised to enhance patient outcomes and the quality of care delivered to patients in various comorbidity clusters. These results should be validated in a prospective cohort and to evaluate the potential impacts of these clusters on the prevention of MACCE after PCI.

Keywords: Cardiovascular Disease; Latent class analysis; Multimorbidity.

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Conflict of interest statement

No conflict of interest

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

SUPPLEMENTARY INFO

MeSH terms, Grants and fundingexpand

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PLOS Glob Public Health



. 2024 Jan 23;4(1):e0002630.

doi: 10.1371/journal.pgph.0002630. eCollection 2024.

Prevalence of chronic conditions and multimorbidity among healthcare workers in Zimbabwe: Results from a screening intervention

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Affiliations expand

- PMID: 38261562
- PMCID: [PMC10805297](#)
- DOI: [10.1371/journal.pgph.0002630](#)

Abstract

The burden of non-communicable diseases (NCDs) in southern Africa is expanding and is superimposed on high HIV prevalence. Healthcare workers are a scarce resource; yet are vital to health systems. There are very limited studies on the burden of chronic conditions among healthcare workers in Africa, and none exploring multimorbidity (≥ 2 chronic conditions). We describe the epidemiology of infectious (HIV) and non-communicable chronic conditions, and multimorbidity, among Zimbabwean healthcare workers. Healthcare workers (≥ 18 years) in eight Zimbabwean provinces were invited to a voluntary,

cross-sectional health-check, including HIV, diabetes, hypertension and mental health screening. Statistical analyses described the prevalence and risk factors for multimorbidity (two or more of HIV, diabetes, hypertension or common mental disorder) and each condition. Missing data were handled using multiple imputation. Among 6598 healthcare workers (July 2020-July 2022) participating in the health-check, median age was 37 years (interquartile range 29-44), 79% were women and 10% knew they were living with HIV. Half had at least one chronic condition: 11% were living with HIV, 36% had elevated blood pressure, 12% had elevated HbA1c and 11% had symptoms of common mental disorder. The overall prevalence of multimorbidity was 15% (95% CI: 13-17%); 39% (95% CI: 36-43%) among people aged 50 and older. Whilst most HIV was diagnosed and treated, other chronic conditions were usually undiagnosed or uncontrolled. Limiting our definition of multimorbidity to two or more screened conditions sought to reduce bias due to access to diagnosis, however, may have led to a lower reported prevalence than that found using a wider definition. Half of healthcare workers screened were living with a chronic condition; one in seven had multimorbidity. Other than HIV, most conditions were undiagnosed or untreated. Multisectoral action to implement contextually relevant, chronic disease services in Africa is urgently needed. Specific attention on health workers is required to protect and retain this critical workforce.

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Conflict of interest statement

The authors have declared that no competing interests exist.

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

SUPPLEMENTARY INFO

Grants and funding [expand](#)

FULL TEXT LINKS



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



. 2024 Jan 29.

doi: 10.1007/s10528-023-10635-y. Online ahead of print.

[A Comprehensive Metagenome Study Identifies Distinct Biological Pathways in Asthma Patients: An In-Silico Approach](#)

[Samiksha Rana](#)¹, [Pooja Singh](#)¹, [Tulika Bhardwaj](#)², [Pallavi Somvanshi](#)^{3,4}

Affiliations expand

- PMID: 38285123
- DOI: [10.1007/s10528-023-10635-y](https://doi.org/10.1007/s10528-023-10635-y)

Abstract

Asthma is a multifactorial disease with phenotypes and several clinical and pathophysiological characteristics. Besides innate and adaptive immune responses, the gut microbiome generates Treg cells, mediating the allergic response to environmental factors and exposure to allergens. Because of the complexity of asthma, microbiome analysis and other precision medicine methods are now widely regarded as essential elements of efficient disease therapy. An in-silico pipeline enables the comparative taxonomic profiling of 16S rRNA metagenomic profiles of 20 asthmatic patients and 15 healthy controls utilizing QIIME2. Further, PICRUST supports downstream gene enrichment and pathway analysis, inferring the enriched pathways in a diseased state. A significant abundance of the phylum Proteobacteria, Sutterella, and Megamonas is identified in asthma patients and a diminished genus Akkermansia. Nasal samples reveal a high relative abundance of Mycoplasma in the nasal samples. Further, differential functional profiling identifies the metabolic pathways related to cofactors and amino acids, secondary metabolism, and signaling pathways. These findings support that a combination of bacterial communities is involved in mediating the responses involved in chronic respiratory conditions like asthma by exerting their influence on various metabolic pathways.

Keywords: Alpha diversity; Asthma; Gene enrichment; Metagenomics; Pathway analysis; Taxonomic classification.

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- [63 references](#)

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J Med Chem

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. 2024 Jan 29.

doi: 10.1021/acs.jmedchem.3c02163. Online ahead of print.

[Discovery and Characterization of a Bicyclic Peptide \(Bicycle\) Binder to Thymic Stromal Lymphopoietin](#)

[Frank Narjes](#), [Fredrik Edfeldt](#), [Jens Petersen](#), [Linda Öster](#), [Corinne Hamblet](#), [James Bird](#), [Peter Bold](#), [Rebecca Rae](#), [Elisabeth Bäck](#), [Stina Stomilovic](#), [Pavol Zlatoidsky](#), [Tor Svensson](#), [Lotta Hidestål](#), [Lavaniya Kunalingam](#), [Igor Shamovsky](#), [Leonardo De Maria](#), [Euan Gordon](#), [Richard J Lewis](#), [Sophie Watcham](#)¹, [Katerine van Rietschoten](#)¹, [Gemma E Mudd](#)¹, [Helen Harrison](#)¹, [LiuHong Chen](#)¹, [Michael J Skynner](#)¹

Affiliations expand

- PMID: 38284169
- DOI: [10.1021/acs.jmedchem.3c02163](https://doi.org/10.1021/acs.jmedchem.3c02163)

Abstract

Thymic stromal lymphopoietin (TSLP) is an epithelial-derived pro-inflammatory cytokine involved in the development of asthma and other atopic diseases. We used Bicycle Therapeutics' proprietary phage display platform to identify bicyclic peptides (Bicycles) with high affinity for TSLP, a target that is difficult to drug with conventional small molecules due to the extended protein-protein interactions it forms with both receptors. The hit series was shown to bind to TSLP in a hotspot, that is also used by IL-7R α . Guided by the first X-ray crystal structure of a small peptide binding to TSLP and the identification of key metabolites, we were able to improve the proteolytic stability of this series in lung S9 fractions without sacrificing binding affinity. This resulted in the potent Bicycle **46** with nanomolar affinity to TSLP ($K_D = 13$ nM), low plasma clearance of 6.4 mL/min/kg, and an effective half-life of 46 min after intravenous dosing to rats.

FULL TEXT LINKS



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World Allergy Organ J



. 2024 Jan 23;17(2):100866.

doi: 10.1016/j.waojou.2023.100866. eCollection 2024 Feb.

[Relationship between indoor inhalant allergen concentrations, serum IgE, and allergic diseases: A cross-sectional study from the NHANES 2005-2006 program](#)

[Fei Ye](#)¹, [Gongkai He](#)², [Hui Gan](#)³

Affiliations expand

- PMID: 38283080
- PMCID: [PMC10811456](#)
- DOI: [10.1016/j.waojou.2023.100866](#)

Abstract

This research analyzed data from 5106 participants in the National Health and Nutrition Examination Survey 2005-2006 to explore the link between indoor allergen concentrations, serum IgE levels, and allergic diseases. The study found that 14.9% of participants reported having asthma, with significant differences noted in the concentrations of certain indoor allergens, specifically dust dog, mite, and cat allergens, between asthma and non-asthma groups. Furthermore, positivity rates for inhalant allergen-specific IgE and total IgE were higher in the asthma group. However, the correlations between most inhalant allergen IgE, including total IgE, and indoor allergen concentrations were very weak. These findings suggest that the relationship between indoor allergen concentrations and asthma incidence is complex, indicating a potential need for personalized allergen prevention strategies based on disease type and patient sensitization.

Keywords: Allergy; Asthma; Indoor allergen; Sensitization.

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Conflict of interest statement

The authors declare no conflict of interests.

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[Review](#)

Expert Opin Pharmacother



. 2024 Jan 28:1-11.

doi: 10.1080/14656566.2024.2307476. Online ahead of print.

The pharmacotherapeutic management of allergic rhinitis in people with asthma

[Ludger Klimek](#)¹, [Pascal Werminghaus](#)², [Ingrid Casper](#)¹, [Mandy Cuevas](#)³

Affiliations expand

- PMID: 38281139
- DOI: [10.1080/14656566.2024.2307476](https://doi.org/10.1080/14656566.2024.2307476)

Abstract

Introduction: Up to 90% of asthmatic patients have comorbid allergic rhinitis (AR). Although appropriate therapy of AR can improve asthma symptoms and management, AR is often underdiagnosed and under-treated in asthmatics. A non-systematic literature research was conducted on AR as a comorbidity and risk factor of asthma. Latest international publications in medical databases, international guidelines, and the Internet were reviewed.

Areas covered: Based on the conducted literature research there is proved evidence of the necessity of diagnosis and treatment of AR in patients with asthma because it affects health care utilization. Therefore, it is recommended in national and global guidelines.

Expert opinion: AR increases the risk of asthma development and contributes to the severity of an existing asthma. Early treatment of AR with drugs as intranasal steroids, antihistamines, leukotriene receptor antagonists, and especially allergen-specific immunotherapy can reduce the risk of asthma development and the concomitant medication use in addition to severity of symptoms in AR and asthma.

Keywords: Allergic rhinitis; allergen-specific immunotherapy; asthma; comorbidity; medication reduction; severity.

SUPPLEMENTARY INFO

Publication types [expand](#)

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J Allergy Clin Immunol Pract



. 2024 Jan 25:S2213-2198(24)00075-8.

doi: 10.1016/j.jaip.2024.01.023. Online ahead of print.

[Phenotyping of Severe Asthma in the Era of Broad-acting Anti-asthma Biologics](#)

[Arnaud Bourdin](#)¹, [Guy Brusselle](#)², [Simon Couillard](#)³, [Merritt L Fajt](#)⁴, [Liam G Heaney](#)⁵, [Elliot Israel](#)⁶, [P Jane McDowell](#)⁵, [Andrew Menzies-Gow](#)⁷, [Neil Martin](#)⁸, [Patrick D Mitchell](#)⁹, [Nayia Petousi](#)¹⁰, [Santiago Quirce](#)¹¹, [Florence Schleich](#)¹², [Ian D Pavord](#)¹³

Affiliations [expand](#)

- PMID: 38280454
- DOI: [10.1016/j.jaip.2024.01.023](https://doi.org/10.1016/j.jaip.2024.01.023)

Abstract

Severe asthma is associated with significant morbidity and mortality despite maximal use of inhaled corticosteroids and additional controller medications, and has a high economic burden. Biologic therapies are recommended for the management of severe, uncontrolled asthma to help prevent exacerbations and to improve symptoms and health-related quality of life. Effective management of severe asthma requires consideration of clinical heterogeneity that is driven by varying clinical and inflammatory phenotypes, which are reflective of distinct underlying disease mechanisms. Phenotyping patients using a combination of clinical characteristics such as age of onset or comorbidities and biomarker profiles, including blood eosinophil counts, and levels of fractional exhaled nitric oxide and serum total immunoglobulin E, is important for the differential diagnosis of asthma. Additionally, phenotyping is beneficial for risk assessment, selection of treatment, and monitoring of treatment response in patients with asthma. This review describes the clinical and inflammatory phenotypes of asthma, provides an overview of biomarkers routinely used in clinical practice and those that have recently been explored for phenotyping, and aims to assess the value of phenotyping in severe asthma management in the current era of biologics.

Keywords: Biologic; Biomarker; Eosinophil; Fractional exhaled nitric oxide; Phenotyping; Severe asthma.

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[Meta-Analysis](#)

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. 2024 Jan 26;14(1):2241.

doi: 10.1038/s41598-023-50466-w.

The association between asthma and atrial fibrillation: systematic review and meta-analysis

[Beatriz Nogueira-Garcia¹](#), [Mariana Alves^{2,3,4}](#), [Fausto J Pinto^{1,5}](#), [Daniel Caldeira^{6,7,8,9}](#)

Affiliations expand

- PMID: 38278854
- PMCID: [PMC10817980](#)
- DOI: [10.1038/s41598-023-50466-w](#)

Abstract

Respiratory disease and atrial fibrillation (AF) frequent coexist, but the risk of AF among asthma patients is less characterized. Growing evidence suggest that AF shares with asthma a systemic inflammation background and asthma treatments, such as beta agonists, have been associated with increased risk of cardiac arrhythmias. The aim of this systematic review was to assess the risk of AF in patients with asthma in observational studies. We search for longitudinal studies reporting AF outcome in asthma and control patients through MEDLINE, Cochrane Central Register of Controlled Trials and EMBASE. Pooled estimates of odds ratios (ORs) and 95% confidence intervals (CIs) were derived by random effects meta-analysis. Heterogeneity was assessed using the I² test. The risk of bias of individual studies was evaluated using the ROBINS-E tool. The study protocol was registered at PROSPERO: CRD42020215707. Seven cohort/nested case-control studies with 1 405 508 individuals were included. The mean follow-up time was 9 years, ranging from 1 to 15 years. Asthma was associated with a higher risk of AF (OR 1.15. 95% CI 1.01-1.29). High heterogeneity (I² = 81%) and overall "serious" risk of bias, lead to a very low confidence in in this result. Asthma was associated with an increased risk of AF. However, the high risk of bias and high heterogeneity reduces the robustness of these results, calling for further high-quality data.

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Conflict of interest statement

The authors declare no competing interests.

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

SUPPLEMENTARY INFO

Publication types, MeSH termsexpand

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J Allergy Clin Immunol Pract

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. 2024 Jan 24:S2213-2198(24)00072-2.

doi: 10.1016/j.jaip.2024.01.020. Online ahead of print.

[Treatable Traits in Asthma: The importance of extra-pulmonary traits – GERD, CRSwNP, Atopic Dermatitis, and Depression/Anxiety](#)

[Vanessa M McDonald](#)¹, [Yuto Hamada](#)², [Alvar Agusti](#)³, [Peter G Gibson](#)⁴

Affiliations expand

- PMID: 38278324
- DOI: [10.1016/j.jaip.2024.01.020](https://doi.org/10.1016/j.jaip.2024.01.020)

Abstract

Treatable traits is a personalised medicine approach to the management of airway disease. Assessing traits within the three domains of pulmonary, extra pulmonary and behavioral/lifestyle/risk-factors traits, and applying targeted treatments to effectively manage these traits enables a holistic and personalised approach to care. Asthma is a heterogeneous and complex airway disease that is frequently complicated by several extrapulmonary traits that impact asthma outcomes and predict future outcomes. We propose that the identification of extra pulmonary, and behavioral risk factor traits and the implementation of targeted therapy will lead to improved management of people with asthma. Furthermore many extrapulmonary traits also present as 'connected comorbidities' that is, they co-exist with asthma, have an impact on asthma, and effective treatment improves both asthma and the comorbidity or the comorbidities may share similar mechanism. In this review we explore this concept and look at atopic dermatitis, chronic rhinosinusitis with nasal polyps (CRSwNP), gastroesophageal reflux disease, anxiety, and depression as treatable traits of asthma and how these can be managed using this approach.

Keywords: Asthma; Extra Pulmonary; Personalised; Treatable Traits.

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Lancet Respir Med

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. 2024 Jan 23:S2213-2600(24)00012-2.

doi: 10.1016/S2213-2600(24)00012-2. Online ahead of print.

US Senate committee investigates asthma inhaler prices

[Bryant Furlow](#)

- PMID: 38278163
- DOI: [10.1016/S2213-2600\(24\)00012-2](https://doi.org/10.1016/S2213-2600(24)00012-2)

No abstract available

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Br J Gen Pract

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. 2024 Jan 25;74(739):86-89.

doi: 10.3399/bjgp24X736353. Print 2024 Feb.

A simple and effective evidence-based approach to asthma management: ICS-formoterol reliever therapy

[Mark L Levy](#)¹, [Richard Beasley](#)², [Bev Bostock](#)³, [Toby Gd Capstick](#)⁴, [Michael G Crooks](#)⁵, [Louise Fleming](#)⁶, [Daryl Freeman](#)⁷, [Viv Marsh](#)⁸, [Hitasha Rupani](#)⁹, [Andy Whittamore](#)¹⁰, [Peter J Barnes](#)¹¹, [Andrew Bush](#)¹²

Affiliations expand

- PMID: 38272684

- DOI: [10.3399/bjgp24X736353](https://doi.org/10.3399/bjgp24X736353)

No abstract available

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MeSH terms, Substancesexpand

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Respir Med

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. 2024 Jan 23:107535.

doi: 10.1016/j.rmed.2024.107535. Online ahead of print.

[Dupilumab sustains lung function improvements in patients with moderate-to-severe asthma](#)

[Alberto Papi](#)¹, [Mario Castro](#)², [Jonathan Corren](#)³, [Ian D Pavord](#)⁴, [Yuji Tohda](#)⁵, [Arman Altincatal](#)⁶, [Nami Pandit-Abid](#)⁷, [Elizabeth Laws](#)⁷, [Bolanle Akinlade](#)⁸, [Leda P Mannent](#)⁹, [Rebecca Gall](#)⁸, [Juby A Jacob-Nara](#)⁷, [Yamo Deniz](#)⁸, [Paul J Rowe](#)⁷, [David J Lederer](#)⁸, [Megan Hardin](#)⁶

Affiliations expand

- PMID: 38272376

- DOI: [10.1016/j.rmed.2024.107535](https://doi.org/10.1016/j.rmed.2024.107535)

Abstract

Background: TRAVERSE ([NCT02134028](https://clinicaltrials.gov/ct2/show/study/NCT02134028)), a phase 3 open-label extension study, assessed dupilumab safety and efficacy in patients with asthma aged ≥ 12 years who completed a previous dupilumab asthma study. This analysis evaluated changes in multiple lung function parameters in patients with moderate-to-severe asthma with elevated type 2 biomarkers (baseline eosinophils ≥ 150 cells· μL^{-1} or fractional exhaled nitric oxide [FeNO] ≥ 25 ppb) who completed QUEST (parent study) and 2 years of dupilumab treatment in TRAVERSE.

Methods: Endpoints analysed included: pre-bronchodilator forced expiratory volume in 1 s (FEV₁), forced vital capacity (FVC), forced expiratory flow (FEF_{25-75%}), and pre- and post-bronchodilator FEV₁/FVC at parent study baseline (PSBL) at Weeks 0, 2, 48, and 96 in TRAVERSE, as well as pre- and post-bronchodilator FEV₁ slopes in QUEST and TRAVERSE. Statistical analyses were descriptive.

Results: Dupilumab improved pre-bronchodilator FEV₁, FVC, and FEF_{25-75%} in QUEST; these improvements were sustained in TRAVERSE. In QUEST patients who received placebo, dupilumab initiation in TRAVERSE resulted in rapid lung function improvements. Mean (standard deviation) changes from PSBL at TRAVERSE Weeks 48 and 96 in pre-bronchodilator FEV₁ were 0.52 (0.59) and 0.45 (0.49) L in the dupilumab/dupilumab group, and 0.47 (0.42) and 0.44 L (0.45) in the placebo/dupilumab group, respectively. Similar trends were observed for FVC and FEF_{25-75%}. Dupilumab also improved FEV₁ slopes in QUEST and TRAVERSE.

Conclusion: Dupilumab demonstrated sustained improvements across multiple spirometric lung function measurements for up to 3 years; patients who received placebo in QUEST experienced rapid lung function improvement upon initiation of dupilumab in TRAVERSE.

Keywords: Dupilumab; Lung function; Moderate-to-severe asthma; Type 2 inflammation.

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Conflict of interest statement

Declaration of competing interest A. Papi reports grants, personal fees and non-financial support from AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, Mundipharma and Teva; personal fees and non-financial support from Menarini, Novartis and Zambon; and grants from Sanofi. M. Castro reports research support from the American Lung Association, AstraZeneca, GSK, NIH, Novartis, PCORI, Pulmatrix, sanofi-aventis and Shionogi;

consultancy fees from Genentech, Novartis, sanofi-aventis and Teva; speaker fees from AstraZeneca, Genentech, GSK, Regeneron Pharmaceuticals, Inc., Sanofi and Teva; and royalties from Elsevier. J. Corren reports research grants from AstraZeneca, Genentech, Novartis and Regeneron Pharmaceuticals, Inc.; research grants and consultancy fees from Sanofi; and speaker fees from AstraZeneca, Genentech and Novartis. I.D. Pavord reports speakers' fees from Aerocrine, Almirall, AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, Novartis and Teva; payments for organising educational events from AstraZeneca and Teva; consultancy fees from Almirall, AstraZeneca, Boehringer Ingelheim, Chiesi, Circassia, Dey Pharma, Genentech, GSK, Knopp Biosciences, Merck, MSD, Napp Pharmaceuticals, Novartis, Regeneron Pharmaceuticals, Inc., RespiVert, Sanofi, Schering-Plough and Teva; international scientific meeting sponsorship from AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, Napp Pharmaceuticals and Teva; and research grants from Chiesi. Y. Tohda reports consultancy fees from AstraZeneca, Kyorin Pharmaceutical, Novartis, Sanofi, and Teijin Pharma. A. Altincatal, N. Pandit-Abid, E. Laws, L.P. Mannent, J.A. Jacob-Nara, P.J. Rowe and M. Hardin are employees of Sanofi and may hold stock and/or stock options in the company. B. Akinlade, R. Gall, Y. Deniz and D.J. Lederer are employees and shareholders of Regeneron Pharmaceuticals, Inc.

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J Allergy Clin Immunol

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. 2024 Jan 23:S0091-6749(24)00043-5.

doi: 10.1016/j.jaci.2023.09.044. Online ahead of print.

Blood eosinophils and FeNO are prognostic and predictive biomarkers in childhood asthma

[Leonard B Bacharier](#)¹, [Ian D Pavord](#)², [Jorge F Maspero](#)³, [Daniel J Jackson](#)⁴, [Alessandro G Fiocchi](#)⁵, [Xuezhou Mao](#)⁶, [Juby A Jacob-Nara](#)⁶, [Yamo Deniz](#)⁷, [Elizabeth Laws](#)⁶, [Leda P Mannent](#)⁸, [Nikhil Amin](#)⁶, [Bolanle Akinlade](#)⁶, [Heribert W Staudinger](#)⁶, [David J Lederer](#)⁷, [Megan Hardin](#)⁹

Affiliations expand

- PMID: 38272375
- DOI: [10.1016/j.jaci.2023.09.044](https://doi.org/10.1016/j.jaci.2023.09.044)

Abstract

Background: Blood eosinophils and fractional exhaled nitric oxide (FeNO) are prognostic biomarkers for exacerbations and predict responses to dupilumab in adolescents and adults with asthma.

Objective: To evaluate the relationship between baseline blood eosinophils and FeNO and response to dupilumab in children with asthma.

Methods: Children aged 6 to 11 years with uncontrolled moderate-to-severe asthma (n = 408) were randomized to receive dupilumab 100/200 mg by body weight, or volume-matched placebo every 2 weeks for 52 weeks. Annualized exacerbation rate (AER) reduction and least squares (LS) mean change in pre-bronchodilator percent predicted forced expiratory volume in 1 second (ppFEV₁) at Week 12 were assessed according to cutoff baseline levels for FeNO (<20 ppb vs ≥20 ppb) and blood eosinophil count (<150, ≥150-<300, ≥300-<500, and ≥500 cells/μL). Quadrant analyses in populations defined by biomarker thresholds and spline models across continuous endpoints assessed the relationship with FeNO and eosinophil count. Interaction testing evaluated the independent roles of FeNO and blood eosinophils as predictive markers.

Results: Exacerbation risk and magnitude of AER reduction increased in subgroups with higher baseline biomarker levels. Quadrant analyses showed that patients with either elevated FeNO or eosinophil counts demonstrated a clinical response to dupilumab. Interaction testing indicated blood eosinophil counts or FeNO independently added value as predictive biomarkers.

Conclusions: In children with uncontrolled moderate-to-severe asthma, blood eosinophil counts and FeNO are clinically relevant biomarkers to identify those at risk for asthma exacerbations, as well as those who will demonstrate a clinical response to dupilumab.

Keywords: Asthma; biomarkers; blood eosinophils; childhood; fractional exhaled nitric oxide (FeNO); pediatric; predictive; prognostic.

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Review

Expert Rev Respir Med



. 2024 Jan 25:1-13.

doi: 10.1080/17476348.2024.2302940. Online ahead of print.

[Demystification of artificial intelligence for respiratory clinicians managing patients with obstructive lung diseases](#)

[Joana Antão](#)^{1,2,3,4}, [Jeroen de Mast](#)⁵, [Alda Marques](#)^{1,2}, [Frits M E Franssen](#)^{3,4}, [Martijn A Spruit](#)^{3,4}, [Qichen Deng](#)^{3,4}

Affiliations expand

- PMID: 38270524
- DOI: [10.1080/17476348.2024.2302940](https://doi.org/10.1080/17476348.2024.2302940)

Abstract

Introduction: Asthma and chronic obstructive pulmonary disease (COPD) are leading causes of morbidity and mortality worldwide. Despite all available diagnostics and treatments, these conditions pose a significant individual, economic and social burden. Artificial intelligence (AI) promises to support clinical decision-making processes by optimizing diagnosis and treatment strategies of these heterogeneous and complex chronic respiratory diseases. Its capabilities extend to predicting exacerbation risk, disease progression and mortality, providing healthcare professionals with valuable insights for more effective care. Nevertheless, the knowledge gap between respiratory clinicians and data scientists remains a major constraint for wide application of AI and may hinder future progress. This narrative review aims to bridge this gap and encourage AI deployment by explaining its methodology and added value in asthma and COPD diagnosis and treatment.

Areas covered: This review offers an overview of the fundamental concepts of AI and machine learning, outlines the key steps in building a model, provides examples of their applicability in asthma and COPD care, and discusses barriers to their implementation.

Expert opinion: Machine learning can advance our understanding of asthma and COPD, enabling personalized therapy and better outcomes. Further research and validation are needed to ensure the development of clinically meaningful and generalizable models.

Keywords: Artificial intelligence; asthma; chronic obstructive pulmonary disease; diagnosis; machine learning; management.

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Eur J Clin Pharmacol

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. 2024 Jan 25.

The relationship between use of SGLT2is and incidence of respiratory and infectious diseases and site-specific fractures: a meta-analysis based on 32 large RCTs

[Yueping Wang](#)¹, [Xian Zhou](#)²

Affiliations expand

- PMID: 38267688
- DOI: [10.1007/s00228-024-03631-7](https://doi.org/10.1007/s00228-024-03631-7)

Abstract

Objectives: We aimed to evaluate the relationship between use of sodium-glucose cotransporter-2 inhibitors (SGLT2is) and incidence of various respiratory and infectious diseases and site-specific fractures.

Methods: Large randomized controlled trials (RCTs) of SGLT2is enrolling more than 400 subjects were included. Outcomes of interest were various serious adverse events regarding to respiratory and infectious disorders and site-specific fractures. Meta-analysis was done using risk ratio (RR) and 95% confidence interval (CI) as effect size.

Results: Thirty-two large RCTs were included in this meta-analysis. Use of SGLT2is was significantly associated with the lower incidences of 6 kinds of noninfectious respiratory diseases {e.g., Asthma (RR 0.64, 95% CI 0.43-0.96; P = 0.0299), Chronic obstructive pulmonary disease [COPD] (RR 0.75, 95% CI 0.62-0.91; P = 0.0027), and Respiratory failure (RR 0.78, 95% CI 0.61-0.99; P = 0.0447)} and 4 kinds of infectious respiratory diseases {e.g., Bronchitis (RR 0.61, 95% CI 0.46-0.81; P = 0.0007), and Pneumonia (RR 0.85, 95% CI 0.78-0.93; P = 0.0002)}. Use of SGLT2is was not significantly associated with the incidences of 31 kinds of site-specific fractures (e.g., Hip fracture, Femoral neck fracture, and Spinal fracture; P > 0.05).

Conclusions: Our meta-analysis confirmed the benefits of SGLT2is against 6 kinds of noninfectious respiratory diseases (e.g., Asthma, COPD, and Respiratory failure) and 4 kinds

of infectious respiratory diseases (e.g., Bronchitis, and Pneumonia). These findings suggest a likelihood that SGLT2is might be used to prevent or treat these respiratory diseases. Moreover, our meta-analysis for the first time revealed no association between use of SGLT2is and incidence of various site-specific fractures.

Keywords: Asthma; Bronchitis; COPD; Hip fracture; Pneumonia; Respiratory failure; SGLT2is; Spinal fracture.

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Tob Induc Dis

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. 2024 Jan 23:22.

doi: 10.18332/tid/176228. eCollection 2024.

[Neglecting the neglected: Tobacco cessation support is essential for the management of asthma and COPD](#)

[Dilek Karadoğan](#)¹, [İlknur Kaya](#)², [Merve Yumrukuz Şenel](#)³, [Esin Bilgin Konyalıhatipoğlu](#)¹, [Tahsin Gökhan Telatar](#)⁴, [Metin Akgün](#)⁵

Affiliations expand

- PMID: 38264187

- PMID: [PMC10804862](#)
- DOI: [10.18332/tid/176228](#)

Free PMC article

Abstract

Introduction: Asthma and COPD management have a broad framework, and smoking cessation plays an essential role. We examine the management of asthma and COPD patients not only for inhaler treatment options but also for essential interventions, such as smoking cessation support.

Methods: Data were collected cross-sectionally from pulmonology departments of three government hospitals in Türkiye between May and September 2022. Patients aged ≥ 18 years who had been diagnosed with asthma or COPD for at least a year, were included in the study. The demographic and clinical characteristics of the patients were investigated. Routine cessation interventions were implemented for current smokers, and they were followed via phone calls after one month regarding their quit status and access to cessation clinics.

Results: Data from 145 patients with asthma and 148 patients with COPD were analyzed. The rate of current smoking among patients with asthma and COPD was 18.8% and 34.5%, respectively. Current smoking was negatively associated with age (<65 years) and disease duration (years) for both diseases ($p < 0.05$). In addition, for asthmatics, presence of pulmonary disease in the family (OR: 0.28, 95% CI: 0.10-0.79) and for COPD patients presence of hospitalization (OR: 0.26, 95% CI: 0.07-0.93) were negatively associated with current smoking. After one month, 85.1% of current asthmatic smokers had not tried to call a quitline, while 14.8% had tried to contact a quitline. Among current smoker COPD patients, only 1.9% had visited a smoking cessation clinic.

Conclusions: Tobacco cessation support seems to be neglected in asthma and COPD management. Instead, pulmonologists and patients focus on pharmaceutical treatments, which constitute the other component of care.

Keywords: COPD; asthma; management; smoking cessation.

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Conflict of interest statement

The authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest and none was reported.

- [29 references](#)

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Allergy

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. 2024 Jan 23.

doi: 10.1111/all.16000. Online ahead of print.

[Plasma protein signatures of adult asthma](#)

[Gordon J Smilnak¹](#), [Yura Lee²](#), [Abhijnan Chattopadhyay¹](#), [Annah B Wyss¹](#), [Julie D White^{1,3}](#), [Sinjini Sikdar^{1,4}](#), [Jianping Jin⁵](#), [Andrew J Grant⁶](#), [Alison A Motsinger-Reif⁷](#), [Jian-Liang Li⁸](#), [Mikyeong Lee¹](#), [Bing Yu²](#), [Stephanie J London¹](#)

Affiliations [expand](#)

- PMID: 38263798

- DOI: [10.1111/all.16000](https://doi.org/10.1111/all.16000)

Abstract

Background: Adult asthma is complex and incompletely understood. Plasma proteomics is an evolving technique that can both generate biomarkers and provide insights into disease mechanisms. We aimed to identify plasma proteomic signatures of adult asthma.

Methods: Protein abundance in plasma was measured in individuals from the Agricultural Lung Health Study (ALHS) (761 asthma, 1095 non-case) and the Atherosclerosis Risk in Communities study (470 asthma, 10,669 non-case) using the SOMAScan 5K array. Associations with asthma were estimated using covariate adjusted logistic regression and meta-analyzed using inverse-variance weighting. Additionally, in ALHS, we examined phenotypes based on both asthma and seroatopy (asthma with atopy (n = 207), asthma without atopy (n = 554), atopy without asthma (n = 147), compared to neither (n = 948)).

Results: Meta-analysis of 4860 proteins identified 115 significantly (FDR<0.05) associated with asthma. Multiple signaling pathways related to airway inflammation and pulmonary injury were enriched (FDR<0.05) among these proteins. A proteomic score generated using machine learning provided predictive value for asthma (AUC = 0.77, 95% CI = 0.75-0.79 in training set; AUC = 0.72, 95% CI = 0.69-0.75 in validation set). Twenty proteins are targeted by approved or investigational drugs for asthma or other conditions, suggesting potential drug repurposing. The combined asthma-atopy phenotype showed significant associations with 20 proteins, including five not identified in the overall asthma analysis.

Conclusion: This first large-scale proteomics study identified over 100 plasma proteins associated with current asthma in adults. In addition to validating previous associations, we identified many novel proteins that could inform development of diagnostic biomarkers and therapeutic targets in asthma management.

Keywords: allergy; area under curve; biomarkers; precision medicine; proteomics.

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- [73 references](#)

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Respir Res

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. 2024 Jan 23;25(1):52.

doi: 10.1186/s12931-024-02665-w.

Mucus plugs in the airways of asthmatic subjects and smoking status

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Affiliations expand

- PMID: 38263221
- PMCID: [PMC10807136](#)
- DOI: [10.1186/s12931-024-02665-w](#)

Free PMC article

Abstract

Background: Mucus plugs have been described in the airways of asthmatic subjects, particularly those with associated with type 2 inflammation and sputum eosinophilia. In the current study we addressed the question of whether smoking, neutrophilic inflammation and airway dimensions affected the prevalence of mucus plugs.

Methods: In a cohort of moderate to severe asthmatics (n = 50), including a group of ex-smokers and current smokers, the prevalence of mucus plugs was quantified using a semi-quantitative score based on thoracic computerized tomography. The relationships between mucus score, sputum inflammatory profile and airway architecture were tested according to patient's smoking status.

Results: Among the asthmatics (37% former or active smokers), 74% had at least one mucus plug. The median score was 3 and was unrelated to smoking status. A significant but weak correlation was found between mucus score, FEV₁ and FEV₁/FVC. Mucus score was significantly correlated with sputum eosinophils. Among former and active smokers, mucus score was correlated with sputum neutrophils. Mucus score was positively associated with FeNO in non-smoking subjects. The lumen dimensions of the main and lobar bronchi were significantly inversely correlated with mucus score.

Conclusion: Airway mucus plugs could define an asthma phenotype with altered airway architecture and can occur in asthmatic subjects with either neutrophilic or eosinophilic sputum according to their smoking status.

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Conflict of interest statement

The authors declare no competing interests.

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

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BMJ Open Respir Res

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. 2024 Jan 23;11(1):e001734.

doi: 10.1136/bmjresp-2023-001734.

Characteristics and outcomes of patients enrolled in the Connect 360 benralizumab patient support programme in the UK: a retrospective cohort study

[Tamsin Morris](#)¹, [Robert Wood](#)², [Mark Silvey](#)², [Christina Diomatari](#)², [Joe Lipworth](#)¹, [Shruti Menon](#)³

Affiliations expand

- PMID: 38262668
- DOI: [10.1136/bmjresp-2023-001734](https://doi.org/10.1136/bmjresp-2023-001734)

Free article

Abstract

Background: Patient support programmes (PSPs) allow patients with chronic diseases to receive treatment and support at home. This study describes the Connect 360 PSP delivery and impact on patient-reported outcomes, satisfaction and adherence/persistence among benralizumab-treated patients with severe eosinophilic asthma (SEA).

Methods: A non-interventional retrospective cohort study using data collected during routine care in the Connect 360 PSP. All consenting enrollees (≥ 18 years) were included in the study.

Results: 746 patients formed the study cohort. Mean (SD) age was 53.7 (14.5) years on PSP entry; 38.3% were female (38.7% unknown). 79.6% of patients were experienced biological therapy users. Oral corticosteroid (OCS) use was reported in 48.4% of patients at baseline and 34.8% at 48 weeks. 8.2% of patients reported asthma hospitalisation in the previous 6 months at 24 weeks vs 3.0% at 48 weeks. Mean (SD) 6-item Asthma Control Questionnaire (ACQ-6) scores were 2.7 (1.5) at baseline vs 1.6 (1.3) at 48 weeks. Mean (SD) patient satisfaction scores remained high (4.5 of 5 (1.0) at baseline; 4.7 of 5 (0.6) at 48 weeks). 28.3% of patients were considered adherent at 24 weeks, increasing to 98.3% when supplemented with sales/delivery data (sensitivity analysis). Discontinuation from PSP/benralizumab was low at 24 (3.4%/3.0%) and 48 (12.6%/5.8%) weeks.

Conclusions: Connect 360 PSP achieved high levels of satisfaction and persistence, with indications of positive outcomes including OCS use, hospitalisation and ACQ-6. The study was conducted during COVID-19, so it provides reassurance that patients with SEA receiving benralizumab may be supported safely and effectively at home.

Keywords: Asthma; COVID-19; Patient Outcome Assessment.

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Conflict of interest statement

Competing interests: MS, RW and CD are employees of Adelphi Real World, which received payment funding from AstraZeneca as part of this research in accordance with Good Publication Practice (GPP3) guidelines (<http://www.ismpp.org/gpp3>). TM, JL and SM are employees and shareholders of AstraZeneca.

SUPPLEMENTARY INFO

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ERJ Open Res

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. 2024 Jan 22;10(1):00832-2023.

doi: 10.1183/23120541.00832-2023. eCollection 2024 Jan.

Bronchial reactivity and asthma at school age after early-life metapneumovirus infection

[Åsne Myklebust](#)^{1,2}, [Melanie Rae Simpson](#)³, [Jonas Valand](#)¹, [Vibeke Stenhaug Langaas](#)⁴, [Tuomas Jartti](#)^{5,6,6}, [Henrik Døllner](#)^{1,2}, [Kari Risnes](#)^{1,2}

Affiliations expand

- PMID: 38259817
- PMCID: [PMC10801746](#)
- DOI: [10.1183/23120541.00832-2023](#)

Free PMC article

Abstract

Background: The association between early-life lower respiratory tract infection (LRTI) and asthma is well established. Knowledge about bronchial hyperresponsiveness (BHR) and asthma after metapneumovirus (MPV) LRTI is scarce. The aim of this study was to assess BHR and current asthma in school-aged children after hospital admission for early-life LRTI with MPV, and to compare with more well-known viruses, rhinovirus (RV) and respiratory syncytial virus (RSV), and with controls.

Methods: A cohort consisting of children admitted for LRTI and controls was followed-up at school age with a clinical research assessment and lung function tests, including a methacholine provocation test. Current asthma was defined based on objective variable airway obstruction and clinical symptoms. BHR and asthma were compared according to viral groups.

Results: 135 children (median age 9.3 years) were included (16 MPV, 34 RV, 51 RSV, 13 mixed infections and 21 controls). Compared with controls there was increased BHR after MPV and RV LRTI (provocative dose causing a 20% fall in forced expiratory volume in 1 s and dose-response slope; $p < 0.05$). Using Kaplan-Meier statistics, BHR was increased for MPV compared with both controls and RSV ($p = 0.02$ and $p = 0.01$). The proportion of children with current asthma at follow-up was higher in the LRTI children compared with the controls (46% versus 24%; $p = 0.06$). Among children who had undergone MPV and RV infection, 50% fulfilled the asthma criteria compared with 43% in the RSV group ($p = 0.37$).

Conclusion: We found increased BHR and a high prevalence of asthma in school-aged children after early-life MPV infection, and findings were similar to RV, and less to RSV, compared with controls.

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Conflict of interest statement

Conflict of interest: All of the authors declare no competing interests.

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

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. 2024 Jan 22;10(1):00701-2023.

doi: 10.1183/23120541.00701-2023. eCollection 2024 Jan.

[Lung function in young adulthood in relation to moderate-to-late preterm birth](#)

[Björn Lundberg](#)^{1,2}, [Simon Kebede Merid](#)¹, [Petra Um-Bergström](#)^{1,2}, [Gang Wang](#)^{1,3}, [Anna Bergström](#)^{4,5}, [Sandra Ekström](#)^{1,4,5}, [Inger Kull](#)^{1,2}, [Erik Melén](#)^{1,2}, [Jenny Hallberg](#)^{1,2}

Affiliations expand

- PMID: 38259815

- PMID: [PMC10801715](#)
- DOI: [10.1183/23120541.00701-2023](#)

Free PMC article

Abstract

Background: Moderate-to-late preterm birth (32 to <37 weeks of gestation) has been associated with impaired lung function in adolescence, but data in adulthood and physiological phenotyping beyond spirometry are scarce. We aimed to investigate lung function development from adolescence into young adulthood and to provide physiological phenotyping in individuals born moderate-to-late preterm.

Methods: Lung function data from individuals born moderate-to-late preterm (n=110) and term (37 to <42 weeks of gestation, n=1895) in the Swedish birth cohort BAMSE were used for analysis and included dynamic spirometry, fractional exhaled nitric oxide and multiple breath nitrogen wash-out. Data from 16- and 24-year follow-ups were analysed using regression models stratified on sex and adjusted for smoking. Data-driven latent class analysis was used to phenotype moderate-to-late preterm individuals at 24 years, and groups were related to background factors.

Results: Males born moderate-to-late preterm had lower forced expiratory volume in 1 s (FEV₁) at 24 years of age (-0.28 z-score, p=0.045), compared to males born term. In females, no difference was seen at 24 years, partly explained by a significant catch up in FEV₁ between 16 and 24 years (0.18 z-score, p=0.01). Lung function phenotypes described as "asthma-like", "dysanapsis-like" and "preterm reference" were identified within the preterm group. Maternal overweight in early pregnancy was associated with "asthma-like" group membership (OR 3.59, p=0.02).

Conclusion: Our results show impaired FEV₁ at peak lung function in males born moderate-to-late preterm, while females born moderate-to-late preterm had significant catch up between the ages of 16 and 24 years. Several phenotypes of lung function impairment exist in individuals born moderate-to-late preterm.

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Conflict of interest statement

Conflict of interest: G. Wang reports receiving lecture fees from Sanofi outside the submitted work. Conflict of interest: E. Melén reports payment for lectures and/or advisory

board fees from ALK, AstraZeneca, Chiesi, Novartis and Sanofi, outside the submitted work.
Conflict of interest: The remaining authors have nothing to disclose.

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- [1 figure](#)

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. 2024 Jan 22;10(1):00403-2023.

doi: 10.1183/23120541.00403-2023. eCollection 2024 Jan.

[Use of infection control measures in people with chronic lung disease: mixed methods study](#)

[Arwel W Jones](#)¹, [Bill E King](#)¹, [Andrew Cumella](#)², [Nicholas S Hopkinson](#)³, [John R Hurst](#)⁴, [Anne E Holland](#)^{1,5}

Affiliations expand

- PMID: 38259806
- PMCID: [PMC10801757](#)
- DOI: [10.1183/23120541.00403-2023](#)

Abstract

Background: The introduction of community infection control measures during the COVID-19 pandemic was associated with a reduction in acute exacerbations of lung disease. We aimed to understand the acceptability of continued use of infection control measures among people with chronic lung disease and to understand the barriers and facilitators of use.

Methods: Australian adults with chronic lung disease were invited to an online survey (last quarter of 2021) to specify infection control measures they would continue themselves post-pandemic and those they perceived should be adopted by the community. A subset of survey participants were interviewed (first quarter of 2022) with coded transcripts deductively mapped to the COM-B model and Theoretical Domains Framework.

Results: 193 people (COPD 84, bronchiectasis 41, interstitial lung disease 35, asthma 33) completed the survey. Physical distancing indoors (83%), handwashing (77%), and avoidance of busy places (71%) or unwell family and friends (77%) were measures most likely to be continued. Policies for the wider community that received most support were those during the influenza season including hand sanitiser being widely available (84%), wearing of face coverings by healthcare professionals (67%) and wearing of face coverings by the general population on public transport (66%). Barriers to use of infection control measures were related to physical skills, knowledge, environmental context and resources, social influences, emotion, beliefs about capabilities and beliefs about consequences.

Conclusions: Adults with chronic lung diseases in Australia are supportive of physical distancing indoors, hand hygiene, and avoidance of busy places or unwell family and friends as long-term infection control measures.

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Conflict of interest statement

Conflict of interest: Authors disclose the following: leadership or fiduciary role in other board, society, committee or advocacy group, paid or unpaid (A.E. Holland: Thoracic Society of Australia and NZ; N.S. Hopkinson: ASH, Asthma+Lung UK); consulting fees (J.R. Hurst: AstraZeneca, GSK); payment or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events (J.R. Hurst: Boehringer Ingelheim, Chiesi, Sanofi and Takeda); support for attending meetings and/or travel (J.R. Hurst: AstraZeneca); participation on a data safety monitoring or advisory board (J.R. Hurst: AstraZeneca); receipt of equipment, materials, drugs, medical writing, and gifts or other services (J.R. Hurst: Nonin). Conflict of interest: The other co-authors have nothing to declare.

- [38 references](#)

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. 2024 Jan 22:22.

doi: 10.18332/tid/176949. eCollection 2024.

[Electronic cigarette use in relation to changes in smoking status and respiratory symptoms](#)

[Linnéa Hedman](#)¹, [Gustaf Lyytinen](#)², [Helena Backman](#)¹, [Magnus Lundbäck](#)², [Caroline Stridsman](#)¹, [Anne Lindberg](#)¹, [Hannu Kankaanranta](#)^{3,4,5}, [Lina Rönnebjerg](#)³, [Eva Rönmark](#)¹, [Linda Ekerljung](#)³

Affiliations expand

- PMID: 38259663
- PMCID: [PMC10801701](#)
- DOI: [10.18332/tid/176949](#)

Free PMC article

Abstract

Introduction: How e-cigarette use relates to changes in smoking status and respiratory symptoms in the population remains controversial. The aim was to study the association between e-cigarette use and, changes in smoking status and changes in respiratory symptoms.

Methods: A prospective, population-based study of random samples of the population (age 16-69 years) was performed within The Obstructive Lung Disease in Northern Sweden (OLIN) study and West Sweden Asthma Study (WSAS). A validated postal questionnaire containing identical questions was used in OLIN and WSAS at baseline in 2006-2008 and at follow-up in 2016. In total, 17325 participated on both occasions. Questions about respiratory symptoms and tobacco smoking were included in both surveys, while e-cigarette use was added in 2016.

Results: In 2016, 1.6% used e-cigarettes, and it was significantly more common in persistent tobacco smokers (10.6%), than in those who quit smoking (2.1%), started smoking (7.8%), or had relapsed into tobacco smoking at follow-up (6.4%) ($p < 0.001$). Among current smokers at baseline, tobacco smoking cessation was less common in e-cigarette users than e-cigarette non-users (14.2% vs 47.6%, $p < 0.001$) and there was no association with a reduction in the number of tobacco cigarettes smoked per day. Those who were persistent smokers reported increasing respiratory symptoms. In contrast, the symptoms decreased among those who quit tobacco smoking, but there was no significant difference in respiratory symptoms between quitters with and without e-cigarette use.

Conclusions: E-cigarette use was associated with persistent tobacco smoking and reporting respiratory symptoms. We found no association between e-cigarette use and tobacco smoking cessation, reduction of number of tobacco cigarettes smoked per day or reduction of respiratory symptoms.

Keywords: ENDS; airways; epidemiology; prospective; quitting smoking.

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Conflict of interest statement

The authors have each completed and submitted an ICMJE form for Disclosure of Potential Conflicts of Interest. The authors declare that they have no competing interests, financial or otherwise, related to the current work. H. Backman reports personal fees for lectures from AstraZeneca, Sanofi, and GlaxoSmithKline. H. Kankaanranta reports personal fees for consultancies or lectures from AstraZeneca, Boehringer-Ingelheim, Chiesi Pharma, GSK, MSD, Mundipharma, Novartis, Orion Pharma and SanofiGenzyme. A. Lindberg reports personal fees for lectures and advisory board from Boehringer Ingelheim, Novartis,

AstraZeneca, and GlaxoSmithKline. C. Stridsman reports personal fees for lectures and advisory board from Boehringer Ingelheim, Novartis, and AstraZeneca.

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- [4 figures](#)

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Review

Acta Physiol (Oxf)

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. 2024 Jan 22:e14092.

doi: 10.1111/apha.14092. Online ahead of print.

[The gut-lung axis and asthma susceptibility in early life](#)

[Fariz G Kahhaleh](#)¹, [Gabriela Barrientos](#)^{2,3}, [Melanie L Conrad](#)¹

Affiliations [expand](#)

- PMID: 38251788

- DOI: [10.1111/apha.14092](https://doi.org/10.1111/apha.14092)

Abstract

Asthma is the most common chronic disease among children, with more than 300 million cases worldwide. Over the past several decades, asthma incidence has grown, and epidemiological studies identify the modernized lifestyle as playing a strong contributing role in this phenomenon. In particular, lifestyle factors that modify the maternal gut microbiome during pregnancy, or the infant microbiome in early life, can act as developmental programming events which determine health or disease susceptibility later in life. Microbial colonization of the gut begins at birth, and factors such as delivery mode, breastfeeding, diet, antibiotic use, and exposure to environmental bacteria influence the development of the infant microbiome. Colonization of the gut microbiome is crucial for proper immune system development and disruptions to this process can predispose a child to asthma development. Here, we describe the importance of early-life events for shaping immune responses along the gut-lung axis and why they may provide a window of opportunity for asthma prevention.

Keywords: DOHaD; antibiotic; asthma; early life; gut-lung axis; hygiene hypothesis; microbiome.

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[Review](#)



. 2024 Jan 22:1-11.

doi: 10.1080/17476348.2024.2307545. Online ahead of print.

The impact of air pollution on asthma: clinical outcomes, current epidemiology, and health disparities

[Ryan J Fiter](#)¹, [Lila J Murphy](#)¹, [Michelle N Gong](#)^{1,2}, [Krystal L Clevon](#)^{1,2}

Affiliations expand

- PMID: 38247719
- DOI: [10.1080/17476348.2024.2307545](https://doi.org/10.1080/17476348.2024.2307545)

Abstract

Introduction: Air pollution has been shown to have a significant impact on morbidity and mortality of respiratory illnesses including asthma.

Areas covered: Outdoor air pollution consists of a mixture of individual pollutants including vehicle traffic and industrial pollution. Studies have implicated an array of individual components of air pollution, with PM_{2.5}, NO₂, SO₂, and ozone being the most classically described, and newer literature implicating other pollutants such as black carbon and volatile organic compounds. Epidemiological and cohort studies have described incidence and prevalence of pollution-related asthma and investigated both acute and chronic air pollution exposure as they relate to asthma outcomes. There is an increasing body of literature tying disparities in pollution exposure to clinical outcomes. In this narrative review, we assessed the published research investigating the association of pollution with asthma outcomes, focusing on the adult population and health care disparities.

Expert opinion: Pollution has multiple deleterious effects on respiratory health but there is a lack of data on individualized pollution monitoring, making it difficult to establish a temporal relationship between exposure and symptoms, thereby limiting our understanding of safe exposure levels. Future research should focus on more personalized monitoring and treatment plans for mitigating exposure.

Keywords: Air Pollution; asthma; health disparities; particulate matter; traffic related air pollution.

SUPPLEMENTARY INFO

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Eur Respir J



. 2024 Jan 25;63(1):2300370.

doi: 10.1183/13993003.00370-2023. Print 2024 Jan.

[ERS technical standard: Global Lung Function Initiative reference values for exhaled nitric oxide fraction \(\$F_{ENO50}\$ \)](#)

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Affiliations [expand](#)

- PMID: 37973177
- DOI: [10.1183/13993003.00370-2023](https://doi.org/10.1183/13993003.00370-2023)

Abstract

Background: Elevated exhaled nitric oxide fraction at a flow rate of 50 mL·s⁻¹ (F_{ENO50}) is an important indicator of T-helper 2-driven airway inflammation and may aid clinicians in the diagnosis and monitoring of asthma. This study aimed to derive Global Lung Function Initiative reference equations and the upper limit of normal for F_{ENO50} .

Methods: Available individual F_{ENO50} data were collated and harmonised using consensus-derived variables and definitions. Data collected from individuals who met the harmonised definition of "healthy" were analysed using the generalised additive models of location, scale and shape (GAMLSS) technique.

Results: Data were retrospectively collated from 34 782 individuals from 34 sites in 15 countries, of whom 8022 met the definition of healthy (19 sites, 11 countries). Overall, height, age and sex only explained 12% of the between-subject variability of F_{ENO50} ($R^2=0.12$). F_{ENO} device was necessary as a predictor of F_{ENO50} , such that the healthy range of values and the upper limit of normal varied depending on which device was used. The range of F_{ENO50} values observed in healthy individuals was also very wide, and the heterogeneity was partially explained by the device used. When analysing a subset of data in which F_{ENO50} was measured using the same device and a stricter definition of health (n=1027), between-site heterogeneity remained.

Conclusion: Available F_{ENO50} data collected from different sites using different protocols and devices were too variable to develop a single all-age reference equation. Further standardisation of F_{ENO} devices and measurement are required before population reference values might be derived.

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Conflict of interest statement

Conflict of interest: C. Bowerman reports personal payments for work on this manuscript through the Global Lung Function Initiative Clinical Research Collaboration subsidised by the ERS, and a leadership role as junior executive for the Global Lung Function Initiative. S. Stanojevic reports consulting fees from Chiesi Pharmaceuticals, lecture honoraria from Vyaire Medical and advisory board participation with Ndd technologies, outside the submitted work. A.T. Dinh-Xuan reports lecture honoraria from Circassia, outside the submitted work. All other authors have no potential conflicts of interest to disclose.

- [Cited by 1 article](#)

SUPPLEMENTARY INFO

MeSH terms, [Substancesexpand](#)

FULL TEXT LINKS



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

1

Editorial

J Allergy Clin Immunol Pract

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. 2024 Jan 26:S2213-2198(24)00076-X.

doi: 10.1016/j.jaip.2024.01.024. Online ahead of print.

Could corticosteroid/antihistamine combination nasal sprays be used as anti-inflammatory reliever therapy for allergic rhinitis ?

[Brian Lipworth](#)¹, [Kirsten Stewart](#)², [Chris RuiWen Kuo](#)², [Rory Chan](#)²

Affiliations expand

- PMID: 38281585
- DOI: [10.1016/j.jaip.2024.01.024](https://doi.org/10.1016/j.jaip.2024.01.024)

No abstract available

Keywords: Allergic rhinitis; anti-inflammatory reliever therapy; antihistamine; corticosteroid.

SUPPLEMENTARY INFO

Publication types expand

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Review

Expert Opin Pharmacother

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. 2024 Jan 28:1-11.

doi: 10.1080/14656566.2024.2307476. Online ahead of print.

[The pharmacotherapeutic management of allergic rhinitis in people with asthma](#)

[Ludger Klimek](#)¹, [Pascal Werminghaus](#)², [Ingrid Casper](#)¹, [Mandy Cuevas](#)³

Affiliations expand

- PMID: 38281139
- DOI: [10.1080/14656566.2024.2307476](https://doi.org/10.1080/14656566.2024.2307476)

Abstract

Introduction: Up to 90% of asthmatic patients have comorbid allergic rhinitis (AR). Although appropriate therapy of AR can improve asthma symptoms and management, AR is often underdiagnosed and under-treated in asthmatics. A non-systematic literature research was conducted on AR as a comorbidity and risk factor of asthma. Latest international publications in medical databases, international guidelines, and the Internet were reviewed.

Areas covered: Based on the conducted literature research there is proved evidence of the necessity of diagnosis and treatment of AR in patients with asthma because it affects health care utilization. Therefore, it is recommended in national and global guidelines.

Expert opinion: AR increases the risk of asthma development and contributes to the severity of an existing asthma. Early treatment of AR with drugs as intranasal steroids, antihistamines, leukotriene receptor antagonists, and especially allergen-specific immunotherapy can reduce the risk of asthma development and the concomitant medication use in addition to severity of symptoms in AR and asthma.

Keywords: Allergic rhinitis; allergen-specific immunotherapy; asthma; comorbidity; medication reduction; severity.

SUPPLEMENTARY INFO

Publication types [expand](#)

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3

BMC Med Imaging



. 2024 Jan 24;24(1):25.

doi: 10.1186/s12880-024-01203-w.

[Deep learning in computed tomography to predict endotype in chronic rhinosinusitis with nasal polyps](#)

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Affiliations expand

- PMID: 38267881
- PMCID: [PMC10809429](#)
- DOI: [10.1186/s12880-024-01203-w](#)

Abstract

Background: As treatment strategies differ according to endotype, rhinologists must accurately determine the endotype in patients affected by chronic rhinosinusitis with nasal polyps (CRSwNP) for the appropriate management. In this study, we aim to construct a novel deep learning model using paranasal sinus computed tomography (CT) to predict the endotype in patients with CRSwNP.

Methods: We included patients diagnosed with CRSwNP between January 1, 2020, and April 31, 2023. The endotype of patients with CRSwNP in this study was classified as eosinophilic or non-eosinophilic. Sinus CT images (29,993 images) were retrospectively collected, including the axial, coronal, and sagittal planes, and randomly divided into training, validation, and testing sets. A residual network-18 was used to construct the deep learning model based on these images. Loss functions, accuracy functions, confusion matrices, and receiver operating characteristic curves were used to assess the predictive performance of the model. Gradient-weighted class activation mapping was performed to visualize and interpret the operating principles of the model.

Results: Among 251 included patients, 86 and 165 had eosinophilic or non-eosinophilic CRSwNP, respectively. The median (interquartile range) patient age was 49 years (37-58 years), and 153 (61.0%) were male. The deep learning model showed good discriminative performance in the training and validation sets, with areas under the curves of 0.993 and 0.966, respectively. To confirm the model generalizability, the receiver operating characteristic curve in the testing set showed good discriminative performance, with an area under the curve of 0.963. The Kappa scores of the confusion matrices in the training, validation, and testing sets were 0.985, 0.928, and 0.922, respectively. Finally, the constructed deep learning model was used to predict the endotype of all patients, resulting in an area under the curve of 0.962.

Conclusions: The deep learning model developed in this study may provide a novel noninvasive method for rhinologists to evaluate endotypes in patients with CRSwNP and help develop precise treatment strategies.

Keywords: Chronic rhinosinusitis with nasal polyps; Deep learning; Endotype; Precision treatment; Sinus computed tomography.

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Conflict of interest statement

The authors declare no competing interests.

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

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

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4

Int Forum Allergy Rhinol

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. 2024 Jan 24.

doi: 10.1002/alr.23315. Online ahead of print.

[Temperature-controlled radiofrequency ablation for the treatment of chronic rhinitis: Two-year outcomes from a prospective multicenter trial](#)

[Masayoshi Takashima](#)¹, [J Pablo Stolovitzky](#)², [Randall A Ow](#)³, [Stacey L Silvers](#)⁴, [Chad M McDuffie](#)⁵, [Marc Dean](#)^{6,7,8}, [Ahmad R Sedaghat](#)⁹, [Bobby A Tajudeen](#)¹⁰

Affiliations expand

- PMID: 38266636
- DOI: [10.1002/alr.23315](https://doi.org/10.1002/alr.23315)

Abstract

Background: Minimally invasive temperature-controlled radiofrequency (TCRF) ablation of the posterior nasal nerve (PNN) demonstrated a significant larger treatment effect on the symptom burden of chronic rhinitis patients than a sham control (no energy delivery) at the 3-month primary endpoint of this trial.

Methods: Two-year posttreatment outcomes for patients treated in a prospective, multicenter, patient-blinded randomized controlled trial were determined by combining the index active treatment-arm and index control-arm crossover patients into a single group (after the primary endpoint) to evaluate the treatment effect durability and long-term effects on concomitant chronic rhinitis medication usage.

Results: The mean baseline reflective total nasal symptom score (rTNSS) was 8.2 (95% confidence interval [CI], 7.9-8.6; N = 104). At 2 years (N = 79), the mean change in rTNSS was -5.3 (95% CI, -5.8 to -4.8; $p < 0.001$; 64.6% improvement). The 2-year responder rate ($\geq 30\%$ improvement in rTNSS) was 87.3% (95% CI, 78.0-93.8). All four components of the rTNSS (rhinorrhea, congestion, sneezing, and nasal itching) showed significant improvement over baseline, with rhinorrhea and congestion showing the most improvement. Postnasal drip and cough symptoms were also significantly improved. At 2 years, 81.0% (95% CI, 70.6-89.0) reported a minimal clinically important difference of ≥ 0.4 -point improvement in the mini-rhinoconjunctivitis quality of life questionnaire score. Of 56 patients using chronic rhinitis medications at baseline, 25 of 56 (44.6%) either stopped all medication use (7/56 [12.5%]) or stopped/decreased (18/56 [32.1%]) use of ≥ 1 medication class at 2 years. No serious adverse events related to the device/procedure were reported over 2 years. To determine the potential effect of patients who left the trial over 2 years on the responder rate, the responder statuses of the 14 patients with follow-up data who were lost to follow-up/withdrew/died were imputed by the last observation carried forward and the responder statuses of all nine patients who had an additional nasal procedure were imputed to nonresponder, resulting in a 2-year responder rate of 79.4% (95% CI, 70.3-86.8).

Conclusion: TCRF ablation of the PNN is safe and resulted in a significant and sustained reduction in chronic rhinitis symptom burden through 2 years and a substantial reduction in concomitant medication burden.

Keywords: RQLQ; ablation; congestion; neurolysis; posterior nasal nerve; radiofrequency rhinitis; rhinorrhea.

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- [28 references](#)

SUPPLEMENTARY INFO

Grants and funding [expand](#)

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5

Allergy

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. 2024 Jan 21.

doi: 10.1111/all.16026. Online ahead of print.

[The effectiveness of pollen allergen immunotherapy on allergic rhinitis over 18 years: A national cohort study in Denmark](#)

[Peter Bager](#)¹, [Gry Poulsen](#)², [Jan Wohlfahrt](#)³, [Mads Melbye](#)^{4,5,6,7}

Affiliations [expand](#)

- PMID: 38247235

- DOI: [10.1111/all.16026](https://doi.org/10.1111/all.16026)

Abstract

Background: Because long-term effectiveness of pollen allergen immune therapy (AIT) for allergic rhinitis (AR) is not well-described, we studied effectiveness over 18 years in Denmark.

Methods: A register-based cohort study using data on filled prescriptions, 1995-2016, Denmark. In a cohort of 1.1 million intranasal corticosteroid inhaler users (proxy for AR), we matched users treated with grass, birch or mugwort AIT 1:2 with non-treated users on baseline year and 24 characteristics in the 3 years prior to baseline. The primary outcome was the odds ratio (OR) of using anti-allergic nasal inhaler during the pollen season in the treated versus non-treated group by years since baseline.

Results: Among 7760 AR patients treated with pollen AIT, the OR of using nasal inhaler 0-5 years after baseline was reduced when compared with 15,520 non-treated AR individuals (0-2 years, OR 0.84 (0.81-0.88); 3-5 years, OR 0.88 (0.84-0.92)), but was close to unity or higher thereafter (6-9 years, OR 1.03 (0.97-1.08); 10-18 years, OR 1.18 (1.11-1.26)). In post hoc analyses, results were more consistent for those who already had 3 of 3 baseline years of use, and in patients using nasal inhaler in the latest pollen season (0-2 years, OR 0.76 (0.72-0.79); 3-5 years OR 0.86 (0.81-0.93); 6-9 years, OR 0.94 (0.87-1.02); 10-18 years, OR 0.94 (0.86-1.04)) as opposed to no such use.

Conclusions: Patients treated with pollen AIT in routine care to a higher degree stopped using anti-allergic nasal inhaler 0-5 years after starting the standard 3 years of therapy, and not beyond 5 years. Post hoc analyses suggested effectiveness was more consistent among patients with persistent AR.

Keywords: allergic rhinitis; anti-allergic medication; epidemiology; grass pollen; immunotherapy; nasal corticosteroids; observational study.

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- [41 references](#)

SUPPLEMENTARY INFO

Grants and funding [expand](#)

FULL TEXT LINKS

chronic cough

1

EClinicalMedicine

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. 2024 Jan 21:68:102423.

doi: 10.1016/j.eclinm.2024.102423. eCollection 2024 Feb.

Prevalence of chronic cough, its risk factors and population attributable risk in the Burden of Obstructive Lung Disease (BOLD) study: a multinational cross-sectional study

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Collaborators, Affiliations expand

- PMID: 38268532
- PMCID: [PMC10807979](#)
- DOI: [10.1016/j.eclinm.2024.102423](#)

Abstract

Background: Chronic cough is a common respiratory symptom with an impact on daily activities and quality of life. Global prevalence data are scarce and derive mainly from European and Asian countries and studies with outcomes other than chronic cough. In this study, we aimed to estimate the prevalence of chronic cough across a large number of study sites as well as to identify its main risk factors using a standardised protocol and definition.

Methods: We analysed cross-sectional data from 33,983 adults (≥ 40 years), recruited between Jan 2, 2003 and Dec 26, 2016, in 41 sites (34 countries) from the Burden of Obstructive Lung Disease (BOLD) study. We estimated the prevalence of chronic cough for each site accounting for sampling design. To identify risk factors, we conducted multivariable logistic regression analysis within each site and then pooled estimates using random-effects meta-analysis. We also calculated the population attributable risk (PAR) associated with each of the identified risk factors.

Findings: The prevalence of chronic cough varied from 3% in India (rural Pune) to 24% in the United States of America (Lexington, KY). Chronic cough was more common among females, both current and passive smokers, those working in a dusty job, those with a history of tuberculosis, those who were obese, those with a low level of education and those with hypertension or airflow limitation. The most influential risk factors were current smoking and working in a dusty job.

Interpretation: Our findings suggested that the prevalence of chronic cough varies widely across sites in different world regions. Cigarette smoking and exposure to dust in the workplace are its major risk factors.

Funding: Wellcome Trust.

Keywords: Chronic cough; Epidemiology; Excess risk; Global health.

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Conflict of interest statement

Fatima Rodrigues declares grants and personal fees from A. Menarini, Boehringer Ingelheim, Teva Pharma, Novartis, GlaxoSmithKline, AstraZeneca, VitalAire and Nippon Gases outside the submitted work. Wan C. Tan received grants from the Canadian Institute of Health Research (CIHR/Rx&D Collaborative Research Program Operating Grants- 93,326) with industry partners Astra Zeneca Canada Ltd., Boehringer-Ingelheim Canada Ltd, GlaxoSmithKline Canada Ltd, Merck, Novartis Pharma Canada Inc., Nycomed Canada Inc., Pfizer Canada Ltd. for conducting the longitudinal population-based Canadian Cohort of Obstructive Lung Disease (CanCOLD) study on COPD. David Mannino is a consultant to GSK, AstraZeneca, Regeneron, Genentech, COPD Foundation, and expert witness on behalf of people suing Tobacco Industry (Schlesinger Law Firm). Sonia Buist is Chair of the Data Safety & Monitoring Board for the RELIANCE Clinical Trial. Frits Franssen declares personal

fees from AstraZeneca, Chiesi, GlaxoSmithKline, MSD, Pieris, and Verona Pharma. Robab Breyer-Kohansal declares consulting fees from AstraZeneca, Boehringer Ingelheim, GlaxoSmithKline, Menarini, Novartis Pharma, and Sanofi, and participation on advisory boards for AstraZeneca, Menarini, and Sanofi. Thorarinn Gislason received a grant from the Icelandic Research Fund. Kevin Mortimer declares participation on advisory boards for AstraZeneca and GlaxoSmithKline. Sylvia Hartl declares grants from GSK, Chiesi Farma, Menarini Pharma, and AstraZeneca, and participation on advisory boards for Menarini Pharma and GSK. AFSA declares a grant from the COLT Foundation (CF/01/21).

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

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Respir Investig

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. 2024 Jan 22;62(2):269-276.

doi: 10.1016/j.resinv.2024.01.003. Online ahead of print.

[Relevant factors associated with the development of chronic cough after recovery from COVID-19](#)

[Yoshihiro Kanemitsu](#)¹, [Kensuke Fukumitsu](#)², [Akio Niimi](#)³

Affiliations expand

- PMID: 38262214

- DOI: [10.1016/j.resinv.2024.01.003](https://doi.org/10.1016/j.resinv.2024.01.003)

Abstract

Background: Cough is one of the symptoms of the post-COVID-19 condition. However, the factors associated with its development remain unclear. We evaluated the factors associated with chronic cough in the post-COVID-19 condition.

Methods: In this survey, 170 individuals who previously had COVID-19 and were admitted to Aichi Hospital between October 2020 and October 2021 were included. Using self-developed questionnaires and visual analog scales, 19 symptoms, including cough, were assessed. Cough-specific quality of life (QoL), reflux-related symptoms, and abnormal laryngeal sensations were also evaluated. The patients' clinical characteristics and indices, including cough-specific QoL, at admission were extracted from their medical records. Multivariate regression analyses were conducted to determine the factors associated with cough-related outcomes, such as prevalence, QoL, and severity, in the post-COVID-19 condition.

Results: The median length (range) of the survey after recovery from COVID-19 was 158 (95-467) days. Cough was prevalent (n = 41, 24 %) and often accompanied by other symptoms, including gastrointestinal symptoms. Cough-specific QoL after recovery was correlated with reflux-related symptoms and abnormal laryngeal sensations. Multivariate analyses revealed that gastrointestinal symptoms, sputum, and chronic cough before contracting COVID-19 are significant predictors of cough-related outcomes in the post-COVID-19 condition. Meanwhile, other indices including cough-specific QoL on the acute phase were not reliable predictors in the post-COVID-19 condition.

Conclusions: Cough during the post-COVID-19 condition had a negative impact on daily life activities. Gastrointestinal symptoms could play a significant role in the pathophysiology of cough in such a condition.

Keywords: Abnormal laryngeal sensations; Chronic cough; Gastrointestinal symptoms; Post-COVID-19 condition; Quality of life.

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Conflict of interest statement

Declaration of competing interest Yoshihiro Kanemitsu received research grants from MSD Life Science Foundation and lecture fees from GSK outside the submitted work; Akio Niimi received lecture fees from AstraZeneca, Kyorin, Novartis, GSK and Sanofi outside the submitted work; Kensuke Fukumitsu has no conflict of interest.

FULL TEXT LINKS



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Review

J Patient Rep Outcomes

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. 2024 Jan 22;8(1):8.

doi: 10.1186/s41687-024-00683-2.

[Mixed-methods research to support the use of new lymphoma-specific patient-reported symptom measures derived from the EORTC item library](#)

[Jessica T Markowitz](#)¹, [Flora Mazerolle](#)², [Teya Lovell](#)¹, [Lisa M Hess](#)³, [Paolo B Abada](#)⁴, [Antoine Regnault](#)², [Nalin Payakachat](#)⁵

Affiliations expand

- PMID: 38252198
- PMCID: [PMC10803695](#)
- DOI: [10.1186/s41687-024-00683-2](#)

Free PMC article

Abstract

Background: No specific measures exist to assess patient-reported symptoms experienced by individuals with chronic lymphocytic leukemia (CLL)/small lymphocytic lymphoma (SLL) or mantle cell lymphoma (MCL). This study was conducted to elicit patient-reported CLL/SLL- and MCL-related symptoms and their impact on patients' lives. The study qualitatively and quantitatively evaluated sets of conceptually-selected EORTC Item Library items for assessing CLL/SLL- and MCL-related symptoms.

Methods: The qualitative component of the research included a literature review, clinician consultations, and patient interviews. Concepts important to patients were identified and coded; cognitive debriefing of the selected library items was completed with patients. CLL/SLL and MCL-related symptoms and impacts were organized in a structured conceptual model, which was mapped to item sets from the Item Library. The quantitative component comprised exploratory macro-level Rasch measurement theory (RMT) analysis conducted to provide supportive quantitative insight on the item sets.

Results: 41 patients (21-MCL; 20-CLL/SLL) and 5 clinicians participated in the qualitative study; 57 unique patients (30-MCL; 27-CLL/SLL) completed the EORTC items. The conceptual models generated from the qualitative work included symptoms and functional impacts of CLL/SLL and MCL. Symptom domains included swollen lymph nodes, B symptoms, abdominal issues, pain, fatigue, subjective cognitive impairment, anemia-related symptoms, bleeding, infection, and other issues (appetite loss, temperature fluctuation, rash, weight gain, sleep problems, cough). Impacts included physical function, role function, and other functions (psychological, social). Cognitive debriefing demonstrated that the separate item sets for CLL/SLL and MCL-related symptoms were well understood and aligned with patients' experiences. All selected items were included in the conceptual models. The exploratory RMT analysis showed that the item sets provided adequate coverage of the continuum of CLL/SLL- and MCL-related symptom severity.

Conclusions: This study gathered qualitative and early quantitative evidence supporting use of the EORTC Item Library to assess CLL/SLL- and MCL-related symptoms and impacts. These items are promising candidates for measurement of patient-reported disease symptoms in these populations. A larger sample size will be essential to establish the psychometric properties necessary to support use in clinical trials. Patients who suffer from rare cancers of the blood, bone marrow, and lymph nodes can experience chronic and debilitating symptoms. At present, however, there are no dedicated instruments for assessing the patient's experience of symptoms of conditions like chronic lymphocytic leukemia (CLL)/small lymphocytic lymphoma (SLL) or mantle cell lymphoma (MCL), or for assessing their impact on patients' lives. This research project aimed to address that need. The researchers selected relevant and clinically meaningful symptoms from the EORTC Item Library that assess fatigue, B symptoms, and CLL/SLL- and MCL-specific symptoms. Using patients and clinician interviews as well as quantitative analyses, the research revealed no major concerns with using these item sets to assess symptoms of CLL/SLL and

MCL. Interviews with patients demonstrated that the separate item sets for CLL/SLL and MCL-related symptoms were well understood and aligned with patients' experiences. All selected items were included in the conceptual models. Item sets identified in this study can potentially be used to assess patient-reported symptom endpoints in clinical trial settings in these disease areas.

Keywords: Chronic lymphocytic leukemia; Mantle cell lymphoma; Patient-reported outcomes; Small lymphocytic lymphoma.

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Conflict of interest statement

NP, LH, and PA are employed by Eli Lilly and Company. AR and FM are employees of Modus Outcomes, which received payment from Eli Lilly and Company to conduct this research. JM and TL were employed by Modus Outcomes at the time this research was conducted.

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

SUPPLEMENTARY INFO

Publication types, MeSH termsexpand

FULL TEXT LINKS



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

1
Respir Investig

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. 2024 Jan 25;62(2):284-290.

doi: 10.1016/j.resinv.2023.12.012. Online ahead of print.

Amikacin liposome inhalation suspension for Mycobacterium avium complex pulmonary disease: A subgroup analysis of Japanese patients in the randomized, phase 3, CONVERT study

[Kozo Morimoto](#)¹, [Mizu Nonaka](#)², [Yoshitaka Yamazaki](#)³, [Taku Nakagawa](#)⁴, [Jin Takasaki](#)⁵, [Kazunari Tsuyuguchi](#)⁶, [Seigo Kitada](#)⁷, [Zhanna Jumadilova](#)⁸, [Dayton W Yuen](#)⁸, [Monika Ciesielska](#)⁹, [Naoki Hasegawa](#)¹⁰

Affiliations expand

- PMID: 38277865
- DOI: [10.1016/j.resinv.2023.12.012](https://doi.org/10.1016/j.resinv.2023.12.012)

Abstract

Background: CONVERT, a randomized, active-controlled, global, Phase 3 trial demonstrated that patients with treatment-refractory Mycobacterium avium complex (MAC) pulmonary disease were more likely to achieve culture conversion with amikacin liposome inhalation suspension (ALIS) plus guideline-based therapy (GBT) versus those continuing on GBT alone. This subgroup analysis reports the efficacy and safety of ALIS in Japanese patients enrolled in CONVERT.

Methods: Japanese patients aged ≥ 20 years with treatment-refractory MAC pulmonary disease from Japanese sites were included. Patients were randomized to receive once-daily 590 mg ALIS + GBT or GBT alone; patients converting by Month 6 remained in the study to complete 12-month treatment followed by a 12-month off-treatment period. Nonconverters exited the study at Month 8. The primary endpoint was the proportion of patients achieving culture conversion by Month 6.

Results: Of the 59 Japanese patients screened, 48 were randomized to receive ALIS + GBT (n = 34) or GBT alone (n = 14), and 41/48 (85.4 %) were women. The mean (standard deviation) age of patients was 64.5 (8.6) years, and 83.3 % of patients had bronchiectasis at baseline. By Month 6, sputum culture conversion was cumulatively achieved in 9/34 (26.5 %) patients receiving ALIS + GBT versus none receiving GBT alone. Treatment-emergent

adverse events were reported in 94.1 % and 100.0 % of patients receiving ALIS + GBT and GBT alone, respectively. No deaths were reported.

Conclusions: The efficacy observed in the Japanese subpopulation was largely consistent with that in the overall CONVERT study population, with more patients achieving culture conversion with ALIS + GBT versus GBT alone. Safety profiles were similar between the overall population and the Japanese subpopulation.

Clinical trial registration: [NCT02344004](https://www.clinicaltrials.gov/ct2/show/study/NCT02344004).

Keywords: CONVERT; Japan; Mycobacterium avium complex; Nontuberculous mycobacteria; Subgroup analysis.

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Conflict of interest statement

Declaration of competing interest Kozo Morimoto received an educational grant from Insmmed G.K. to NTM-JRC, serves as a consultant to Nippon Boehringer Ingelheim Co. Ltd. and Insmmed G.K., received honoraria for writing promotional material from Insmmed G.K. and Nippon Boehringer Ingelheim Co. Ltd.; Mizu Nonaka received lecture fees from Insmmed G.K.; Taku Nakagawa received lecture fees from Insmmed Inc. and was a member of the advisory board of Insmmed Inc.; Kazunari Tsuyuguchi serves as a consultant to Insmmed Inc. and Asahi Kasei Pharma and received honoraria for writing promotional material from Insmmed Inc., Janssen Pharmaceutical K.K., Eiken Chemical Co. Ltd., AstraZeneca K.K., Kyorin Pharmaceutical Co., Ltd., Teijin Pharma Ltd., and Oxford Immunotec K.K; Zhanna Jumadilova was a former employee of Insmmed Inc. and received grants or contracts from Insmmed Inc.; Dayton W. Yuen is an employee of Insmmed Inc. and reports stock or stock options in Insmmed Inc.; Monika Ciesielska is an employee of Insmmed Inc. and reports stock or stock options in Insmmed Inc.; Naoki Hasegawa serves as a consultant to Insmmed Inc.; Yoshitaka Yamazaki, Jin Takasaki, and Seigo Kitada have no conflicts of interest.

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Chronic Obstr Pulm Dis



. 2024 Jan 25;11(1):1-2.

doi: 10.15326/jcopdf.2024.0497.

[Editorial-2014-2024: Celebrating 10 Years of Nonprofit, Open-Access Publishing Focused on COPD, Bronchiectasis, and Nontuberculous Mycobacteria Research](#)

[Mark T Dransfield](#)^{1,2}

Affiliations expand

- PMID: 38277667
- DOI: [10.15326/jcopdf.2024.0497](https://doi.org/10.15326/jcopdf.2024.0497)

No abstract available

Keywords: 10th anniversary; Journal of the COPD Foundation; editorial.

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. 2024 Jan 25.

doi: 10.1164/rccm.202309-1614OC. Online ahead of print.

The Association Between Bronchiectasis and Chronic Obstructive Pulmonary Disease: Data from the European Bronchiectasis Registry (EMBARC)

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Affiliations expand

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- DOI: [10.1164/rccm.202309-1614OC](https://doi.org/10.1164/rccm.202309-1614OC)

Abstract

Rationale and objective: Bronchiectasis and COPD are associated conditions but misdiagnosis is believed to be common. A recently published international consensus definition of bronchiectasis (BE) and COPD association: The ROSE criteria (radiological bronchiectasis(R), obstruction: FEV1/FVC ratio<0.7 (O), symptoms (S) and exposure:≥ 10 pack year smoking (E) allows objective diagnosis of the BE-COPD association.

Methods: Analysis of the EMBARC registry, a prospective observational study of patients with CT confirmed bronchiectasis from 28 countries. The ROSE criteria were used to

objectively defined BE-COPD association. Key outcomes during up to 5-years follow-up were exacerbations, hospitalization and mortality.

Measurement and main results: 16730 patients with bronchiectasis were included. 4336 had a co-diagnosis of COPD and these patients had more exacerbations, worse quality of life and higher severity scores. We observed marked overdiagnosis of COPD using the ROSE criteria: 22.2% of patients with a diagnosis of COPD did not have airflow obstruction and 31.9% did not have a history of ≥ 10 pack years smoking. Therefore the proportion meeting the ROSE criteria for COPD was 2157 (55.4%). Compared to patients without COPD, patients meeting ROSE criteria had increased risk of exacerbations and exacerbations resulting in hospitalisation during follow-up (IRR 1.25 95%CI 1.15-1.35 and 1.69 95%CI 1.51-1.90 respectively) but patients with a diagnosis of COPD who did not meet ROSE criteria also had increased risk of exacerbations.

Conclusions: The label of COPD is often applied to bronchiectasis patients without objective evidence of airflow obstruction and smoking history. Patients with a clinical label of COPD have worse clinical outcomes.

Keywords: COPD; bronchiectasis; exacerbations; mortality; spirometry.

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Am J Respir Crit Care Med

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. 2024 Jan 25.

doi: 10.1164/rccm.202306-1059OC. Online ahead of print.

[Airway 'Resistotypes' and Clinical Outcomes in Bronchiectasis](#)

[Micheál Mac Aogáin](#)^{1,2}, [Fransiskus Xaverius Ivan](#)³, [Tavleen Kaur Jaggi](#)³, [Hollian Richardson](#)⁴, [Amelia Shoemark](#)^{5,6}, [Jayanth Kumar Narayana](#)³, [Alison J Dicker](#)⁷, [Mariko Siyue Koh](#)⁸, [Ken Cheah Hooi Lee](#)⁹, [Ong Thun How](#)⁸, [Mau Ern Poh](#)¹⁰, [Ka Kiat Chin](#)¹⁰, [Albert Lim Yick Hou](#)¹¹, [Puah Ser Hon](#)¹², [Teck Boon Low](#)¹³, [John Arputhan Abisheganaden](#)¹⁴, [Katerina Dimakou](#)¹⁵, [Antonia Digalaki](#)¹⁵, [Chrysavgi Kosti](#)¹⁶, [Anna Gkousiou](#)¹⁵, [Philip M Hansbro](#)¹⁷, [Francesco Blasi](#)¹⁸, [Stefano Aliberti](#)^{19,20}, [James D Chalmers](#)²¹, [Sanjay H Chotirmall](#)²²

Affiliations expand

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- DOI: [10.1164/rccm.202306-1059OC](https://doi.org/10.1164/rccm.202306-1059OC)

Abstract

Introduction: Application of whole-genome shotgun metagenomics to the airway microbiome in bronchiectasis highlights a diverse pool of antimicrobial resistance genes: the 'resistome', the clinical significance of which remains unclear.

Methods: Individuals with bronchiectasis were prospectively recruited into cross-sectional and longitudinal cohorts (n=280) including the international multicentre cross-sectional Cohort of Asian and Matched European Bronchiectasis 2 study (CAMEB 2; n=251) and two independent cohorts, one describing patients experiencing acute exacerbation and a further cohort of patients undergoing *P. aeruginosa* eradication treatment. Sputum was subjected to metagenomic sequencing and the bronchiectasis resistome evaluated in association with clinical outcomes and underlying host microbiomes.

Results: The bronchiectasis resistome features a unique resistance gene profile and elevated counts of aminoglycoside, bicyclomycin, phenicol, triclosan and multi-drug resistance genes. Longitudinally, it exhibits within-patient stability over time and during exacerbations despite between-patient heterogeneity. Proportional differences in baseline resistome profiles including increased macrolide and multi-drug resistance genes associate with shorter intervals to next exacerbation, while distinct resistome archetypes associate with frequent exacerbations, poorer lung function, geographic origin, and the host microbiome. Unsupervised analysis of resistome profiles identified two clinically relevant 'resistotypes' RT1 and RT2, the latter characterized by poor clinical outcomes, increased multi-drug resistance and *P. aeruginosa*. Successful targeted eradication in *P. aeruginosa*-colonized individuals mediated reversion from RT2 to RT1, a more clinically favourable resistome profile demonstrating reduced resistance gene diversity.

Conclusion: The bronchiectasis resistome associates with clinical outcomes, geographic origin, and the underlying host microbiome. Bronchiectasis 'resistotypes' link to clinical disease and are modifiable through targeted antimicrobial therapy.

Keywords: Bronchiectasis; Metagenomics; Microbiome; Resistome; Resistotype.

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BMC Pulm Med



. 2024 Jan 23;24(1):49.

doi: 10.1186/s12890-024-02867-4.

[Clinical outcomes of long-term inhaled combination therapies in patients with bronchiectasis and airflow obstruction](#)

[Hyo Jin Lee](#)¹, [Jung-Kyu Lee](#)¹, [Tae Yeon Park](#)¹, [Eun Young Heo](#)¹, [Deog Kyeom Kim](#)¹, [Hyun Woo Lee](#)^{2,3}

Affiliations expand

- PMID: 38263115
- PMCID: [PMC10804611](#)
- DOI: [10.1186/s12890-024-02867-4](#)

Abstract

in [English](#), [Panjabi](#)

Background and objectives: Few studies have reported which inhaled combination therapy, either bronchodilators and/or inhaled corticosteroids (ICSs), is beneficial in patients with bronchiectasis and airflow obstruction. Our study compared the efficacy and safety among different inhaled combination therapies in patients with bronchiectasis and airflow obstruction.

Methods: Our retrospective study analyzed the patients with forced expiratory volume in 1 s (FEV₁)/forced vital capacity < 0.7 and radiologically confirmed bronchiectasis in chest computed tomography between January 2005 and December 2021. The eligible patients underwent baseline and follow-up spirometric assessments. The primary endpoint was the development of a moderate-to-severe exacerbation. The secondary endpoints were the change in the annual FEV₁ and the adverse events. Subgroup analyses were performed according to the blood eosinophil count (BEC).

Results: Among 179 patients, the ICS/long-acting beta-agonist (LABA)/long-acting muscarinic antagonist (LAMA), ICS/LABA, and LABA/LAMA groups were comprised of 58 (32.4%), 52 (29.1%), and 69 (38.5%) patients, respectively. ICS/LABA/LAMA group had a higher severity of bronchiectasis and airflow obstruction, than other groups. In the subgroup with BEC \geq 300/uL, the risk of moderate-to-severe exacerbation was lower in the ICS/LABA/LAMA group (adjusted HR = 0.137 [95% CI = 0.034-0.553]) and the ICS/LABA group (adjusted HR = 0.196 [95% CI = 0.045-0.861]) compared with the LABA/LAMA group. The annual FEV₁ decline rate was significantly worsened in the ICS/LABA group compared to the LABA/LAMA group (adjusted β -coefficient=-197 [95% CI=-307--87]) in the subgroup with BEC < 200/uL.

Conclusion: In patients with bronchiectasis and airflow obstruction, the use of ICS/LABA/LAMA and ICS/LABA demonstrated a reduced risk of exacerbation compared to LABA/LAMA therapy in those with BEC \geq 300/uL. Conversely, for those with BEC < 200/uL, the use of ICS/LABA was associated with an accelerated decline in FEV₁ in comparison to LABA/LAMA therapy. Further assessment of BEC is necessary as a potential biomarker for the use of ICS in patients with bronchiectasis and airflow obstruction.

Keywords: Bronchiectasis; Bronchodilator agent; COPD; Exacerbation; FEV₁; Inhaled corticosteroid.

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Conflict of interest statement

The authors declare no competing interests.

All authors declare no conflicts of interest for the present study.

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

SUPPLEMENTARY INFO

MeSH terms, Substancesexpand

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ERJ Open Res

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. 2024 Jan 22;10(1):00403-2023.

doi: 10.1183/23120541.00403-2023. eCollection 2024 Jan.

[Use of infection control measures in people with chronic lung disease: mixed methods study](#)

[Arwel W Jones](#)¹, [Bill E King](#)¹, [Andrew Cumella](#)², [Nicholas S Hopkinson](#)³, [John R Hurst](#)⁴, [Anne E Holland](#)^{1,5}

Affiliations expand

- PMID: 38259806
- PMCID: [PMC10801757](#)
- DOI: [10.1183/23120541.00403-2023](#)

Free PMC article

Abstract

Background: The introduction of community infection control measures during the COVID-19 pandemic was associated with a reduction in acute exacerbations of lung disease. We aimed to understand the acceptability of continued use of infection control measures among people with chronic lung disease and to understand the barriers and facilitators of use.

Methods: Australian adults with chronic lung disease were invited to an online survey (last quarter of 2021) to specify infection control measures they would continue themselves post-pandemic and those they perceived should be adopted by the community. A subset of survey participants were interviewed (first quarter of 2022) with coded transcripts deductively mapped to the COM-B model and Theoretical Domains Framework.

Results: 193 people (COPD 84, bronchiectasis 41, interstitial lung disease 35, asthma 33) completed the survey. Physical distancing indoors (83%), handwashing (77%), and avoidance of busy places (71%) or unwell family and friends (77%) were measures most likely to be continued. Policies for the wider community that received most support were those during the influenza season including hand sanitiser being widely available (84%), wearing of face coverings by healthcare professionals (67%) and wearing of face coverings by the general population on public transport (66%). Barriers to use of infection control measures were related to physical skills, knowledge, environmental context and resources, social influences, emotion, beliefs about capabilities and beliefs about consequences.

Conclusions: Adults with chronic lung diseases in Australia are supportive of physical distancing indoors, hand hygiene, and avoidance of busy places or unwell family and friends as long-term infection control measures.

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Conflict of interest statement

Conflict of interest: Authors disclose the following: leadership or fiduciary role in other board, society, committee or advocacy group, paid or unpaid (A.E. Holland: Thoracic Society of Australia and NZ; N.S. Hopkinson: ASH, Asthma+Lung UK); consulting fees (J.R. Hurst: AstraZeneca, GSK); payment or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events (J.R. Hurst: Boehringer Ingelheim, Chiesi, Sanofi and Takeda); support for attending meetings and/or travel (J.R. Hurst: AstraZeneca); participation on a data safety monitoring or advisory board (J.R. Hurst: AstraZeneca); receipt of equipment, materials, drugs, medical writing, and gifts or other services (J.R. Hurst: Nonin). Conflict of interest: The other co-authors have nothing to declare.

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- [1 figure](#)

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. 2024 Jan 23;9(1):e0048423.

doi: 10.1128/msystems.00484-23. Epub 2023 Dec 22.

[Phenotypes of a *Pseudomonas aeruginosa* hypermutator lineage that emerged during prolonged mechanical ventilation in a patient without cystic fibrosis](#)

[Sophia H Nozick](#)¹, [Egon A Ozer](#)^{2,3}, [Rachel Medernach](#)², [Travis J Kochan](#)¹, [Rebecca Kumar](#)⁴, [Jori O Mills](#)¹, [Richard G Wunderlink](#)⁵, [Chao Qi](#)⁶, [Alan R Hauser](#)^{1,2}

Affiliations expand

- PMID: 38132670
- PMCID: [PMC10804958](#)
- DOI: [10.1128/msystems.00484-23](#)

Free PMC article

Abstract

Hypermutator lineages of *Pseudomonas aeruginosa* arise frequently during the years of airway infection experienced by patients with cystic fibrosis and bronchiectasis but are rare in the absence of chronic infection and structural lung disease. Since the onset of the COVID-19 pandemic, large numbers of patients have remained mechanically ventilated for extended periods of time. These patients are prone to acquire bacterial pathogens that persist for many weeks and have the opportunity to evolve within the pulmonary environment. However, little is known about what types of adaptations occur in these bacteria and whether these adaptations mimic those observed in chronic infections. We describe a COVID-19 patient with a secondary *P. aeruginosa* lung infection in whom the causative bacterium persisted for >50 days. Over the course of this infection, a hypermutator lineage of *P. aeruginosa* emerged and co-existed with a non-hypermutator lineage. Compared to the parental lineage, the hypermutator lineage evolved to be less cytotoxic and less virulent. Genomic analyses of the hypermutator lineage identified numerous mutations, including in the mismatch repair gene *mutL* and other genes frequently mutated in individuals with cystic fibrosis. Together, these findings demonstrate that hypermutator lineages can emerge when *P. aeruginosa* persists following acute infections such as ventilator-associated pneumonia and that these lineages have the potential to affect patient outcomes. **IMPORTANCE** *Pseudomonas aeruginosa* may evolve to accumulate large numbers of mutations in the context of chronic infections such as those that occur in individuals with cystic fibrosis. However, these "hypermutator" lineages are rare following acute infections. Here, we describe a non-cystic fibrosis patient with COVID-19 pneumonia who remained mechanically ventilated for months. The patient became infected with a strain of *P. aeruginosa* that evolved to become a hypermutator. We demonstrate that hypermutation led to changes in cytotoxicity and virulence. These findings are important because they demonstrate that *P. aeruginosa* hypermutators can emerge following acute infections and that they have the potential to affect patient outcomes in this setting.

Keywords: *Pseudomonas aeruginosa*; antibiotic resistance; genomics; hypermutator; virulence.

Conflict of interest statement

The authors declare no conflict of interest.

- [53 references](#)
- [9 figures](#)

SUPPLEMENTARY INFO

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