ADVANCES

in Real-life Respiratory Research

Respiratory Effectiveness Group

The Respiratory Effectiveness Group Newsletter
ISSUE SEPTEMBER 2026

www.regresearchnetwork.org

THE RESPIRATORY EFFECTIVENESS GROUP NEWSLETTER
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EDITORIAL

Joan B. Soriano
REG President

CELEBRATING RESPIRATORY EFFECTIVENESS RESEARCH

Dear colleagues, friends, and assorted honorary night-owls,

If you are reading this, you have already survived the summer heatwaves, the inevitable airport chaos, and—if you are British—at least three separate "barbecue disasters" that were optimistically scheduled despite meteorological evidence to the contrary. Welcome to the September edition of the REG Newsletter.

It feels like only yesterday that I was penning my February missive, and yet here we are again, blinking in the late summer, early autumn light, still recovering from the sheer velocity of our record-breaking REG 2026 Annual Summit last March in Palma de Mallorca. For those of you who were in Palma, you will remember the electric atmosphere, the packed lecture halls, and the valiant attempts of the catering team to keep up with the collective caffeine demand of participants galore. It was, by any metric, a triumph—and at the REG Board of Directors we remain immensely proud of what we achieved together.

But we at REG are not a society that rests on its laurels; or indeed, on anything less than a properly structured, evidence-based seat. The Local and Scientific Committees are already beavering away with Roman fervour to prepare for REG 2027 in the Eternal City. And I do mean fervour—I have it on good authority that our Italian hosts are treating the scientific programme with the same meticulous passion they reserve for espresso and the offside rule. There will be neither bordedom nor pineapple pizza. Yet, expect deeper, extended scientific and business exchanges than ever before, all laser-focused on the single goal that unites us: better outcomes for respiratory patients and lung health worldwide. I have no doubt there will be new collaborations forged, data debated, and the odd surprise or two—because what is a REG Congress without a little theatricality?

Speaking of surprises, I hope the inaugural REG Real-Life Respiratory Award in Palma, so magnificently bestowed upon our esteemed colleague Professor David Price, has inspired you. I do formally encourage you to put your thinking caps on and suggest candidates for our second award. The bar is high, but I know our community is brimming with unsung heroes. Do not be shy and nominate the brilliant, the dogged, and the quietly revolutionary. And yes, there will be other surprises in Rome. I am not at liberty to say more, but if you see me looking smug in Barcelona at this year's ERS, you will know why.

On a more personal note, I must extend my deepest thanks to our former CEO, Michael Walker. Michael, your savoir faire and steady hand made the recent leadership transition look alarmingly easy; a feat akin to conducting an orchestra while riding a unicycle and singing in high pitch. To his successor, Adam Marsh, I say this: despite his blatant youth, Adam brings a wealth of experience and a cascade of breaking, innovative ideas that will propel REG to the next level. He is already reshaping our digital strategy, our engagement models, and REG Working Groups. Please stop by him in Barcelona and greet him with the best of REG smiles; and maybe a sympathetic nod for the sheer volume of handshakes he has ahead of him.

But before Rome, there is Barcelona. I will see many of you at the ERS Congress this September, where our REG team has an extensive slate of professional and academic engagements in the official programme, with Marc Miravitlles as incoming President and Omar Usmani as Science Council Chair. Look for us in the thick of it—debating, networking, and probably defending our position on at least one contentious guideline.

Until then, safe travels, pack a decent pair of walking shoes, and remember that in respiratory medicine, as in life, it is always better to breathe deeply and laugh often.

Last and least, there are things that happen once in a blue moon in the immensity of space within an infinite universe. Yet one happens in summer every four years. After a thrilling World Cup in the US, Canada and Mexico, please share the joy of Spain in having its second, shiny, little star.

See you very soon.

Yours in breath and good humour

Joan B. Soriano
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REG TEAM UPDATE

Adam Marsh
REG CEO

As we approach the end of the summer, I wanted to take this opportunity to share a few reflections as I settle into my first months as Chief Executive of REG.

First and foremost, my sincere thanks to the Board for entrusting me with the leadership of this remarkable organisation. The welcome I have received has been both warm and energising, and I am grateful for the confidence placed in me as we begin this next chapter together. I would also like to extend my deep appreciation to Michael for his exceptional stewardship of REG over the past eight years. His leadership has shaped the organisation we are all so proud of today, and he has been extraordinarily generous with his time and insight throughout the transition.

By way of brief introduction, I am a geologist by training, although my career has been firmly rooted in healthcare since university. Over the past decade I have worked across digital health, market access, strategy, and clinical research—roles that have all, in one way or another, centred on the commercial and translational challenges of improving patient outcomes. Most recently, I served as Head of Commercial and Partnerships at Optimum Patient Care Global, where I also co-led the UK business.

What drew me to REG is also what makes it truly unique: the calibre and breadth of its collaborators; its international, systemagnostic perspective; its role as a forum for rigorous debate and the exchange of cutting-edge ideas; and its shared commitment to a clear mission and vision. REG is not simply a convening body—it has the capability to support the full lifecycle of research, from concept and design through data generation, analysis, and dissemination.

I am very much looking forward to getting to know more of you in the months ahead as we build on the strong foundations already in place and shape the future of REG together.

I will be at the European Respiratory Society Congress in Barcelona in a couple of weeks. If you spot me, please feel free to pop over and say hello.

Transforming Respiratory Care

Our ambition is to transform Respiratory and Immunology care for patients, moving beyond symptom control to disease modification, remission and, one day, cure.

AstraZeneca

Respiratory Effectiveness Group

THE RESPIRATORY EFFECTIVENESS GROUP

REG SUMMIT 2026

19-21 March, Palma de Mallorca, Spain

REG SUMMIT 2026:

ADVANCING REAL-WORLD RESPIRATORY RESEARCH IN PALMA DE MALLORCA

ACSM – AUGUST 2026

The 11th Respiratory Effectiveness Group (REG) Summit brought together the global respiratory community in Palma de Mallorca, Spain, from 19 to 21 March 2026 for three days of scientific exchange, collaboration and debate. As the premier meeting dedicated to real-world research in respiratory medicine, the Summit once again demonstrated the growing influence and international reach of the REG network.

A key milestone for this year's meeting was the continued strength of attendance. REG Summit 2026 welcomed 124 participants, maintaining the high levels of engagement seen in recent years and building on a long-term growth trend that has seen registrations increase substantially from the early years of the Summit. Attendance has grown from just 74 delegates in London in 2017 to well over 120 today, confirming the Summit's position as a leading forum for respiratory effectiveness research.

Equally impressive was the breadth of international representation. Participants travelled from 35 countries around the world, highlighting the truly global nature of the REG community. Faculty members represented 14 countries, while submitted abstracts originated from researchers across 10 nations. We are looking forward to seeing if we can grow this yet further for 2027.

The scientific programme reflected the diversity and ambition of contemporary respiratory research. Across 10 working groups, eight scientific sessions, two Pro & Con debates and an Early Career Travel Grant session, attendees explored the latest developments in real-world evidence, respiratory disease management and implementation science. A total of 26 abstracts were presented, showcasing innovative research from around the world.

Several themes emerged as particularly influential throughout the meeting.The first was the growing importance of environmental and planetary health in respiratory medicine. Sessions examining indoor air pollution, pollen exposure, nanoplastics, air quality and climate-related respiratory risks generated significant discussion and reflected increasing recognition of environmental determinants of lung health. Delegate feedback identified the environment session as one of the most memorable elements of the programme, with many attendees highlighting its relevance to future clinical practice and research.

A second major theme was the continued evolution of precision medicine and biologic therapies. Discussions explored asthma remission, optimisation of biologic treatment, severe asthma management, eosinophilic COPD and the role of biomarkers in guiding care. The International Severe Asthma Registry (ISAR) session continued to attracted considerable interest, while the debate on whether biologics in asthma are disease-modifying exemplified the rigorous scientific discussion for which the REG Summit is known.

A particular highlight was the Early Career Travel Grant Winners Oral Presentation Session, which showcased the next generation of respiratory researchers. Congratulations to the six award winners:

Their presentations covered topics ranging from biologic therapy and severe asthma to airway obstruction, eosinophilic COPD and the impact of environmental factors on respiratory health, demonstrating both scientific excellence and the bright future of respiratory research. We look forward to welcoming you to future meetings where you can update us on your ongoing research.

EARLY CAREER TRAVEL GRANT WINNERS ORAL PRESENTATION SESSION

Paper Title	Author	Country
Impact of response to biologics on FEV_1 decline in severe asthma patients	Mrs. Laura Arias Zas	Spain
Accuracy of FEOS rate to assess response to biologics in severe asthma patients. Comparison with the FEOS score.	Ms. Iria Veiga Teijeiro	Spain
The Effect of Sedative and Opioid Medications on Respiratory Outcomes in Patients with Asthma	Dr. Anna Meffen	United Kingdom
Combined Large and Small Airway Obstruction Is Associated With Increased Exacerbation Frequency and Poorer Symptom Control in Persistent Asthma	Dr. Rory Chan	United Kingdom
Clinical, Functional and Inflammatory characteristics of Eosinophilic Severe COPD: Real-World Data from the SPOCCAT Registry	Ms. Ane Lopez-Gonzalez	Spain
Impact of ambient air pollution and relative humidity on multimorbidity costs in patients with chronic airway disease	Dr. Laura Huey Mien Lim	United Kingdom

The programme also highlighted the increasing role of real-world evidence, digitalisation and implementation research in shaping respiratory care. Sessions addressing data standards, multimorbidity, digital health and translating evidence into practice reinforced REG's long-standing commitment to ensuring that research findings have meaningful impact on patient outcomes.

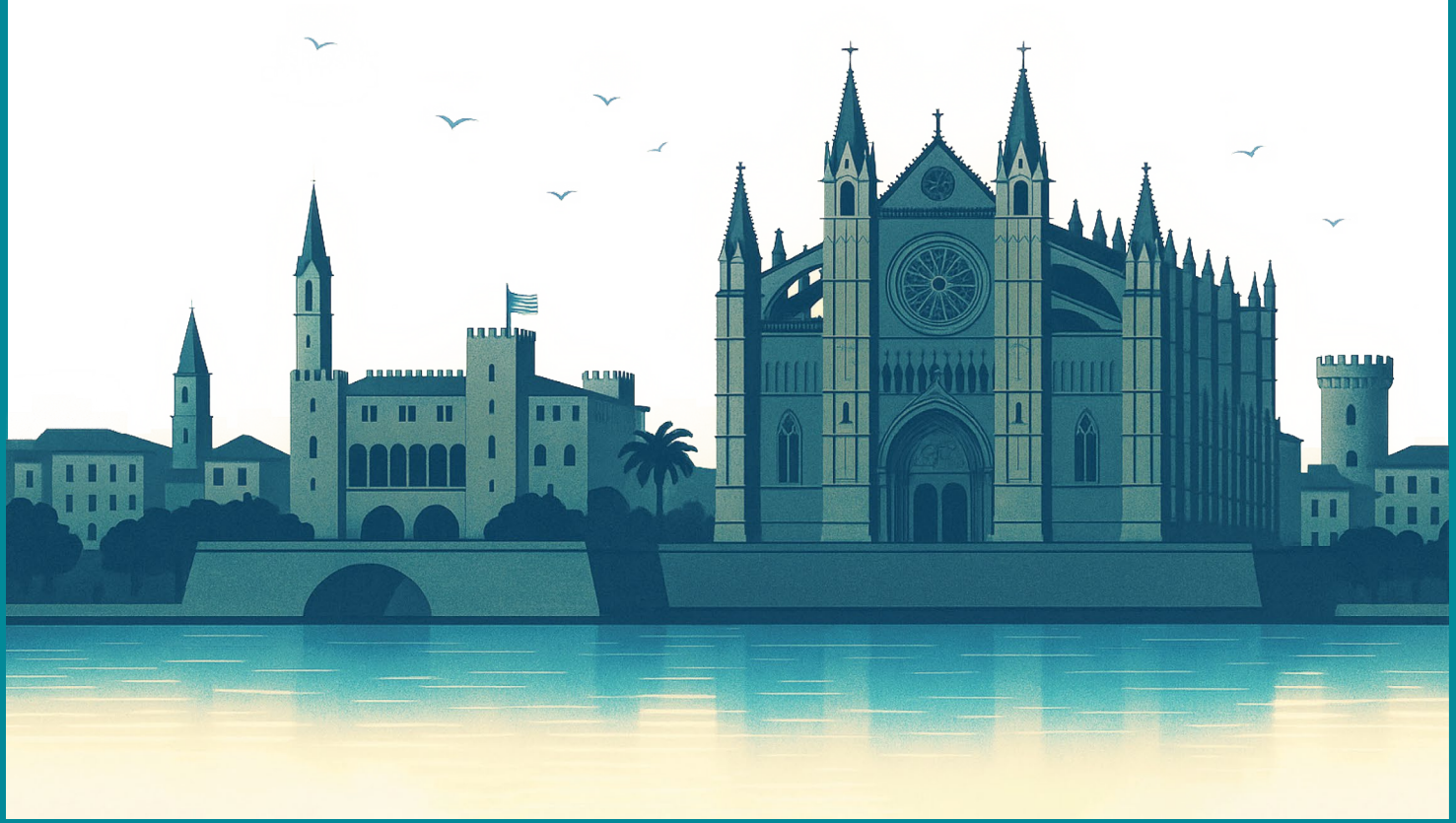
Another important moment at the Summit was the presentation of the inaugural REG Real-Life Respiratory Research Award to Professor David Price. The award recognises outstanding contribution to real-world evidence and comparative effectiveness research in respiratory medicine, and provided a fitting opportunity to celebrate Professor Price's exceptional leadership, vision and enduring impact on the field.

The success of REG Summit 2026 would not have been possible without the generous support of its sponsors and contributors. REG extends its sincere gratitude to all partner organisations whose commitment helps make this unique forum possible. Special thanks are due to the Summit's sponsors and contributors, including Bristol Myers Squibb, Menarini, Teva, Verona Pharma and Chiesi, as well as all REG corporate supporters for their continued investment in advancing respiratory research and education.

Feedback from attendees underlined the event's impact. The overwhelming majority of respondents rated the Summit as useful for their professional activities, praised the quality of the programme and organisation, and stated that they would recommend the meeting to colleagues. Networking opportunities, interactive discussions and the high calibre of speakers were consistently cited among the most valuable aspects of the event.

As REG looks ahead, preparations are already underway for the 2027 REG Summit in Rome. Building on the momentum generated in Palma de Mallorca, next year's meeting promises another outstanding opportunity to engage with international experts, discover cutting-edge research and strengthen collaborations across the respiratory community.

We encourage all members of the REG network, collaborators and colleagues to mark their calendars and register early for Rome 2027. If the success of Palma is any indication, the next REG Summit will be another unforgettable gathering of the world's leading respiratory researchers and clinicians.



REG PUBLICATIONS IN 2026

It's always encouraging to see the breadth of work emerging from across REG's working groups. In 2026, our publication portfolio continues to grow, with two papers already published (see below for more details), and a further two manuscripts submitted and under review:

- Choosing the right respiratory database for the right research question – Database and Coding Working group
- Economic Impact of Time to Biologic Initiation in Severe Asthma Worldwide: A Cost Effectiveness Analysis – Cost Effectiveness Working Group

SUBOPTIMAL PEAK INSPIRATORY FLOW, COPD EXACERBATIONS, HOSPITALISATIONS, AND DISEASE BURDEN: A LONGITUDINAL FOLLOW-UP IN A MULTICENTRE REAL-WORLD STUDY

REFERENCES: Valeria Perugini, Chin Kook Rhee, Ji-Yong Moon, Tiew Pei Yee, Seung Won Ra, Pietro Pirina, Kwang Ha Yoo, Bernardino Alcázar Navarrete, Caroline Gouder, Virginia Almadana Pacheco, Annie NavarroRolon, Matevž Harlander, Thérèse S. Lapperre, Chee Hong Loh, Naval Elsa, Marc Miravitlles, Omar Usmani


ERJ open research
THE BEST IN OPEN ACCESS BASIC, TRANSLATIONAL & CLINICAL RESPIRATORY RESEARCH
Early View
Suboptimal Peak Inspiratory Flow, COPD Exacerbations, Hospitalisations, and Disease Burden: A Longitudinal Follow-Up in a Multicentre Real-World Study

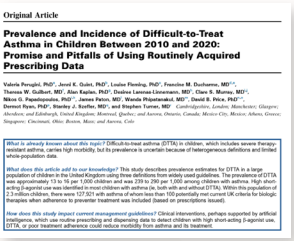
ERJ Open Research 2026 00343-2026

This longitudinal multicentre real-world study followed 415 patients with COPD across 17 centres in Europe and Asia to assess whether suboptimal peak inspiratory flow (PIF), measured against the resistance of a patient's prescribed inhaler, was associated with poorer clinical outcomes. Approximately 29% of patients had suboptimal PIF at both 3- and 6-month follow-up, indicating that impaired inspiratory flow is a persistent characteristic rather than a transient finding. Patients with suboptimal PIF had significantly worse lung function, were more likely to be female and current smokers, and experienced a substantially higher risk of both moderate and severe COPD exacerbations. By six months, they also showed increased hospitalisation rates and greater use of rescue and intensive therapies, including oral corticosteroids and triple therapy. Importantly, the association between suboptimal PIF and adverse outcomes remained significant after adjustment for demographic factors, lung function, symptom burden, and inhaler type, suggesting PIF is an independent marker of risk. The authors conclude that routine assessment of PIF could help identify patients at increased risk of poor outcomes, support more personalised inhaler selection, and potentially improve COPD management through optimisation of inhaler technique and device choice.

Online Link - click here (1)

PREVALENCE AND INCIDENCE OF DIFFICULT-TO-TREAT ASTHMA IN CHILDREN BETWEEN 2010 AND 2020: PROMISE AND PITFALLS OF USING ROUTINELY ACQUIRED PRESCRIBING DATA

REFERENCES: Valeria Perugini, Jenni K. Quint, Louise Fleming, Francine M. Ducharme, Theresa W. Guilbert, Alan Kaplan, Desiree Larenas-Linnemann, Clare S. Murray, Nikos G. Papadopoulos, James Paton, Wanda Phipatanakul, David B. Price, Dermot Ryan, Stanley J. Szefler, and Stephen Turner


Original Article
Prevalence and Incidence of Difficult-to-Treat Asthma in Children Between 2010 and 2020: Promise and Pitfalls of Using Routinely Acquired Prescribing Data

J Allergy Clin Immunol Pract. 2026 Jul 23:S2213-2198(26)00601-X.

This population-based UK study analysed prescribing records from more than 2.3 million children between 2010 and 2020 to estimate the prevalence and incidence of difficult-to-treat asthma (DTTA) using three major international guideline definitions. The authors found that DTTA appeared common when identified from prescribing data alone, affecting approximately 13-16 per 1,000 children in the general population and around 24-30% of children with asthma, although prevalence declined over the study period. However, once adherence to inhaled corticosteroids (ICS) was considered, the number of children truly meeting criteria for severe difficult-to-treat disease fell dramatically, with fewer than 100 children in the entire cohort potentially fulfilling current UK criteria for biologic therapies. High short-acting beta-agonist (SABA) use was extremely common, occurring in 68% of children with asthma, highlighting substantial concerns around asthma control and treatment optimisation. The authors conclude that routine prescribing data can be a valuable tool for identifying children who may require specialist review, but that prescribing data alone can substantially overestimate the burden of DTTA because it cannot reliably distinguish poor adherence, prescribing behaviour, or genuine severe disease. They suggest that integrating prescribing data, adherence monitoring, and potentially AI-enabled surveillance could help identify high-risk children earlier and improve asthma outcomes.

Online Link - click here (2)

CALL FOR NOMINATIONS
REG REAL-LIFE RESPIRATORY AWARD

REG is once again delighted to invite nominations for the REG Real-Life Respiratory Research Award, which recognises outstanding contributions to real-world evidence and comparative effectiveness research in respiratory medicine.

We welcome nominations of individuals who have demonstrated leadership, innovation and measurable impact on patient care, clinical practice, health policy, or research methodology. Nominations are open internationally and both REG and non-REG collaborators are eligible.

The recipient will be recognised at the REG Summit in Rome, and invited to deliver an honorary lecture highlighting their contribution to the field.

Nominations should include a brief statement describing the nominee's achievements and impact.

Please pass your nominations to Adam Marsh – **adam@regresearchnetwork.org**

Let's celebrate more than a decade of real-world respiratory impact by honouring those who made it possible!

WORKING GROUP UPDATE

ADHERENCE WORKING GROUP

Transitions of inhaled medications and devices in asthma: a real-life assessment (TIDARA) A retrospective OPCRD study investigating treatment transitions and inhaler/device pathways in asthma prior to initiation of emerging therapies.

Development of the TIDARA study is progressing well, with the proposal and budget currently being finalised. Discussions with potential sponsors are planned following completion of the proposal, and the study is expected to generate several scientific publications while providing valuable insights into real-world treatment pathways.

ALLERGY WORKING GROUP

The proposal on missed opportunities and resource expenditure in allergen immunotherapy in the UK (AIMORE-UK) has received positive feedback from several AIT companies. It is now being revised to reduce project costs and explore the potential to broaden the scope to include data from additional countries. The group is also developing new project proposals on the use of biologic treatments in patients with mild asthma and severe allergic rhinitis, and on the health and financial implications of misdiagnosing chronic rhinitis.

CHILD HEALTH WORKING GROUP

Severe asthma in children

A retrospective OPCRD study describing difficult-to-treat asthma in children using contemporary guideline definitions.

We are delighted to share that this work has now been accepted for publication in JACI: In Practice. The study provides contemporary real-world evidence on difficult-to-treat asthma in children with asthma and represents an important milestone for the Child Health WG.

COPD WORKING GROUP

Triple therapy in COPD

An international retrospective, multi-database cohort study evaluating the impact of triple therapy following hospitalisation for a severe COPD exacerbation.

The Triple Therapy in COPD study continues to make excellent progress and now includes 23 participating sites across the international network. Data extraction is actively underway, with dataset submissions anticipated through early Q4 2026. Following completion of data collection, the study team will begin central data harmonisation and analysis, with one or more scientific publications planned in 2027.

Peak inspiratory flow (PIF) in COPD

An international prospective observational study investigating the relationship between peak inspiratory flow and clinical outcomes in patients with COPD.

The follow-up manuscript from the PIF in COPD study has now been accepted for publication in ERJ Open Research. The study provides further evidence linking suboptimal peak inspiratory flow with exacerbations, hospitalisations and disease burden in COPD and may also support the development of a future position paper.

Patient characteristics and health outcomes associated with prompt or delayed use of extrafine BDP/FF/G following a COPD exacerbation (PRIMED)

An international retrospective, multi-database cohort study evaluating the impact of prompt versus delayed initiation of extrafine triple therapy following a COPD exacerbation.

Development of the PRIMED study is progressing well, with the proposal and budget currently being finalised. Feasibility assessments are ongoing across the COPD network, with 18 international sites currently participating. Sponsor discussions are planned following completion of the proposal. The study has the potential to establish a large multinational collaboration and generate important real-world evidence on treatment timing following COPD exacerbations.

The 3MsRC study: re-calibration of the modified medical research council dyspnoea scale: an international, multi-condition, psychometric re-assessment

An international psychometric study to re-evaluate the modified Medical Research Council (mMRC) dyspnoea scale.

Development of the 3MsRC study is underway, with the proposal currently being refined following a productive brainstorming session involving members of the COPD WG. The project aims to establish an international collaboration to reassess and recalibrate the mMRC dyspnoea scale using modern psychometric approaches, with the goal of improving breathlessness assessment across chronic cardiorespiratory diseases.

COST EFFECTIVENESS WORKING GROUP

The AstraZeneca-funded project, "A Global Evaluation of the Economic Impact of Time to Initiation of Biologic Treatment of Severe Asthma Patients," assessed the national-level cost-effectiveness of biologic treatment and compared the economic impact and lifelong disease burden associated with treatment initiation timelines across countries. The project has now concluded. A poster was presented at the REG Summit, and another abstract has been submitted to ISPOR Europe and has been accepted for a poster presentation at ISPOR Europe in November 2026. A manuscript has also been submitted to JACI: Global.

DATABASES AND CODING WORKING GROUP

Choosing the right respiratory database for the right research question
A REG position paper proposing a practical framework to support the selection of respiratory databases according to the research question.
The manuscript is currently being revised following reviewer feedback, with additional respiratory-specific examples and practical guidance being incorporated prior to resubmission for publication.

ENVIRONMENT, EPIDEMIOLOGY AND AIRWAYS WORKING GROUP

The group is developing project ideas focused on small airways dysfunction (SAD) and the impact of pollution on chronic respiratory diseases.

ILD WORKING GROUP

The group has developed the flagship ILD project proposal, "Towards Standardisation in IPF/PPF Registry Data: A Global Initiative", which has been divided into three subprojects:

Project 1: "Identifying Key Variables through a Global Prioritisation Task".
Project 2: "Identifying Data Elements for Disease Management".
Project 3: "Development of a Global Composite Staging System for IPF / PPF Disease Progression".

The Project 1 proposal has been shared with funders, and funding has been secured for 50% of the budget. The proposal has also been submitted to a second funder to secure the remaining funding, which has been verbally confirmed.

The group is also developing a proposal to study acute exacerbations (AEs) in patients with idiopathic pulmonary fibrosis (IPF). The project aims to create prognostic and phenotypic models that support therapeutic development, inform treatment pathways, and evaluate the health-economic impact of AEs in IPF.

The group has also supported, as a collaborator, an ILD-Delphi study that aimed to identify centres worldwide where genomic testing is offered for ILD cases, characterise current practice, and reach consensus on the utility of genomic testing and family screening for early ILD diagnosis. Data collection has now been completed, and a conference abstract has been submitted.

The group has developed a proposal on the genetic determinants of pulmonary hypertension in interstitial lung disease: uncovering pathways for early detection. The proposal and supporting materials are being updated while discussions with prospective funders continue.

SEVERE ASTHMA AND BIOMARKERS WORKING GROUP

Members of the Biomarkers and Severe Asthma WG continue to contribute actively across several REG initiatives, particularly within the Adherence and Child Health WGs. At the REG Summit 2026, the group discussed new collaborative research ideas, including contributions to the development of the TIDARA study, reflecting the increasingly cross-working group approach to generating innovative real-world evidence.

TECHNOLOGY WORKING GROUP

The group has developed a new proposal for a 1000 Minds study exploring the current use and perceptions of oscillometry and spirometry. Positive feedback has been received from potential funders, and the proposal is being finalised before it is shared more widely.

VACCINES WORKING GROUP

The proposal for "Vaccine Uptake and Clinical Outcomes in High-Risk Chronic Respiratory Patients: A Retrospective Database Study" has been submitted to prospective funders and is currently awaiting a decision.

CLINICAL MANAGEMENT PERSPECTIVE

Filipe Froes, MD, PhD
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PhD in Public Health and member of the Portuguese Council of Public Health
Visiting Professor at the Faculty of Medicine of the University of Coimbra, Portugal

WE URGENTLY NEED TO IMPLEMENT LIFELONG IMMUNIZATION

The well-known quote, "Take care of your body, it is the only place you have to live", by the American author Jim Rohn, who died in 2009 at the age of 79, underscores the importance of maintaining good health and, particularly in older adults, promoting healthy aging.

Vaccination is one of humanity's greatest achievements. It enabled the eradication of smallpox and played a decisive role in controlling the COVID-19 pandemic. Routine immunization programs were established in the second half of the twentieth century, initially focusing on children. The World Health Organization estimates that between 1974 and 2024, vaccination prevented 154 million child deaths, an impact unmatched by any other health intervention. The challenge now is to extend this success beyond childhood and implement immunization strategies that protect individuals throughout life.

In the prevention of adult respiratory infections, particular attention should be given to vaccines against influenza, COVID-19, respiratory syncytial virus, and Streptococcus pneumoniae. A study published in Eurosurveillance reported that between 2009 and 2013 influenza ranked first among 31 infectious diseases evaluated in terms of disability-adjusted life years (DALYs) in European Union countries. In 2025, the European Medicines Agency authorized the first pneumococcal vaccine specifically developed for adults, marking an important milestone in adult vaccination. More recently, The Lancet published a comprehensive analysis on the safety and efficacy of mRNA vaccines against COVID-19, reinforcing evidence of their benefits across all population groups, including children, and pregnant women, while also highlighting the potential of mRNA technology in oncology and autoimmune diseases.

The field of adult immunization has advanced significantly in recent years. Vaccines should be regarded as an investment in quality of life and in the sustainability of healthcare systems. Integrating lifelong immunization into routine clinical practice is now an essential priority.

WHAT REG MEANS TO ME

My first REG meeting was the Annual Summit in the vibrant city of Palma de Mallorca in March 2026, which I was fortunate to attend after being awarded an early career travel grant. This followed the submission of a scientific abstract based on some of our exploratory work from the Oscillometry Asthma Registry (OAR). During the meeting, I attended both the COPD and the Biomarkers & Severe Asthma working group sessions. These were a great opportunity to hear about the progress of ongoing collaborative projects and to brainstorm ideas for future research.

What made the meeting particularly memorable was how welcoming everyone was. People were genuinely receptive to my suggestions, which led to productive conversations both during the formal sessions and more informally outside of them. The REG meeting also felt close-knit enough to make it easy to meet and speak with more experienced researchers, which can be much harder at larger conferences such as ERS. As a direct result of attending the Annual Summit, I am now actively contributing clinical data to an upcoming multicentre project examining real-world clinical outcomes following acute exacerbations of COPD.

Through the REG group, I also had the opportunity to take part in a Delphi consensus with the International Cardiology and Respiratory Alliance (ICRA) group, focused on developing a comprehensive catalogue of data standards for multimorbid COPD. Looking ahead, I am currently recruiting for a PhD student, and I would definitely encourage them to submit their work to future REG meetings. It is a fantastic way to build connections, share ideas and open up opportunities for collaboration.

DR. RORY CHAN,
Scottish Centre for Respiratory Research
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Ninewells Hospital
Dundee, United Kingdom

My engagement with the Respiratory Effectiveness Group began as a natural extension of a question that sits at the heart of my clinical and research work: what actually happens to patients with interstitial lung diseases in the real world, beyond the carefully controlled boundaries of a randomised trial?

For those of us working in interstitial lung diseases (ILD), the gap between trial populations and the patients we see in clinic can be particularly wide. Patients are older, carry multiple comorbidities, and often present at stages of disease that trial protocols would exclude. REG offered me, from the outset, a community that takes this challenge seriously, one that is rigorous in its methodology yet grounded in clinical reality.

What has distinguished REG in my experience is its ability to bring together clinicians, scientists, and industry partners in a way that is genuinely collaborative rather than transactional. Ideas raised in a working group session find their way into study designs that are clinically meaningful. Discussions that begin over coffee evolve into publications that influence practice. In the field of ILD, where evidence has historically been sparse and treatment decisions difficult, this kind of network-driven, real-life research is not merely useful; it is essential.

I have also been struck by REG's commitment to nurturing early-career researchers. The structured mentorship and international exposure available through REG are invaluable for young clinician-scientists entering a complex and rapidly evolving field. Through my laboratory of Molecular and Cellular Pneumonology, the ILD unit and the clinical trials department which I am leading, my team see directly how much this type of collaborative platform means to the next generation. Moreover, it was such a pleasure and privilege to chair the ILD session at this year's annual conference and have the opportunity to meet in person not only my ILD colleagues but also to interact with colleagues from other working groups such as Severe Asthma and COPD. At last but not least, we presented two posters to emphasize to use of biologics in EGPA in real life in our center and the development of PROs questionnaires in collaboration with Social Medicine Department of School of Medicine, University of Crete.

REG continues to grow in ambition and scope, and I am proud to be part of that journey.

PROF. KATERINA ANTONIOU
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University Hospital of Heraklion (PAGNI)
Head of Molecular & Cellular Pneumonology Laboratory
School of Medicine, University of Crete Heraklion, Crete, Greece

WHAT REG MEANS TO ME

I first learned about the Respiratory Effectiveness Group (REG) through Dr. Job van Boven at an international COPD modeling workshop and was later invited to join by my long-time colleague, Dr. Brett McQueen. Since joining REG and the Cost-Effectiveness Working Group in 2020, I have gained valuable insights into the clinical and economic value of respiratory treatments across diverse healthcare systems and patient populations. I joined the group at the beginning of the pandemic and was grateful for Dr. Graham Lough's commitment to keep us connected virtually as we all adjusted to our evolving work environments.

My involvement with REG has been primarily through the economics and cost-effectiveness activities of the Working Group, where I have greatly appreciated the opportunity to connect with colleagues from different countries and disciplines. While my past work was primarily focused on populations in the United States, through this group, I have learned more about how respiratory care is delivered across country settings and how evidence can be used to support better decision-making for patients, clinicians, and health systems globally.

Through my involvement in the Time to Biologics project, it has been especially meaningful to contribute to evidence that may help guide interventions aimed at reducing treatment delays and improving patient outcomes globally. This study demonstrated that even modest delays in biologic initiation can lead to measurable negative impacts on both health and economic outcomes for patients with severe asthma.

An unexpected and rewarding aspect of REG has been the opportunity to make new connections for activities outside of REG, for example, journal peer review and panel participation. For me, REG represents a unique combination of scientific collaboration, international perspective, and a shared commitment to improving respiratory health through real-world evidence.

JULIA F. SLEJKO, PHD
Associate Professor
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I started my career as a nurse before gradually transitioning into the field of respiratory research. Following several years in academia, I moved into the pharmaceutical industry and now work as a Clinical Trial Liaison at Vicore Pharma.

Vicore Pharma is a Swedish clinical-stage biopharmaceutical company developing an angiotensin II type 2 receptor agonist, buloxibutid, for the treatment of idiopathic pulmonary fibrosis (IPF). Encouraging results from the Phase 2a AIR trial have supported progression to the ongoing global Phase 2b ASPIRE study, which is designed to further evaluate the disease-modifying potential of buloxibutid.

Working in this rapidly evolving field, staying up to date with emerging scientific and clinical advances has been essential. In this context, the IPF/ILD Working Group, led by Pilar Rivera-Ortega, has been a particularly valuable resource. The group's publication, "The Interstitial Lung Disease Patient Pathway: From Referral to Diagnosis" (ERJ Open Research, 2025), provides clear, concise, and up-to-date insights into clinical pathways, the patient journey, and current research priorities within this therapeutic area.

At the most recent congress in Palma de Mallorca, an afternoon session was dedicated to Working Group initiatives. This provided an opportunity to engage in discussions around the standardisation of IPF/PPF registry data and the identification of core common data elements. It also offered first-hand insights into emerging research, including efforts to identify genetic variants associated with pulmonary hypertension in patients with interstitial lung disease. In addition, updates were shared on advances in genomic testing and screening approaches aimed at facilitating earlier diagnosis of ILD.

For an emerging biopharmaceutical company, forums such as REG offer valuable access to cutting-edge scientific developments, alongside the opportunity to engage directly with leading experts in respiratory medicine.

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INTERNATIONAL SEVERE ASTHMA REGISTRY

ISAR Country Updates

We celebrate the **International Severe Asthma Registry** (ISAR)'s recruitment of **38,000+ severe asthma patients** from **32 countries**, with data now representing over **137,000** patient years. ISAR continues to make an impact on severe asthma research, with the achievement of **42** publications and **71** abstracts and posters. We thank all our ISAR collaborators for their continued contributions!

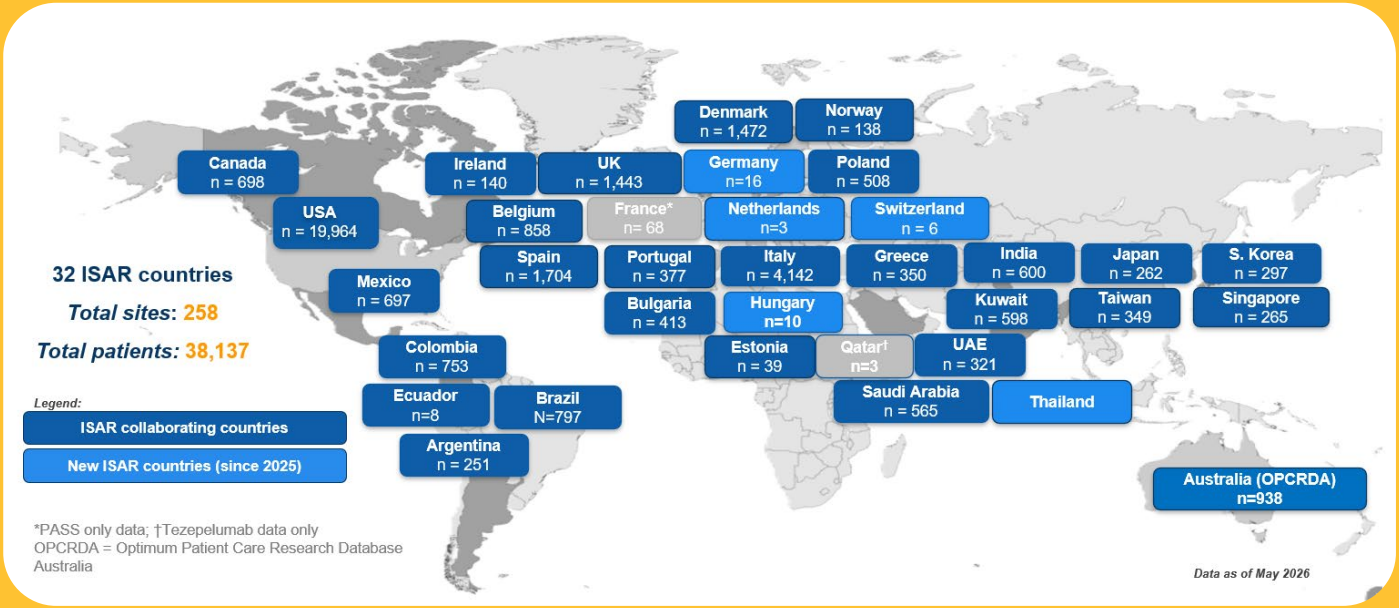


Figure: ISAR participating countries (2017 – today)

Upcoming ISAR Event 2026

ERS CONGRESS | 2026
5-9 September | Barcelona, Spain

European Respiratory Society (ERS) Congress

Barcelona, Spain
5-9 September 2026

ISAR Abstracts Accepted at ERS 2026

Oral presentation

- **SHINE II**: Predictors of relapse at 24 months among ISAR patients in remission after 12 months on biologics

Posters

- **ENLIGHTEN:** Assessment of quality improvement impact on long-term oral corticosteroid (LTOCS) use in ISAR
- **SHINE I**: Relapse among International Severe Asthma Registry patients in remission 12 months after initiating biologics
- **MOONLIGHT I:** ICS, SABA and triple therapy patterns of use following biologic initiation in severe asthma: real-world evidence from ISAR and OPCRD
- **MOONLIGHT II:** Predictors of inhaled corticosteroid, SABA and triple-therapy reduction following biologic initiation in severe asthma: real-world evidence from ISAR and OPCRD
- **FLAME:** Association between clinical and biological response to anti-IL5/5R biologic treatments in severe asthma

Upcoming ISAR Event 2026

Asian Pacific Society of Respirology (APSR) Congress

Penang, Malaysia

19-22 November 2026

ISAR's **Registry-driven Data Quality Improvements** project findings have been submitted to APSR, more updates to come soon!
Abstract Title: Registry-driven improvement in data collection quality to enhance clinical and research impact: insights from the International Severe Asthma Registry (ISAR) in East and Southeast Asia (SEA DQ)

ISAR in 2026: Publications

Since January 2026, ISAR has published **4** articles and **2** articles in press. To view ISAR's publications and study slide decks, please visit the **ISAR website**.

Guida G., et al.
"Longitudinal observation of severe asthma comorbidities and oral corticosteroids use from SANI and ISAR registries"
World Allergy Organ J

Full Article

Key Findings: Severe asthma patients in Italy had higher prevalence of T2-related comorbidities and some OCS-related comorbidities than in ISAR globally.

Larenas-Linnemann D., et al.
"Severe asthma patients' characteristics in Mexico versus International Severe Asthma Registry (ISAR) Global"
Curr Allergy Asthma Rep

Full Article | Press Release | Slide Deck

Key Findings: Severe asthma patients in Mexico had higher prevalence of T2 comorbidities, lower prevalence of OCS-related comorbidities and higher rate of biologic use than in ISAR globally.

Chen W., et al.
"Development and validation of the Risk of Exacerbation in Severe Asthma (RESA) model"
J Allergy Clin Immunol Pract

Full Article | Press Release | Slide Deck

Key Findings: The Risk of Exacerbation in Severe Asthma (RESA) model uses 11 predictors to estimate exacerbation risk, highlighting the value of real-world data.

ISAR in 2026: Publications

Kallieri M., et al.
"Geographical variability in severe asthma: comparison of patients' characteristics between national, regional and international cohorts in ISAR"
J Asthma
Full Article | Press Release | Slide Deck

Key Findings: Severe asthma patients in Greece had higher prevalence of allergic rhinitis and osteoporosis vs. Southern Europe and the global ISAR cohort.

Canonica G. W., et al.
"Assessing the impact of earlier initiation of biologics on clinical remission and other outcomes in a global real-life severe asthma cohort from CHRONICLE, ISAR and OPCRD" (GLEAM I)
CHEST
In Press

Key Findings: The odds of achieving clinical remission, reducing exacerbation rate and OCS use, having better asthma control and improving lung function post-biologic were most likely in those with reduced time-to-biologic initiation from evidence of high-risk and severe asthma.

Hansen S., et al.
"Association of easier biologic access with remission and other clinical outcomes in severe asthma: a global real-world study" (GLEAM II)
J Allergy Asthma
In Press

Key Findings: Easier access to biologics for patients with severe asthma, a prerequisite for shorter time-to-initiation of biologic therapies, was associated with a greater probability of achieving clinical remission and other key asthma outcomes

ISAR in 2026: Abstracts

Since January 2026, ISAR has **5** abstracts presented. To view ISAR's abstracts, please visit the please visit the **ISAR website**.

Leszczynska E., et al.
"Patient characteristics and treatment patterns in adults with severe asthma in Poland (POLSAR): a retrospective, single-center real-world cohort from ISAR"
Poster presentation at EAACI 2026

Key Findings: Biologic-eligible patients represented a high-burden, clinically advanced severe asthma population. Multimorbidity and unified airway disease features were common. Earlier referral and optimized access to biologics may reduce disease and OCS burden.

ISAR in 2026: Abstracts

Tran T. N., et al.
"Remission after biologic therapy initiation in patients with severe asthma: An evaluation of up to 5 years of follow-up in the International Severe Asthma Registry (SPOTLIGHT I)" Oral Presentation at ATS 2026
Am J Respir Crit Care Med, 2026

Abstract

Key Findings: Remission status following biologic therapy initiation in patients with severe asthma who met remission criteria in the first year was relatively stable over time, irrespective of the criteria used to assess remission status.

Scelo G., et al.
"Long-term clinical impact of 12-month remission after biologic therapy in patients with severe asthma (SPOTLIGHT II)"
Am J Respir Crit Care Med, 2026

Abstract

Key Findings: Among patients with severe asthma receiving biologic therapy, achieving remission within the first year is associated with clinically important improvements in asthma-related outcomes sustained up to 5 years.

Bourdin A., et al.
"Association between clinical and biological response to anti-IL5/5R biologic treatments in severe asthma (FLAME)"
Respiratory Effectiveness Group (REG) Newsletter
Sep 2026 issue, In Press

Key Findings: Reductions in T2 biomarkers after anti-IL5/5R initiation were associated with reduced exacerbations and improved lung function.

Lough G., et al.
"Impact of Delayed Biologic Initiation on Clinical Outcomes and Lifetime Health Losses in Severe Asthma Worldwide"
Respiratory Effectiveness Group (REG) Newsletter
Sep 2026 issue, In Press

Key Findings: Later initiation of biologics is associated with a higher exacerbation burden and meaningful long-term health losses, underscoring the need for earlier referral, clearer escalation triggers, and service pathways that support timely biologic access.

ISAR in 2026: Events

Respiratory Effectiveness Group (REG) Summit
Palma de Mallorca, Spain
19 – 21 March 2026

Highlights:

- Over 40 collaborators attended ISAR events in person and online. 23 country meetings were held, and 1 ISAR poster (FLAME) was presented.
- ISAR Session: The presentations showcased a transformative shift in severe asthma management, focusing on remission as a treatment goal, earlier biologic access, relapse prevention, and reducing long-term OCS exposure.
- ISAR meetings: Highlights of ISAR's research projects (SPOTLIGHT, SHINE, GLEAM, FLAME and ENLIGHTEN) were shared. Future opportunities for ISAR were explored, including Centres and Networks of Excellence.

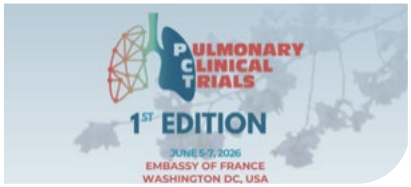
ATS 2025

American Thoracic Society (ATS) Congress
Orlando, Florida
15-20 May 2026

Highlights:

- Over 20 global collaborators attended ISAR events in person.
- ISAR's impact on advancement to remission-focused research was demonstrated through the oral and poster presentations of SPOTLIGHT.
- Professor David Price additionally presented 'The role of biologics in asthma remission', underscoring the importance of setting a higher bar in asthma care towards the goal of remission.
- ISAR Industry Symposium: Attended by six pharmaceutical companies, ISAR's research achievements were highlighted and collaboration opportunities identified through exploring our real-world datasets, impact on practice change, and potential for clinical trial recruitment.
- Exciting initial results were shared at the working groups for the latest prioritized ISAR research studies GLOW and GLISTEN, aiming to understand patterns in biologic use and which domains of remission drive long-term clinical outcomes.
- ISAR's achievements and ideas for its long-term sustainability were discussed.
- The finalised results for SPOTLIGHT and GLEAM, as well as latest developments for FLAME and ENLIGHTEN, were shared at the research updates meeting.

ISAR in 2026: Events



Pulmonary Clinical Trials (PCT) Workshop
Washington, D.C
5-7 June 2026

Highlights:

- **Professor David Price** presented 'Should Prescribing Expand from Specialists to Primary Care?' during the Pulmonary Clinical Trials Workshop session on earlier intervention in asthma.

The presentation highlighted the harm caused by delaying treatment until severe asthma develops, including irreversible damage to lungs and the burden of oral corticosteroid use, and emphasised the role of biologics in reducing steroid dependence and improving long-term outcomes through the achievement of remission. Key priorities identified included studies to better identify patients at risk of developing severe asthma, randomised trials evaluating biologics in high-risk and earlier severe asthma, and the implementation of structured care pathways to standardise the management of high-risk asthma.

European Academy of Allergy & Clinical Immunology (EAACI)
Congress, Istanbul, Türkiye
12-15 June 2026

Highlights:

- The ISAR poster "Patient characteristics and treatment patterns in adults with severe asthma in Poland (POLSAR): a retrospective, single-center real-world cohort from ISAR" was presented, highlighting characteristics of severe asthma patients in Poland.

Join ISAR today!

To register interest as a collaborating country, or to submit a research request or proposal, please contact us **here**.

THANKS TO OUR SUPPORTERS

The work of REG would not be possible without the contributions from our invaluable supporters to fund innovative research projects developed by our expert Collaborators.

REG is looking to launch a number of ambitious research initiatives which offer the opportunity to impact clinical management guidelines and patient care.

We welcome any suggestions from Supporters and would be happy to discuss your ideas in more detail.

You can always get in contact with the REG team by email at **enquiries@regresearchnetwork.org,**

or write to Adam Marsh, REG, CEO, at **adam@regresearchnetwork.org**

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EARLY CAREER TRAVEL GRANT WINNERS | REG SUMMIT 2026

PP01 **Impact of response to biologics on FEV1 decline in severe asthma patients**
Dr. Arias Zas Laura, lzk215@gmail.com, Lucus Augusti University Hospital, Spain

PP02 **Accuracy of FEOS rate to assess response to biologics in severe asthma patients. Comparison with the FEOS score.**
Dr. Veiga Teijeiro Iria, iriaveigat@hotmail.com, Hospital Universitario Lucus Augusti, Spain

PP03 **The Effect of Sedative and Opioid Medications on Respiratory Outcomes in Patients with Asthma**
Dr. Meffen Anna, am1313@le.ac.uk, University of Leicester, United Kingdom

PP04 **Combined Large and Small Airway Obstruction Is Associated With Increased Exacerbation Frequency and Poorer Symptom Control in Persistent Asthma**
Dr. Chan Rory, rchan@dundee.ac.uk, University of Dundee, United Kingdom

PP05 **Clinical, Functional and Inflammatory characteristics of Eosinophilic Severe COPD: Real-World Data from the SPOCCAT Registry**
Dr. Lopez-Gonzalez Ane, anelopez95@gmail.com, Hospital Universitari Vall D'hebron, Spain

PP06 **Impact of ambient air pollution and relative humidity on multimorbidity costs in patients with chronic airway disease**
Dr. Lim Laura Huey Mien, hmienlim@yahoo.com, University of Cambridge. United Kingdom

REG SUMMIT 2026 ABSTRACTS

PP01

IMPACT OF RESPONSE TO BIOLOGICS ON FEV_1 DECLINE IN SEVERE ASTHMA PATIENTS

Laura Arias Zas[1], N Blanco Cid, E Martinez-Moragón, V Plaza, C Cisneros Serrano, C Benchimol, H Izaguirre Flores, S Sánchez-Cuéllar, Martínez-Pitarch, C Fernández Aracil, A Trisán Alonso, JC Serrano Rebollo, Z Vásquez Gambasica, RM Díaz Campos, P Trujillo Mulato, I Escribano Gimeno, D Laorden, E Arismendi, M Marina Malanda, A De Diego Damia, M Ferrer Galvan, I Dávila, J Ortiz de Saracho Bobo, BG Cosio, A Blanco Hortas, LA Pérez de Llano

Lucus Augusti University Hospital, Lugo, Spain

Introduction: Patients with severe asthma experience an accelerated decline in FEV_1. Although biologics improve disease control, their long-term impact on lung function remains uncertain. The aim of our study was to analyze how the response to biologic therapy at 12 months influences subsequent FEV_1 trajectory.

Methods: We conducted a retrospective, observational, multicenter study. We included patients with uncontrolled severe asthma treated with the same biologic for 24 months. Response at 12 months was assessed and patients were classified into three groups: Clinical remission: no severe exacerbations in the previous 12 months, ACT ≥20, no oral corticosteroids, and FEV_1 ≥80%; Clinical control: same criteria except FEV_1 <80%; Suboptimal response: ≥1 severe exacerbation in the previous 12 months, or ACT <20, or use of oral corticosteroids. Accelerated FEV_1 decline was defined as a loss of >30 mL/year.

Results: A total of 291 patients were analyzed, with a mean follow-up of 46.5 ± 19.6 months. FEV_1 trajectories for the overall population and each subgroup are shown in Figure 1. Before biologic therapy, the median FEV_1 loss was 39.2 mL/year (IQR 1.12–150.0), and 54.4% of patients showed accelerated decline. After biologic initiation, FEV_1 improved initially, followed by a gradual decrease beginning at 18–24 months, but remained above baseline values: +53 mL (IQR 0.0–206.0) in clinical remission, +31 mL (IQR 0.0–128.0) in clinical control, and +27 mL (IQR −35.0–113.0) in the suboptimal response group, as shown in Figure 2. The prevalence of accelerated decline decreased to 19.4%: 17.1% in clinical remission (n=129), 13.1% in clinical control (n=61), and 26.3% in suboptimal responders (n=101). The prevalence of accelerated decline in the entire population after biologic initiation was 19.4% (17.1% in clinical remission, 13.1% in clinical control, and 26.3% in suboptimal responders).

Conclusions: Biologic therapy modifies the accelerated FEV_1 decline observed in 54.4% of patients with severe asthma. After biologic initiation, FEV_1 trajectory differs according to the 12-month response. Achieving clinical remission reduces the likelihood of accelerated FEV_1 decline.

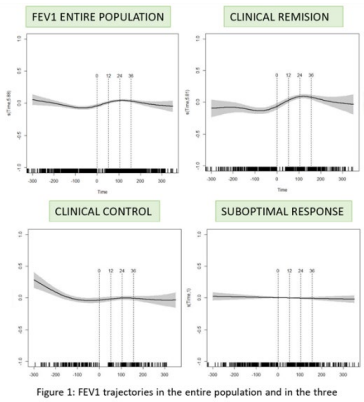


Figure 1: FEV1 trajectories in the entire population and in the three response groups.

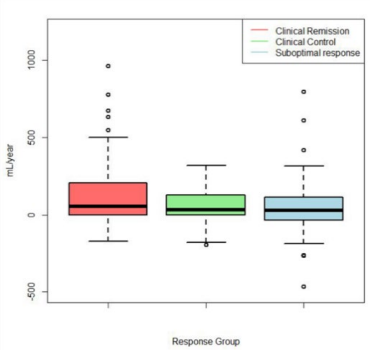


Figure 2: Changes in postbronchodilator FEV1 from baseline to the last follow-up visit in the three response groups.

REG SUMMIT 2026 ABSTRACTS

PP02

ACCURACY OF FEOS RATE TO ASSESS RESPONSE TO BIOLOGICS IN SEVERE ASTHMA PATIENTS. COMPARISON WITH THE FEOS SCORE

Iria Veiga Teijeiro[1], Nagore Blanco Cid[1], Belén Morote Bravo[1], Ignacio Dávila[2], Eva Martínez Moragón[3], Javier Domínguez-Ortega[4], Carlos Almonacid[5], Juan Luis García-Rivero[6], Borja García-Cosío[7], Andrés Blanco Hortas[8], Paulina Trujillo Mulato[9], Carmen Vidal[10], Luis Pérez de Llano[1]

[1]Hospital Universitario Lucus Augusti, Lugo, Spain, [2]University Hospital of Salamanca, Salamanca, Spain, [3]Hospital Universitario Dr Peset, Valencia, Spain, [4]La Paz Hospital Institute for Health Research , Madrid, Spain, [5]Hospital Puerta de Hierro Majadahonda, Madrid, Spain, [6]Hospital Universitario Marqués de Valdecilla, Cantabria, Spain, [7]Hospital Universitario Son Espases, Palma de Mallorca, Spain, [8]Fundación Pública Galega Instituto de Investigación Sanitaria de Santiago de Compostela (FIDIS), Galicia,c Spain, [9]Instituto Nacional del Tórax, Santiago de Chile, Chile, [10]Complejo Hospitalario Universitario de Santiago de Compostela, Galicia, Spain

Introduction: The FEV_1, Exacerbations, OCS, and Symptoms (FEOS) score was developed to quantify the response to biologics in patients with severe asthma (SA). However, it does not report the percentage of the maximal possible improvement (MPI) achieved. To solve this, the FEOS-rate [(FEOS score/MPI) x 100] was developed. The objective of this work is to determine the accuracy of the FEOS-rate to identify different levels of response and to compare it with that of the FEOS score 12 and 24 months after biologic initiation.

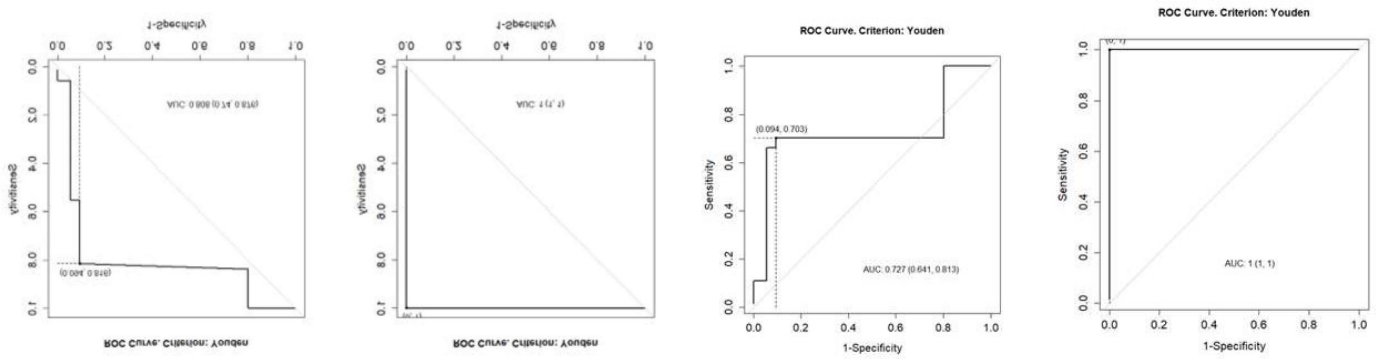
Methods: Three levels of response (clinical remission, partial and suboptimal responses) were defined. Receiver operating characteristic (ROC) analysis were performed to determine the overall accuracy of the FEOS score and FEOS rate in differentiating between response groups.

Results: Three hundred and six patients were included. The FEOS-rate was superior to the FEOS score to discriminate between clinical remission and partial response at 12 months [AUC 1.00 vs 0.81; sensitivity (S) 1.00 vs 0.90 ; specificity (SP) 1.00 vs 0.55; optimal cut-off point 100%], between clinical remission and suboptimal response (AUC 1.00 vs 0.72; S 1.00 vs 0.94; SP 1.00 vs 0.64; optimal cut-off point 100%), and between partial and suboptimal responses (AUC 0.86 vs 0.63; S 0.70 vs 0.79; SP 0.93 vs 0.58; optimal cut-off point 91%). Results were reproduced at 24 months.

Conclusion: FEOS-rate had high accuracy in classifying patients with SA into different levels of response to a biologic, and supplements the FEOS information by calculating the percentage of the response relative to the maximum possible.

Figure 1. ROC curves for discriminating between clinical remission and partial response using FEOS (A) and FEOS rate (B) at 12 months.

Figure 2. ROC curves for discriminating between clinical remission and suboptimal response using FEOS (A) and FEOS rate (B) at 12 months.



REG SUMMIT 2026 ABSTRACTS

PP03 THE EFFECT OF SEDATIVE AND OPIOID MEDICATIONS ON RESPIRATORY OUTCOMES IN PATIENTS WITH ASTHMA

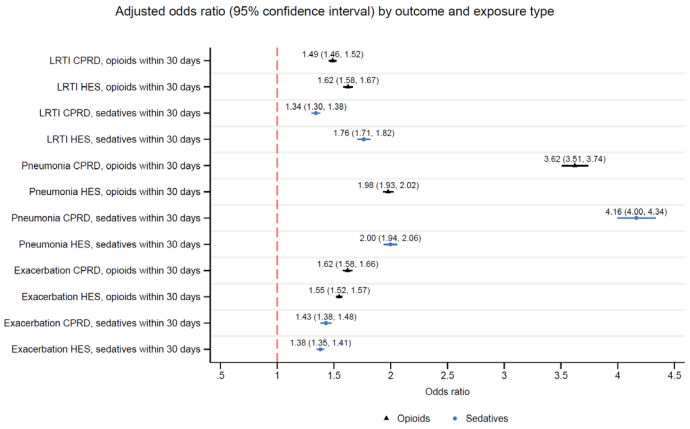
Anna Meffen[1], Tricia McKeever[2], Lisong Zhang[1], Graham Lough[1], Laura Gray[1], Dominick Shaw[1]
[1]University of Leicester, Leicester, UK, [2]University of Nottingham, Nottingham, UK

Introduction: People with asthma who take sedative and opioid medications, often for chronic pain relief, have been shown to have higher probability of exacerbation, lower respiratory tract infection (LRTI) and pneumonia. However, the strength of association between the risk and adverse outcomes are not yet established. The overall aim of the study was to investigate the hypothesis that sedative and opioid medications, impact on the incidence and severity of outcomes including exacerbation, LRTI and pneumonia, in those with asthma.

Methods: A real-world observational case-control study using linked primary care and hospital data of adults with asthma from 1st April 2004 to 31st December 2023 in England was conducted. Cases and controls for each outcome were matched on age, sex practice ID with conditional logistic regression models applied and adjusted for asthma medication and demographic. Conditions were analysed based on primary or secondary care diagnosis. Exposure to sedative and opioids medications separately were considered within 30 days prior to the recorded outcome (index) date.

Results: Matched and adjusted analysis of 1,927,210 adults with asthma revealed that those who were exposed to opioid medications within the 30 days prior to index had 62% higher odds of a primary care asthma exacerbation diagnosis; 55% higher odds of hospital admission for exacerbation; 49% higher odds of a primary care LRTI diagnosis; 62% higher odds of hospital admission for LRTI diagnosis; over 3.5 times the odds of a primary care pneumonia diagnosis (OR: 3.62) and twice the odds of hospital admission for pneumonia (OR: 1.98) compared to those unexposed (Figure 1). Those who were exposed to sedative medications within the 30 days prior to index had 43% higher odds of a primary care asthma exacerbation diagnosis; 38% higher odds of hospital admission for exacerbation; 34% higher odds of a primary care LRTI diagnosis; 76% higher odds of hospital admission for LRTI diagnosis; over 4 times the odds of a primary care pneumonia diagnosis (OR: 4.16) and twice the odds of hospital admission for pneumonia (OR: 2.00) compared to those unexposed.

Conclusion: Those with asthma that are exposed to sedative and opioid medications have significantly higher odds of adverse respiratory outcomes than those unexposed. The magnitude of the increase varies by outcome and severity. Prescription and care guidelines should recommending consider alternative pain relief treatments.



REG SUMMIT 2026 ABSTRACTS

PP04

COMBINED LARGE AND SMALL AIRWAY OBSTRUCTION IS ASSOCIATED WITH INCREASED EXACERBATION FREQUENCY AND POORER SYMPTOM CONTROL IN PERSISTENT ASTHMA

Rory Chan[1], Atanu Bhattacharjee[1], Andrea Portacci[2], Valeria Ortolani[3], Brian Lipworth[1], Marcello Cottini[4]

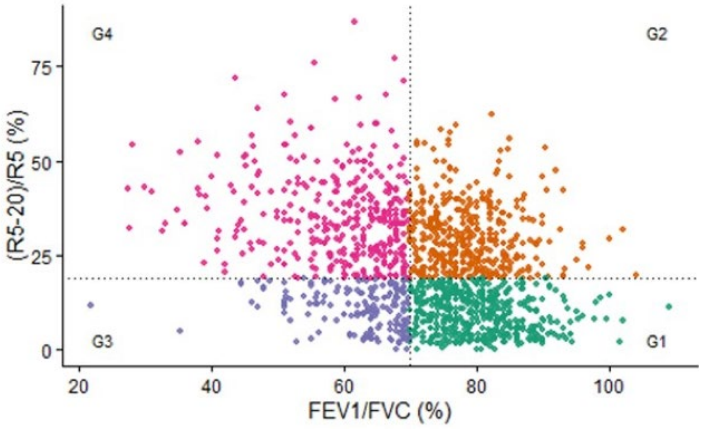
[1]University of Dundee, Dundee, UK, [2]Institute of Respiratory Disease, Department of Translational Biomedicine and Neuroscience, University of Bari "Aldo Moro", Bari, Italy, [3]Allergologia e Immunologia clinica, Ospedale Luigi Sacco Azienda Ospedaliera E Polo Universitario, Milan, Italy, [4]Allergy and Pneumology Outpatient Clinic, Bergamo, Italy

Introduction: Large airway obstruction is conventionally assessed using the ratio of forced expiratory volume in one second to forced vital capacity (FEV_1/FVC) on spirometry. In contrast, small airway obstruction can be evaluated using oscillometry, expressed as the ratio of peripheral airway resistance (R5–20) to total airway resistance (R5), reported as a percentage, (R5-20)/R5.

Methods: This multicentre retrospective observational study analysed data from 1,442 patients enrolled in the Oscillometry Asthma Registry (OAR) across four centres in the UK and Italy. Abnormal oscillometry was defined as (R5–20)/R5 ≥19%, and abnormal spirometry as FEV_1/FVC <70%. Patients were categorised into four groups according to combined spirometry and oscillometry findings: (a) Group 1 - (R5-20)/R5 <19% and FEV_1/FVC ≥70%; (b) Group 2 - (R5-20)/R5 ≥19% and FEV_1/FVC ≥70%; (c) Group 3 - (R5-20)/R5 <19% and FEV_1/FVC <70%; and (d) Group 4 - (R5-20)/R5 ≥19% and FEV_1/FVC <70% (Figure 1).

Results: Patients with combined large and small airway obstruction (Group 4) experienced the highest exacerbation frequency and the poorest symptom control, as assessed by both the Asthma Control Questionnaire (ACQ) and Asthma Control Test (ACT) (Table 1). In this group, the proportions of patients with ≥1 exacerbation, ACQ ≥1.5, and ACT <20 were 215/361 (59.6%), 103/129 (79.8%), and 31/51 (60.8%), respectively, compared with 147/501 (29.3%), 80/119 (67.2%), and 57/147 (38.8%) in patients with normal oscillometry and normal spirometry (Group 1). Post hoc analyses demonstrated that abnormal oscillometry ((R5-20)/R5 ≥19%) was significantly associated with an increased likelihood of experiencing ≥1 exacerbation [OR 1.66 (1.24,2.24); p<0.001], whereas abnormal spirometry (FEV_1/FVC <70%) was not [OR 0.97 (0.69,1.36); p=0.853).

Conclusion: Comprehensive assessment of both small and large airway dysfunction should be routinely undertaken in asthma to accurately identify patients at greatest risk of adverse clinical outcomes.



	Group 1 N oscillometry N spirometry (n=501)	Group 2 AbN oscillometry N spirometry (n=409)	Group 3 N oscillometry AbN spirometry (n=171)	Group 4 AbN oscillometry AbN spirometry (n=361)	Kruskal-Wallis rank sum test; Pearson's Chi-squared test
Age (years)	43 (31,55)	53 (37,64)	53 (41,64)	61 (50,70)	<0.001
Female (n,%)	209 (42%)	154 (38%)	88 (51%)	163 (45%)	0.016
BMI (kg/m²)	24.7 (21.5,28.0)	28.0 (24.0,32.0)	24.5 (22.0,28.0)	27.1 (24.0,31.0)	<0.001
ICS dose (µg)	920 (500,2000)	1000 (480,1920)	1,000 (800,2000)	1720 (960,2000)	<0.001
Ex smokers (n,%)	45 (9.4%)	36 (9.5%)	34 (21%)	55 (16%)	<0.001
FEV_1 (%)	100.0 (91.0,109.0)	94.0 (84.0,104.0)	81.7 (70.5,94.0)	69.0 (55.0,80.7)	<0.001
FEV_1/FVC (%)	79.0 (75.0,84.0)	78.0 (74.0,82.0)	64.3 (60.0,68.0)	62.0 (55.0,66.1)	<0.001
(R5-20)/R5 (%)	9.8 (5.0,14.1)	28.9 (23.3,35.6)	11.8 (6.1,15.4)	33.9 (25.9,42.0)	<0.001
BEC (cells/µL)	208 (120,380)	250 (165,450)	313 (192,510)	300 (160,480)	<0.001
FeNO (ppb)	18 (11,34)	20 (12,40)	23 (13,46)	23 (11,43)	<0.001
ACQ	2.1 (1.0,3.0) n=119	2.1 (1.3,3.0) n=85	2.1 (0.9,2.8) n=71	3.0 (1.8,4.0) n=129	<0.001
ACT	21 (17,24) n=147	21 (18,24) n=60	22 (17,24) n=28	18 (15,21) n=51	0.006
Exacerbations	0 (0,1)	0 (0,1)	0 (0,2)	1 (0,2)	<0.001

N oscillometry = (R5-20)/R5 <19%
N spirometry = FEV_1/FVC ≥70%
AbN oscillometry = (R5-20)/R5 ≥19%
AbN spirometry = FEV_1/FVC <70%
Median (Q1, Q3) or n (%) presented

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PP05

CLINICAL, FUNCTIONAL AND INFLAMMATORY CHARACTERISTICS OF EOSINOPHILIC SEVERE COPD: REAL-WORLD DATA FROM THE SPOCCAT REGISTRY

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The eosinophilic phenotype of chronic obstructive pulmonary disease (COPD) is associated with type 2 (T2) inflammation and a differentiated therapeutic response. The SPOCCAT registry, involving 33 researchers from 24 centres, systematically collects clinical and functional data from patients with severe COPD in our territory. This study aimed to describe clinical, functional and inflammatory characteristics of patients with eosinophilic COPD and to compare them with non-eosinophilic patients. Additionally, we assessed the proportion of patients meeting the criteria for treatment with dupilumab according to the latest GesEPOC (Spanish COPD Guidelines).

This was a descriptive, observational study including patients with severe COPD (FEV1 <50%). Patients were classified according to blood eosinophil count into eosinophilic COPD (Eosinophils (EOS) ≥300 cells/µL) and non-eosinophilic COPD (EOS<300 cells/µL). Sociodemographic characteristics, symptoms, comorbidities, lung function, inflammatory markers, treatments and exacerbation history were analysed. In the eosinophilic subgroup, eligibility for dupilumab was defined as ≥1 severe or ≥2 moderate exacerbations the previous year despite triple therapy, together with the presence of mucus hypersecretion.

A total of 501 patients were included, of whom 74% (n=372) had EOS<300 cells/µL and 25.7% (n=129) had EOS≥300 cells/µL (mean 400 cells/µL). In the eosinophilic group, 76.7% were men, with a mean age of 67.7 years, 75.2% were former smokers (mean 60 pack-years). 4.65% reported childhood asthma and 7.75% reported current asthma. 62.8% had chronic expectoration, mean CAT score was 15 points, 78.3% had emphysema, 20.2% bronchiectasis, 2.33% chronic bronchial infection, mean FEV_1 and DLCO were 37% and 46% predicted. Frequent exacerbators accounted for 55.8% of patients, 56.5% had ≥1 moderate exacerbation and 25.6% ≥1 severe exacerbation in the previous year.

Compared with the non-eosinophilic group, eosinophilic COPD patients showed greater use of chronic oral corticosteroids, higher FEV1, TLC, and RV values, longer six-minute distance, higher levels of leukocyte, basophil, and platelet counts, and a lower percentage of blood neutrophils. Overall, 4.6% of the total cohort and 17.8% of the eosinophilic group met the GesEPOC 2025 criteria for dupilumab treatment (Table 1).

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In this cohort of severe COPD patients, approximately one quarter presented with peripheral blood eosinophilia, a high symptom burden, and more than half were frequent exacerbators. In this well-characterised population, around 5% of patients would be would be deemed candidates for treatment with dupilumab.

TABLE 1. Frequency and severity of exacerbations and eligibility for dupilumab treatment according to eosinophilic phenotype

	All	EOS <0.3	EOS >=0.3	p-value
	N=501	N=372	N=129	
Exacerbations				
Exacerbations in the last year/since last visit	291 (58.1%)	213 (57.3%)	78 (60.5%)	0,594
Moderate exacerbations:				0,029
0-1	446 (89.0%)	324 (87.1%)	122 (94.6%)	
2+	55 (11.0%)	48 (12.9%)	7 (5.43%)	
Severe exacerbations (n=291)	134 (46.0%)	101 (47.4%)	33 (42.3%)	0,521
Severe exacerbations:				0,817
1+	134 (26.7%)	101 (27.2%)	33 (25.6%)	
Severe exacerbations requiring ICU admission (n=134)				0,292
1	11 (8.21%)	10 (9.90%)	1 (3.03%)	
Frequent exacerbator status				0,647
Non-exacerbator	232 (46.3%)	175 (47.0%)	57 (44.2%)	
Frequent exacerbator	269 (53.7%)	197 (53.0%)	72 (55.8%)	
Eligibility for biological treatment with dupilumab*				
No			106 (82.2%)	
Yes			23 (17.8%)	

*Data are presented as n (%). Abbreviations: ICU, intensive care unit; EOS, blood eosinophils; COPD, chronic obstructive pulmonary disease. *Frequent exacerbations (≥1 severe or ≥2 moderate) plus triple inhaled therapy and chronic sputum production.*

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PP06

IMPACT OF AMBIENT AIR POLLUTION AND RELATIVE HUMIDITY ON MULTIMORBIDITY COSTS IN PATIENTS WITH CHRONIC AIRWAY DISEASE

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Background: Air pollution and climate conditions are risk factors of chronic airway diseases (CADs) and comorbidities. However, their comprehensive economic impacts remain largely unknown.

Objective: To evaluate the impacts of ambient air pollution and relative humidity (RH) on multimorbidity costs in patients with asthma or chronic obstructive pulmonary disease (COPD).

Methods: We examined national health administrative data (2012–2019) combined with environmental data in Singapore. Direct medical costs comprised hospitalisation, emergency department visits, primary and specialist care and medications, measured per patient-year (PY) in 2023 Singaporean dollars (SGD$1=US$0.76=£0.60=€0.69). Environmental exposures were measured annually, including annual mean nitrogen dioxide (NO2), maximum 8-hour mean ozone (O3,), carbon dioxide (CO2), maximum 1-hour mean carbon monoxide (CO), maximum 24-hour mean sulfur dioxide (SO2), 24-hour mean particulate matter <2.5μm (PM2.5) and <10μm (PM10), and 24-hour mean RH. We applied machine learning-augmented causal inference methods to derive exposure-multimorbidity cost associations among paediatric and adult asthma patients, and COPD patients, and to derive the relative importance of exposures. Using the generalised computation method, we conducted counterfactual analyses to predict cost savings in each subgroup under controlled conditions of top environmental effects in line with international targets.

Results: Adult CAD costs were positively associated with NO2, SO2 and RH, with greater effects

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observed for COPD-multimorbidity (SO2: $320.3/10μg·mg-^{3}, RH: $185.5/%, NO2: $132.2/μg·m-^{3}) than asthma-multimorbidity (SO2: $243.5/10μg·m-^{3}, RH: $72.8/%, NO2: $362.9/μg·m-^{3}), especially impacting the circulatory, metabolic, digestive, genitourinary and respiratory systems. Paediatric asthma-multimorbidity cost was positively associated with CO2 ($132.6/tonne), CO ($237.0/mg·m-^{3}), O3 ($148.5/10μg·m-^{3}), PM2.5 ($212.3/10μg·m-^{3}), and PM10 ($106.9/10μg·m-^{3}), mainly in asthma and other respiratory diseases. Top cost predictors were NO2, RH and SO2 in adults with CAD and CO2, RH and CO in asthmatic children. While CO had been kept below the international target (30mg/m^{3}), further controlling CO2 at 45 tonnes, RH at 60% and O3 at 100mg/m^{3} would lead to multimorbidity cost savings of $447.4/PY (95% CI: $227.8/PY-$667.6/PY) in asthmatic children. Keeping NO2 at 10μg/m^{3}, RH at 60%, and SO2 at 40mg/m^{3} would save $731.5/PY (95% CI: $534.3/PY-$840.9/PY) and $1,101.4/PY (95% CI: $275.1/PY-$1,465.2/PY) in asthmatic adults and COPD patients, respectively.

Conclusions: In a humid but clean setting like Singapore, ambient air pollution and climate factors, particularly combustion-related pollutants and RH, can drive significant increases in CAD multimorbidity costs. Integrated, multi-pollutant air quality strategies – including indoor humidity control – are crucial for mitigating the escalating multimorbidity burden of CADs.

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PP07 LONG-TERM EXPOSURE TO WILDFIRE SMOKE AND REAL-WORLD TREATMENT EFFECTIVENESS IN ASTHMA AND COPD: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction: Wildfire smoke has become a major global driver of poor air quality, with particulate matter from wildfires increasing by more than 120% worldwide over the past decade. Unlike urban pollution, wildfire aerosols contain high concentrations of ultrafine particles and oxidised organic compounds that may reduce treatment effectiveness and increase exacerbation risk in chronic respiratory diseases. Although emerging real-world studies suggest clinically significant impacts, there has been no unified synthesis quantifying how wildfire exposure modifies outcomes among patients receiving standard therapy for asthma and COPD. we aimed to evaluate the real-world effects of wildfire smoke exposure on treatment response, symptom control, lung function, and exacerbation rates in patients with asthma and COPD

Methods: We conducted a systematic search of MEDLINE, EMBASE, Web of Science, environmental health datasets, and respiratory registries from 2005 to 2025. Eligible studies included cohort studies, pragmatic trials, electronic health record analyses, and population-based exposure studies that assessed wildfire-related particulate matter ($PM_{2.5}$) and its association with asthma or COPD outcomes. Random-effects models were used to pool effect estimates.

Results: We included 19 studies comprising 2.4 million patient-years from regions with documented wildfire activity, including North America, Australia, Southern Europe, and South America. Patients exposed to wildfire-related $PM_{2.5}$ above 25 μg/m³ for ≥10 days per year experienced a 22% increase in asthma exacerbations (rate ratio 1.22; 95% CI: 1.15–1.28) despite standard controller therapy. Among COPD populations, the same exposure threshold was associated with a 34% increase in exacerbations (rate ratio 1.34; 95% CI: 1.26–1.43) and a 16% increase in hospital admissions. Stratification by exposure intensity showed that patients exposed to ≥50 μg/m³ experienced a marked 48% increase in exacerbations (rate ratio 1.48; 95% CI: 1.35–1.61). Lung function declined more rapidly among exposed patients, with annual FEV_1 loss accelerated by 21 mL/year compared with non-exposed cohorts. Controller medication effectiveness was reduced, with an 11–18% decrease in the relative benefit of ICS and ICS/LABA therapies during wildfire seasons.

Conclusion: This systematic review demonstrates that wildfire smoke substantially worsens real-world outcomes in asthma and COPD and attenuates the effectiveness of standard pharmacological therapies. Increasing frequency and severity of wildfires represent a growing challenge for respiratory disease management, underscoring the need for targeted prevention strategies, personalised treatment adjustments during high-exposure periods, and integration of environmental risk into clinical decision-making.

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PP08

EFFECTIVENESS OF ANTIFIBROTIC THERAPY ACROSS RADIOLOGICAL PROGRESSION PATTERNS IN INTERSTITIAL LUNG DISEASES: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction: Antifibrotic therapies, including nintedanib and pirfenidone, are established treatments for idiopathic pulmonary fibrosis (IPF) and are increasingly used across the broader spectrum of progressive pulmonary fibrosis (PPF). Emerging real-world evidence suggests that radiological progression patterns, specifically usual interstitial pneumonia (UIP), probable UIP, and non-UIP fibrotic changes, may significantly influence treatment response. However, the magnitude of antifibrotic effectiveness across these radiological phenotypes has not been comprehensively quantified. A clearer understanding of pattern-specific treatment response is essential for improving precision therapy in fibrotic interstitial lung diseases (ILDs).

Methods: A systematic search of MEDLINE, EMBASE, Web of Science, radiology databases and international ILD registries was conducted for studies published between 2005 and 2025. Eligibility criteria included observational cohorts, pragmatic treatment studies and registry analyses reporting antifibrotic outcomes stratified by radiological pattern. Primary outcomes were annualised forced vital capacity (FVC) decline and progression-free survival. Secondary outcomes included hospitalisations and mortality. Random-effects meta-analysis was used to pool effect estimates, and subgroup analyses explored differences by radiological pattern and fibrosis extent. Risk of bias was assessed using the ROBINS-I tool, and certainty of evidence was evaluated with GRADE methodology.

Results: We included 22 studies encompassing 14,800 patients with fibrotic ILDs receiving antifibrotic therapy. In patients with definite UIP, antifibrotic treatment reduced annual FVC decline by 117 mL per year (95% CI: 102–131). In probable UIP, the reduction was 98 mL per year (95% CI: 81–115). Non-UIP fibrotic ILDs, including hypersensitivity pneumonitis and connective tissue disease–associated ILD, demonstrated a more modest reduction of 63 mL per year (95% CI: 48–76). Progression-free survival improved across all subgroups, with the strongest effect observed in UIP-pattern disease, corresponding to a 29 percent reduction in progression or mortality (HR 0.71; 95% CI: 0.64–0.79). Hospitalisations decreased by 18 percent in UIP-pattern disease and by 9 percent in non-UIP patterns. Stratification by fibrosis extent showed that patients with greater than 20 percent radiographic fibrosis experienced a 34 percent slowing of FVC decline, compared with 18 percent in those with milder involvement.

Conclusion: This systematic review and meta-analysis demonstrates that antifibrotic therapies provide clinically meaningful benefit across multiple fibrotic ILD phenotypes, though the magnitude of benefit differs markedly by radiological pattern. UIP-pattern fibrosis shows the greatest treatment response, probable UIP shows intermediate benefit, and non-UIP patterns demonstrate smaller but still significant improvement.

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PP09 PREVALENCE AND PHENOTYPES OF THE DIFFERENT SEVERITY GROUPS OF COPD EXACERBATIONS ACCORDING TO THE GOLD 2023 SEVERITY CLASSIFICATION

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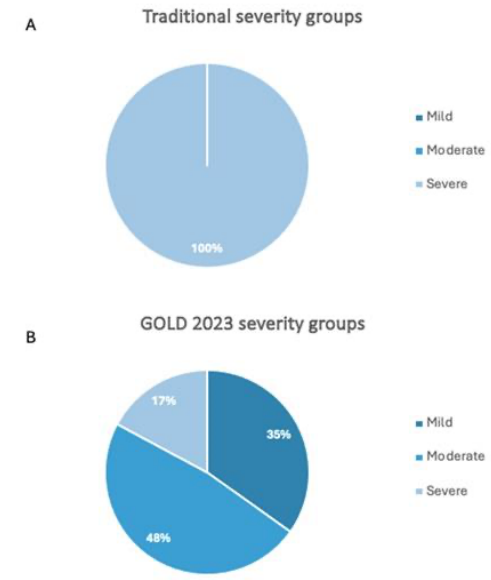
Introduction: With the GOLD 2023 severity classification there is a shift from relying on healthcare resource utilization to incorporating measurable clinical parameters. This study assessed the prevalence of exacerbation severities in adults admitted to the University Hospital of Antwerp (UZA) using this new classification. We also evaluated patient and exacerbation characteristics, treatment strategies, phenotypes, and their association with severity, as well as outcomes such as readmission risk and mortality.

Methods: This retrospective, single-center study included COPD patients admitted for acute exacerbations (AEs) at UZA between July 2021 and June 2023. Clinical data were extracted from electronic health records, and patients were classified using the GOLD 2023 severity criteria. We assessed the prevalence of mild, moderate, and severe AEs, along with baseline and exacerbation characteristics, 1-year readmission risk, and 90-day and 1-year all-cause mortality. Statistical analyses included descriptive statistics, Kruskal-Wallis, ANOVA, Chi-squared or Fisher's Exact tests, and Kaplan-Meier survival curves with hazard ratios for readmission and mortality outcomes.

Results: Among 138 patients, 198 AEs were recorded: 17.2% severe, 48.0% moderate, and 34.8% mild. Severe and moderate AEs were linked to lower oxygen saturation, higher respiratory rates, and higher CRP levels. ICU admission ($p<0.001$) and acute non-invasive ventilation (NIV) use ($p<0.001$) were more frequent in severe exacerbations. Length of stay did not differ significantly ($p=0.379$). In-hospital mortality was higher in the severe group (17.6%, $p=0.003$), with a trend toward increased 90-day mortality ($p=0.051$). No significant differences in 1-year readmission or mortality were found.

Conclusion: The GOLD 2023 classification reclassified many formerly "severe" AEs into moderate or mild categories. Severe exacerbations were associated with more intensive care and higher in-hospital mortality, supporting the new classification's ability to better reflect clinical severity and predict outcomes.

Figure 2. Total number of exacerbations categorized into severity groups



The figure displays two pie charts representing the total number of exacerbations categorized into severity groups using the old (A) and new (B) classification systems.

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PP10

RESPIRATORY OSCILLOMETRY TO ASSESS LYMPHANGIOLEIOMYOMATOSIS SEVERITY

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Rationale: Lymphangioleiomyomatosis (LAM) is a rare, progressive cystic lung disease affecting predominantly women, leading to airflow and functional limitation. Monitoring of disease progression relies primarily on spirometry. However, spirometry is insensitive to small airway and peripheral lung abnormalities and may miss early disease progression. Respiratory oscillometry, a different PFT modality is highly sensitive to changes in the small airways and lung periphery. It measures total respiratory system impedance to small amplitude oscillations superimposed onto normal quiet breathing. Oscillometry is better tolerated by patients as it does not require the forced breathing manoeuvres needed for spirometry. The aim of this study is to evaluate whether oscillometry provides surrogate metrics of LAM disease severity as determined by airflow limitation.

Methods: Healthy volunteers and LAM patients were enrolled for paired spectral (5-37 Hz) and intrabreath (10 Hz) oscillometry before routine spirometry and plethysmography from September 2020 to December 2024. Key oscillometry metrics were reactance at 5 Hz (X5), difference in resistance between 5 and 19 Hz (R5-19), reactance area (AX), resistance during end-expiration (ReE) and reactance at end-inspiration (XeI).

Results: 50 LAM patients (49F/1M; mean age = 50±12 yrs), were enrolled and age- and sex-matched to 50 healthy volunteers (49F/1M; mean age = 45±16 yrs). Amongst the spirometry and plethysmography metrics, only FEV1/FVC (81.5±4.6 vs 68.4±15.5) and %pred FEV1 (91.9±11.8 vs 76.3±22.8) were different between groups ($p<0.05$ for both). In contrast, multiple oscillometry parameters were different between healthy volunteers and LAM patients. These include the spectral metrics (healthy vs LAM): X5 (-1.41 vs -1.67 cmH2O.s/L, $p=0.004$), R5-19 (0.32 vs 0.66 cmH2O.s/L, $p=0.011$), AX (4.86 vs 9.48 cmH2O/L, $p=0.006$) and intrabreath metrics: ReE (2.87 vs 3.60 cmH2O.s/L, $p=0.008$) and XeI (0.03 vs -0.16 cmH2O.s/L, $p=0.03$).

Conclusions: In LAM patients, increased R5-19, AX and ReE, and more negative X5 and XeI indicate peripheral airway obstruction and ventilatory inhomogeneity. Longitudinal follow-up with oscillometry may be useful for patient monitoring and could offer additional insights into disease severity and heterogeneity in LAM.

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PP11

OPPORTUNITIES TO OPTIMISE THE MANAGEMENT OF ALLERGIC RHINITIS USING THE RESPIRATORY ALLERGY OPTIMISER: RESULTS OF THE AERO STUDY

Iris Van Geer - Postmus[1], Dermot Ryan[2], Chantal Arling[1], Stephanie Dramburg[3], Evelien Harms[1,4,5], Hugo Hernández[1], Yvette Jansen[1], Miloš Jesenák[6], Jiska Meijer[1], Jill Stuifzand[1], Juan Trujillo Wurttele[7], Marika Leving[1], Janwillem Kocks[1,4,5,8]

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Introduction: Digital tools may support healthcare professionals in providing guideline-directed management for patients with allergic rhinitis (AR). This study aimed to develop and implement the Respiratory Allergy Optimiser (RAO), a digital decision support tool, based on treatment recommendations from existing clinical AR guidelines, and to evaluate its clinical effectiveness in reducing AR symptom severity.

Methods: The AERO study was an interventional study conducted in 11 general practices (GPs) across the Netherlands (August-November 2025). Adult patients (≥18 years) with a diagnosis of allergic rhinitis and/or allergic conjunctivitis (AC) and/or prescribed AR medication within the previous three years, were included. The RAO was used during a GP consultation, during which AR/C symptom severity and management was assessed using a visual analogue scale (VAS)(0-100mm, complaints past 7 days) and questions. Two weeks later, patients completed a follow-up survey including the VAS. User experience data were collected from healthcare professionals and patients.

Results: In total, 104 patients with rhinitis (mean age 49.0 years (SD 16.5), 61% female) were included. Mean VAS score was 35.1 mm (SD 25.6) at baseline and 35.8 (SD 25.4) at follow-up (n=100). For 30% of patients, the advice was to continue the current treatment, while for 50% the advice was to step up treatment. In 15 (14.4%) patients, step up plus allergy immunotherapy was advised (Figure 1). In patients with uncontrolled rhinitis (VAS>5)(n=33), VAS scores significantly decreased two weeks after the study consultation with the RAO (65.7 mm (SD 9.7) vs 47.7 (SD 22.0); p=0.003).

Conclusion: Discussion: In 70% of patients, the RAO suggested changes toward more guideline-directed treatment. Among patients with uncontrolled rhinitis, use of the RAO during consultation was associated with reduced symptom severity after two weeks. User experience was generally positive among patients and healthcare professionals, identifying opportunities for further improvement. In Dutch general practice, the Respiratory Allergy Optimiser supported identification of opportunities to improve allergic rhinitis management, particularly by addressing poor disease control.

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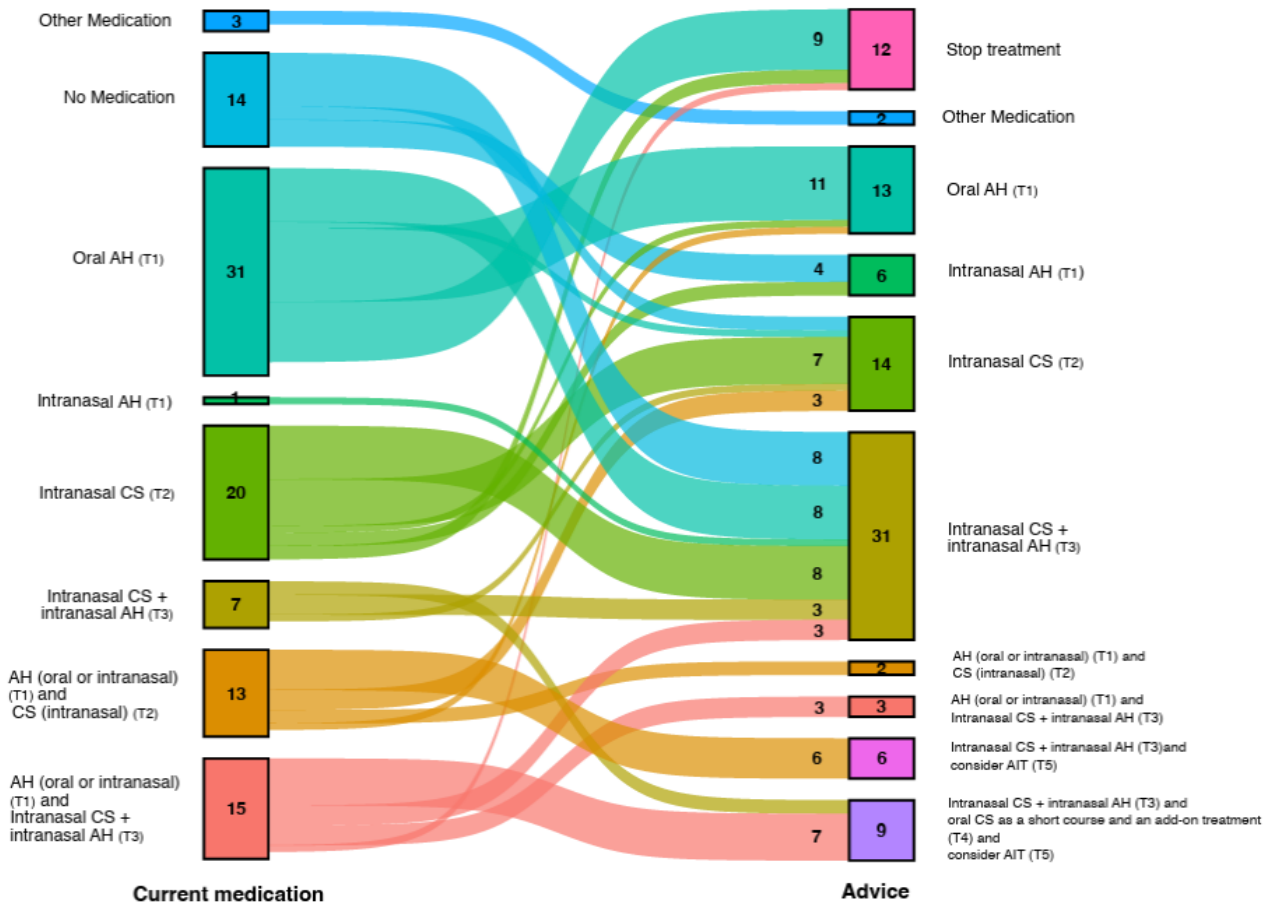
Results: Among 138 patients, 198 AEs were recorded: 17.2% severe, 48.0% moderate, and 34.8% mild. Severe and moderate AEs were linked to lower oxygen saturation, higher respiratory rates, and higher CRP levels. ICU admission (p<0.001) and acute non-invasive ventilation (NIV) use (p<0.001) were more frequent in severe exacerbations. Length of stay did not differ significantly (p=0.379). In-hospital mortality was higher in the severe group (17.6%, p=0.003), with a trend toward increased 90-day mortality (p=0.051). No significant differences in 1-year readmission or mortality were found.

Conclusion: The GOLD 2023 classification reclassified many formerly "severe" AEs into moderate or mild categories. Severe exacerbations were associated with more intensive care and higher in-hospital mortality, supporting the new classification's ability to better reflect clinical severity and predict outcomes.



REG SUMMIT 2026 ABSTRACTS

PP12 PROTON PUMP INHIBITOR OVERUSE IS ASSOCIATED WITH INCREASED EXACERBATION RISK IN PATIENTS WITH ASTHMA

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Introduction: Proton pump inhibitors (PPI) are first-line pharmacological treatment of GastroEsophageal Reflux Disease (GERD). When indicated in patients with asthma, PPI are expected to reduce reflux symptoms and reflux-related exacerbations. However in Belgium, almost half of adult patients on chronic medication for obstructive airway diseases are PPI-users and emerging evidence suggests that chronic PPI use may increase exacerbation risk in asthma patients.(Dehondt et al. Chest.2026; Bushi et al. J.Clin.Pharm. Ther.2025) Therefore, we aimed to evaluate the exacerbation risk associated with chronic PPI use in patients with asthma without GERD indication.

Methods: Within Belgian nationwide claims-based data of adult patients on chronic medication for obstructive airway diseases between 2017 and 2022, we identified patients with a hospital discharge diagnosis of asthma (ICD-10: J45) with/without concomitant COPD (ICD-10: J44), and excluded patients with a GERD-related indication for PPI use (ICD-10 K20, K21, K22.7 and 6 medical procedure codes related to GERD or (Barrett) oesophagitis). Study entry date was defined as the date of the second dispensing of respiratory medication. We investigated the association between PPI use (ATC code A02BC) in the year prior to study entry and exacerbation risk (moderate (oral corticosteroids and/or antibiotics) and severe exacerbations (hospital admissions or emergency department visits with a primary exacerbation diagnosis without concomitant pneumonia)) using multivariable Cox model adjusted for age, sex, smoking, socio-economic status, exacerbation history, reliever use, frailty, concomitant COPD and other comorbidities; and an inverse probability of treatment weighted (IPTW) Cox model taking all 23 Table characteristics into account and additionally stratifying on defined daily doses (DDD) dispensed during the prior year.

Results: Among 29,038 patients with asthma (median age 63.1 years, 59.6% female), 18,321 (63.1%) were PPI-users, of whom 3,502 (12.1%) had 1-28 DDD, 5,687 (19.6%) 29-180 DDD, 4,966 (17.1%) 181-365 DDD, and 4,166 (14.3%) >365 DDD in the previous year; and 7,412 (25.5%) had concomitant COPD. Independent of all potential confounders, PPI use was associated with an increased risk of exacerbations (aHR 1.18, 95%CI 1.14-1.21; IPTW_HR 1.13, 95%CI 1.10-1.17). Moreover compared to non-users, the risk of exacerbations increased with cumulative DDD (IPTW_HR_28DDD 1.05, 95%CI 1.00-1.10; IPTW_HR_180DDD 1.10, 95%CI 1.06-1.15; IPTW_HR_365DDD 1.21, 95%CI 1.16-1.27; and IPTW_HR>365DDD 1.31, 95%CI 1.24-1.38).

Conclusion: In patients with asthma without GERD, cumulative PPI use was associated with an increase in exacerbation risk suggesting to carefully reconsider proton pump inhibitor use in patients without an ongoing clear indication.

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Table: Baseline characteristics of the asthma population without GERD (N = 29,038 asthma).

	Overall (N= 29,038)	No PPI use (n= 10,717)	PPI use (n = 18,321)
Patient characteristics			
Female sex	17,299 (59.6%)	5,935 (55.4%)	11,364 (62.0%)
Age (years)	63.1 [47.9-76.2]	56.5 [39.2-71.8]	66.3 [52.8-78.0]
Low SES	10,330 (35.6%)	3,069 (28.6%)	7,261 (39.6%)
(Ever-)smoking	12,274 (42.3%)	4,100 (38.3%)	8,174 (44.6%)
Weight			
Normal	19,950 (68.7%)	7,942 (74.1%)	12,008 (65.5%)
Cachexia/underweight	767 (2.6%)	193 (1.8%)	574 (3.1%)
Obesity/overweight	8,321 (28.7%)	2,582 (24.1%)	5,739 (31.3%)
Exacerbation history			
No exacerbation	6,859 (23.6%)	3,221 (30.1%)	3,638 (19.9%)
One moderate exacerbation	6,833 (23.5%)	2,762 (25.8%)	4,071 (22.2%)
Two or more moderate or one severe exacerbation	15,346 (52.8%)	4,734 (44.2%)	10,612 (57.9%)
Comorbidities			
Arthritis	2,390 (8.2%)	474 (4.4%)	1,916 (10.5%)
Bronchiectasis	607 (2.1%)	153 (1.4%)	454 (2.5%)
Cancer	3,590 (12.4%)	912 (8.5%)	2,678 (14.6%)
Cardiovascular comorbidity	18,114 (62.4%)	5,221 (48.7%)	12,893 (70.4%)
COPD	7,412 (25.5%)	2,035 (19.0%)	5,377 (29.3%)
Depression/anxiety	9,818 (33.8%)	2,560 (23.9%)	7,258 (39.6%)
Diabetes mellitus	7,072 (24.4%)	1,735 (16.2%)	5,337 (29.1%)
Frailty	5,575 (19.2%)	1,320 (12.3%)	4,255 (23.2%)
Sleep apnea	3,881 (13.4)	1,391 (13.0%)	2,490 (13.6%)
Stomach ulcer	1,108 (3.8%)	94 (0.9%)	1,014 (5.5%)
Medication use			
Acetylsalicylic acid	8,708 (30.0)	2,278 (21.3)	6,430 (35.1)
Antacid	2,695 (9.3)	579 (5.4)	2,116 (11.5)
Clopidogrel	1,600 (5.5)	373 (3.5)	1,227 (6.7)
DOAC	3,555 (12.2)	892 (8.3)	2,663 (14.5)
NSAID	15,748 (54.2)	5,497 (51.3)	10,251 (56.0)
SABD use			
Appropriate	21,639 (74.5)	8,262 (77.1)	13,377 (73.0)
Overuse	3,518 (12.1)	1,232 (11.5)	2,286 (12.5)
Heavy overuse	3,881 (13.4)	1,223 (11.4)	2,658 (14.5)
Vitamin K antagonist	1,234 (4.2)	330 (3.1)	904 (4.9)

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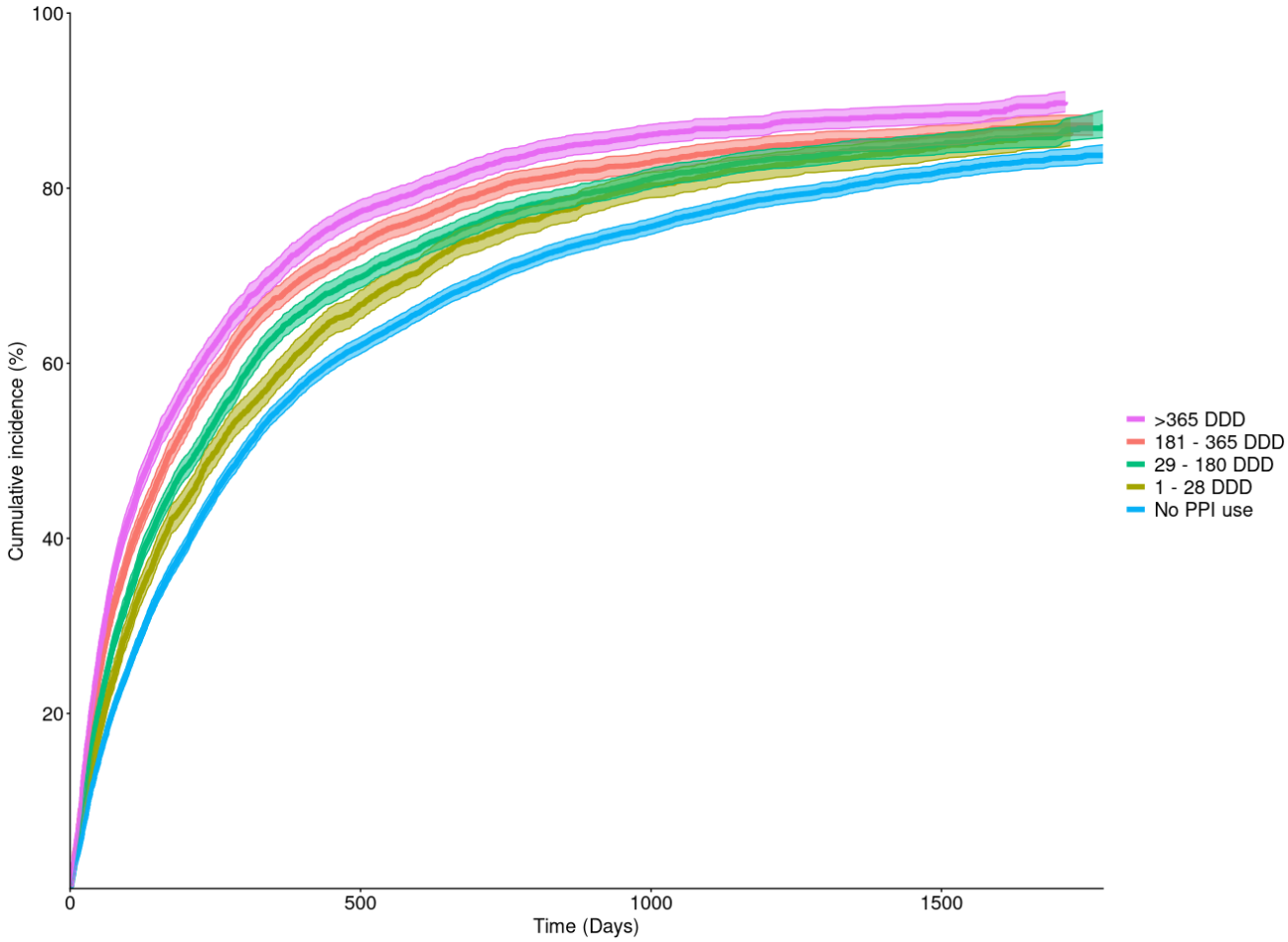
DOAC = direct oral anticoagulants; PPI = proton pump inhibitor; SES = socio-economic status; GERD = gastroesophageal reflux disease; SABD = short-acting bronchodilator; NSAID = non-steroidal anti-inflammatory drug
SABD appropriate use:
Figure: Cumulative incidence of exacerbations by PPI dose among patients with asthma (DDD: defined daily dose; PPI = proton pump inhibitor)

Figure: Cumulative incidence of exacerbations by PPI dose among patients with asthma (DDD: defined daily dose; PPI = proton pump inhibitor)



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PP13

A COMPREHENSIVE TOOL TO SUPPORT GUIDELINE USE IN MULTIMORBIDITY MANAGEMENT: THE INTERNATIONAL MYFRIEND FRAMEWORK

Zijun Wang[1], Jako S. Burgers[2], Barbara C. van Munster[3,4], Liliya E. Ziganshina[5,6], Joan B. Soriano[7,8,9], Lubna A. Al-Ansary[10,11,12], Marjan van den Akker[2,13,14], Abere W. Azagew[15], Opeyemi Babatunde[16], Edouard Battegay[17,18], Heider Bautista-Mier[19,20], Derek K. Chu[21,22,23,24], Enying Gong[25], Juan A. Lopez-Rodriguez[26,27,28], Olga D. Ostroumova[29,30], Chavdar S. Pavlov[30,31], Natsumi Saka[32,33], Martin Scherer[34], Søren T. Skou[35,36], Maoyi Tian[37], Xiaolin Xu[38], Simiao Wu[39], Lijing Yan[40], Sergey K. Zyryanov[5], Antonio Anzueto[41], Alan Kaplan[42,43], Sheyu Li[44], Yalong Chen[1], Janne Estill[1,45]

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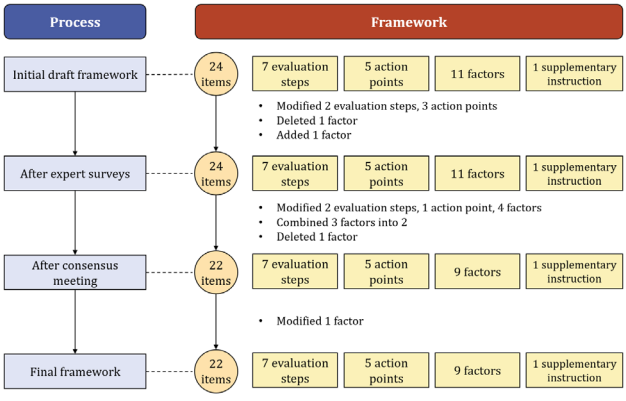
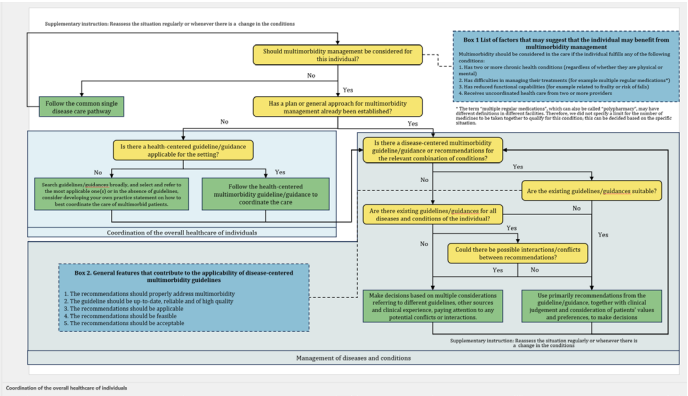
Introduction: Multimorbidity (the co-existence of two or more chronic conditions in the same individual) is a major challenge for health systems worldwide. People with chronic respiratory illnesses are particularly affected by the high risk and complexity caused by comorbidities. As most clinical practice guidelines focus on single diseases in isolation, clinicians are often overwhelmed with the large number of guidelines with potentially conflicting recommendations. We therefore aimed to develop a decision support framework for multimorbidity that helps healthcare professionals to efficiently evaluate, select, and adapt recommendations from guidelines addressing different comorbidities and the broader context of multimorbidity – the Multimorbidity management FRamework for guIdEliNe-based Decision support (MyFRIEND).

Methods: We established a working group of 34 experts from 13 countries, including leading experts in multimorbidity research, guideline methodology, and several clinical specialties including respiratory medicine. We carried out a series of background studies (two systematic reviews of existing multimorbidity guidelines, a questionnaire survey among frontline healthcare workers, and a series of expert interviews) to draft the initial version of the framework. Subsequently, one round of Delphi-like expert survey, followed by online consensus meetings among the working group and a thorough review by external experts, were conducted to finalize the framework (Figure 1). The work was performed in collaboration with the Respiratory Effectiveness Group (REG).

Results: The MyFRIEND framework comprises 22 items, presented in the form of a flowchart (Figure 2): seven evaluation steps (questions that determine the subsequent path), five action points (practical recommendations about which guidelines to use and how), nine factors to support decision-making related to the evaluation steps, and one supplementary instruction concerning the follow-up. The user starts by assessing whether multimorbidity should be considered in the individual's care or not. If so, the next steps address the availability of applicable guidelines to guide the care in general. The remaining evaluation steps focus on selecting guidelines and recommendations for the individual's specific combination of diseases. The framework is intended to be applicable in any type of healthcare setting, including primary care, referral hospitals, nursing homes, and other types of facilities.

Conclusion: The MyFRIEND framework, endorsed by REG, aims to promote rational, standardized, and effective multimorbidity care across different types of healthcare facilities worldwide. MyFRIEND provides structured support for managing patients affected by multiple diseases, including chronic respiratory conditions, based on guidelines and evidence-based recommendations.





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PP14

EVALUATION AND IMPLEMENTATION OF THE MYFRIEND FRAMEWORK FOR GUIDELINE-BASED DECISION MAKING IN MULTIMORBIDITY CARE BY CLINICIANS AND PATIENTS: A PROTOCOL

Zijun Wang[1], Liliya E. Ziganshina[2,3], Joan B. Soriano[4,5,6], Antonio Anzueto[7], Alan Kaplan[8,9], Yaolong Chen[1], Janne Estill[1,10]

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Introduction: The recently developed Multimorbidity management FRamework for guIdEliNe-based Decision support (MyFRIEND) aims to help healthcare professionals efficiently evaluate, select, and adapt recommendations from different guidelines. This protocol presents a planned study to evaluate the comprehensibility, theoretical feasibility and usability of MyFRIEND and explore clinicians' and patients' opinions and experience.

Methods: The project will consist of two steps (Figure 1). The study will be conducted in selected facilities in China, as well as at least two other countries to be chosen by the MyFRIEND working group. Step one is a scenario-based, qualitative-dominant mixed-methods study. We will invite 10-15 clinicians in each participating country with different levels of experience, including general practitioners and specialists in fields most affected by multimorbidity (e.g., respiratory diseases). We will first give a short introduction of the framework to each participant. Next, the participant will be given a brief multimorbidity case vignette related to his/her area of specialty and be asked to reflect on the framework while working through the scenario through the "think aloud" method. For each step of the framework, participants will assess its clarity and feasibility in theory and real-world practice. The process will be carried out in real time (online or in person). Based on the feedback, we will make clarifications to the framework and develop a structured plan to guide its implementation in different types of settings. In step two, we will conduct an implementation study in at least two facilities interested in using the adapted framework in real-world multimorbidity practice in every participating country. All clinicians in the participating facilities will be offered systematic training and asked to refer to the framework in their daily practice with multimorbid patients. Three months later, we will conduct a survey among the clinicians to collect their experience about applying the framework and the barriers they encountered. Throughout the implementation period, we will also recruit patients receiving consultations at the participating facilities. The patients will be asked about their experience of medical care, including whether and how the doctors have paid attention to their comorbidities before and after the framework was implemented.

Conclusions: This project will evaluate the comprehensibility and practical value of the MyFRIEND framework, and help to improve the framework and promote the implementation of evidence-based decision-making in multimorbidity care.

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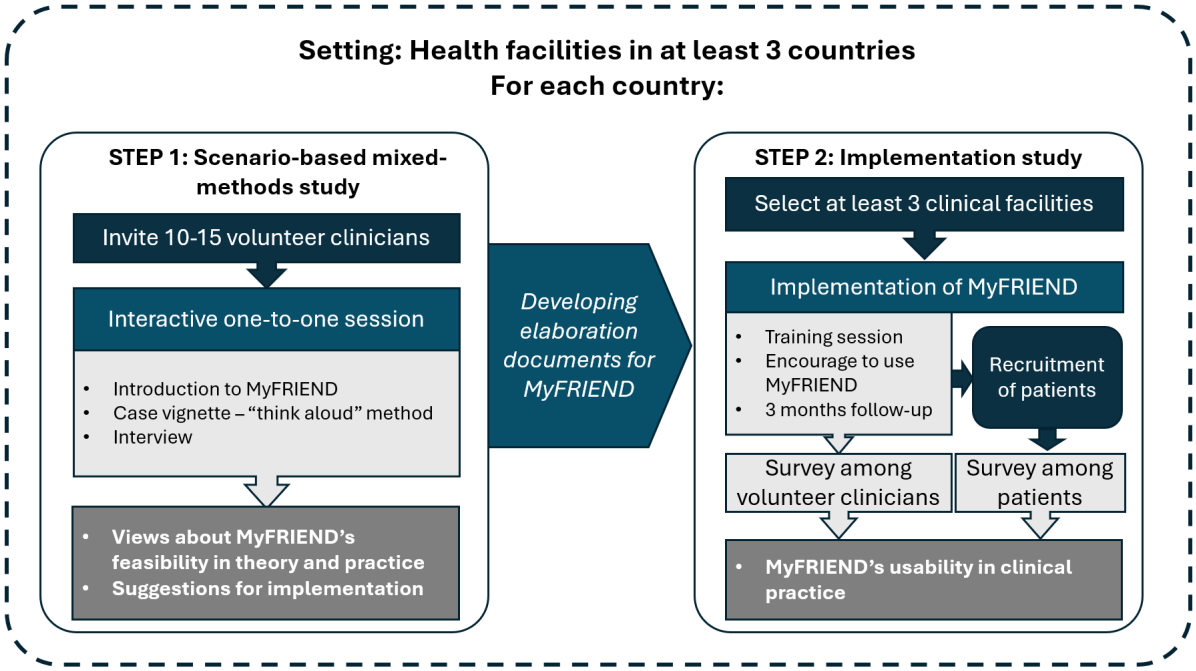

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PP15

IDENTIFYING PATTERNS OF DISCORDANT MULTIMORBIDITY: INSIGHTS FROM A LATENT CLASS ANALYSIS OF A LARGE DATABASE FROM CHINA

Zijun Wang[1], Søren T. Skou[2,3], Yaolong Chen[1], Janne Estill[1,4]

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Introduction: Multimorbidity is increasingly prevalent in the ageing population and poses major challenges for clinical decision-making. People with chronic respiratory diseases are particularly affected by multimorbidity. Existing studies have proposed categorizing multimorbidity into concordant (if the co-existing conditions share similar pathophysiological mechanisms and/or management strategies) and discordant (otherwise). Discordant multimorbidity is particularly challenging for clinical practice, as it involves multiple clinical specialties and potentially conflicting treatment recommendations. Identifying common comorbidity patterns and categorizing multimorbidity could help to strengthen evidence-based care of individuals with multimorbidity including those with respiratory conditions.

Methods: We used the China Health and Retirement Longitudinal Study (CHARLS) database, a large open-source dataset of elderly individuals aged 45 years and above, comprising data on 14 key chronic diseases. Patients with at least two conditions (multimorbidity) were included. We classified having only asthma and (another) chronic lung disease as respiratory concordant multimorbidity; having any combination of hypertension, heart disease, dyslipidemia, diabetes, kidney disease, liver disease, and stroke as cardiometabolic multimorbidity; and having any other combination of diseases (including those listed above, and arthritis, digestive disease, memory related disease, psychiatric problems, and cancer) as discordant multimorbidity. We conducted a latent class analysis (LCA) of patients with discordant multimorbidity to further characterize comorbidity patterns.

Results: A total of 8974 patients had at least two conditions: 78 (0.9%) had respiratory concordant multimorbidity, 1610 (18%) cardiometabolic concordant multimorbidity, and 7306 (81%) discordant multimorbidity. The LCA identified four clusters of patients with discordant multimorbidity, characterized by digestive diseases with comorbidities (n=2753, 38% of the 7306 patients), arthritis with comorbidities (n=1959, 27%), respiratory diseases with comorbidities (n=1572, 22%), and complex multisystem multimorbidity (n=1022, 14%; Figure 1). In the respiratory disease-comorbidity cluster, 40% of patients had asthma and 88% another chronic lung disease, but arthritis, digestive disease, hypertension and heart disease were also frequent. In the multisystem cluster, the patients had a mean of six co-existing conditions, among which asthma (19%) and other chronic lung diseases (37%) were common.

Conclusion: We identified four characteristic types of discordant multimorbidity. Most multimorbid individuals with respiratory diseases also have conditions from other disease systems, and chronic lung diseases are frequent among the most severely affect individuals with multimorbidity. Common comorbidities like cardiovascular diseases, arthritis, and digestive diseases need to be adequately addressed in guidelines and clinical practice related to the care of chronic respiratory disorders.

Name of classes	Cardiac metabolic diseases and related diseases							Arthritis	Digestive disease	Respiratory diseases		Other diseases			Share of the population	Number of individuals
	Hypertension	Heart disease	Dyslipidemia	Diabetes	Kidney disease	Liver disease	Stroke	Arthritis	Digestive disease	Chronic lung disease	Asthma	Memory related disease	Psychiatric problems	Cancer		
Digestive-comorbid conditions class	38.3%	23.7%	24.4%	11.1%	14.3%	11.3%	5.4%	64.7%	100.0%	10.0%	0.6%	2.4%	3.4%	2.8%	37.7%	2753
Arthritis-cardiometabolic class	64.7%	23.7%	29.9%	17.6%	12.4%	6.4%	8.9%	95.1%	0.0%	7.6%	1.4%	4.3%	3.2%	5.5%	26.8%	1959
Respiratory-comorbid conditions class	40.6%	30.9%	16.9%	8.4%	14.5%	11.6%	4.7%	60.4%	47.1%	88.8%	40.3%	3.5%	5.5%	3.9%	21.5%	1572
Multisystem morbidity class	82.3%	70.3%	76.1%	47.5%	35.1%	21.9%	29.4%	69.0%	65.2%	37.2%	18.6%	25.6%	15.4%	6.3%	14.0%	1022

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PP16

ASSESSMENT OF THREE SEQUENTIAL PHASES OF THE IPF-PROM SCALE, DEPRESSION SYMPTOMS AND QUALITY OF LIFE IN PATIENTS WITH IDIOPATHIC PULMONARY FIBROSIS

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Background and Aim: A significant proportion of patients with idiopathic pulmonary fibrosis (IPF) face mental health disorders and symptoms of depression. We have previously shown that the IPF-PROM scale represents a useful tool that can predict mental health impairment and health-related quality of life in IPF, with potential utility in clinical practice and research. Aim of this study was to further investigate the IPF-PROM scale in clinical practice through longitudinal changes of the score during the follow-up of the patients.

Materials and Methods: A total of 54 patients with IPF were examined longitudinally in three phases within the previous 24mo. They completed the IPF-PROM scale, Patient Health Questionnaire-9 (PHQ-9, as an index of depressive symptoms), and Health Survey Questionnaire Short Form-12 (SF-12, as an indicator of quality of life). Patients were categorized into two groups based on the presence of disease severity parameters. The statistical analysis of the parameters in the three phases was performed based on their distribution using the IBM-SPSS program.

Results: During follow-up from phase I to phases II and III, significantly greater reduction in the overall IPF-PROM score, as well as in the individual scores of the 'Breathlessness/Fatigue' and 'Psychological Wellbeing' parameters, were observed in the patients with higher disease severity, indicating greater prospective improvement. Similar findings were also noticed in the total score of PHQ-9 and the individual score of 'Mental Component' of the SF-12. Married marital status was associated with positive changes in IPF-PROM scale, while the presence of more disease severity factors determined the greater reduction in IPF-PROM scale in phases II and III.

Conclusions: Parameters of disease severity, as well as socioeconomic characteristics, influence the IPF-PROM scale, which is a useful tool for monitoring patients and highlights changes associated with mental health and their quality of life.

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PP17

ETIOTYPES AND PREVALENCE OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) IN A POPULATION-BASED STUDY: PREPOCOL II

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Introduction: Chronic obstructive pulmonary disease (COPD) is functionally defined by persistent airflow limitation on spirometry, most commonly using post-bronchodilator FEV1/FVC <0.70. Under this definition, various factors associated with COPD other than smoking are recognized, emerging recently the concept of etiotypes. PREPOCOL II Study was designed to update COPD epidemiology in Colombia and represents an opportunity to approach the profile of COPD etiotypes in population-based studies.

Methods: PREPOCOL II is a population-based cross-sectional study of adults >40 years from nine Colombian municipalities, selected through probabilistic sampling (2023–2024). Participants provided demographic information, completed a respiratory questionnaire, and underwent spirometry and pulse oximetry. COPD was defined as post-bronchodilator FEV1/FVC <0.70. Multivariable logistic regression assessed factors associated with COPD, including pre-specified non-smoking etiotypes: early life events (respiratory disease before 16 years), infection (prior tuberculosis [TB]), occupational exposure (vapors, gases, dust and/or fumes [VGDF]), and household wood smoke (biomass) exposure. Population attributable fractions (PAF) were also estimated.

Results: A total of 5759 subjects were included (59.9 ± 11.6 years, 39.3% male). Table 1 shows the characteristics of the study population. The prevalence of COPD was 12.1%. Table 2 shows the factors associated with COPD. In addition to age ≥64 years, male sex, smoking and low educational level, the etiotypes associated with COPD were respiratory disease before age 16, history of TB, occupational exposure and wood smoke (biomass) exposure. The main contributors to the population burden of COPD were smoking ≥10 pack-years (PAF 21.9%; 95% CI: 20.8–22.9), occupational exposure to VGDF (PAF 19.8%; 95% CI: 18.7–20.8), respiratory disease before age 16 (PAF 7.8%), exposure ≥20 years to wood smoke (PAF 5.7%), and a history of TB (PAF 3.0%).

Conclusion: The prevalence of COPD has increased by 36% in Colombia over the last 20 years (from 8.9% to 12.1%). In addition to smoking, occupational exposure, childhood respiratory disease (early events), exposure to wood smoke (biomass), and tuberculosis (infections) were identified as relevant etiotypes. According to PAF, the main determinants of the COPD burden in the country are smoking, occupational exposure, early childhood respiratory disease, exposure to wood smoke, and tuberculosis. This situation highlights the need to broaden public health prevention strategies beyond tobacco control.

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Table 1. Participant characteristics in PREPOCOL II (N=5,759)

Characteristic	Total population	COPD (–)	COPD (+)	p value
Age, years (mean ± SD)	59.9 ± 11.6	58.7 ± 11.2	68.5 ± 11.0	<0.001
Age ≥64 years, n (%)				<0.001
No	3575 (62.1)	3360 (66.4)	215 (30.8)	
Yes	2184 (37.9)	1701 (33.6)	483 (69.2)	
BMI, kg/m² (mean ± SD)	27.2 ± 4.8	27.5 ± 4.8	25.7 ± 4.6	<0.001
Underweight (BMI <18 kg/m²), n (%)				<0.001
No	5652 (98.1)	4985 (98.5)	667 (95.6)	
Yes	107 (1.9)	76 (1.5)	31 (4.4)	
Sex, n (%)				<0.001
Male	2263 (39.3)	1868 (36.9)	395 (56.6)	
Female	3496 (60.7)	3193 (63.1)	303 (43.4)	
Place of residence, n (%)				<0.001
Barranquilla	819 (14.2)	749 (14.8)	70 (10.0)	
Medellín	785 (13.6)	671 (13.3)	114 (16.3)	
Bogotá	807 (14.0)	720 (14.2)	87 (12.5)	
Cali	816 (14.2)	728 (14.4)	88 (12.6)	
Bucaramanga	850 (14.8)	764 (15.1)	86 (12.3)	
Samacá (rural)	398 (6.9)	295 (5.8)	103 (14.8)	
Aquitania (rural)	411 (7.1)	352 (7.0)	59 (8.5)	
Santa Rosa (rural)	425 (7.4)	383 (7.6)	42 (6.0)	
San Estanislao (rural)	448 (7.8)	399 (7.9)	49 (7.0)	
Education level, n (%)				<0.001
Technical or higher	723 (12.6)	689 (13.6)	34 (4.9)	
High school or lower	5036 (87.4)	4372 (86.4)	664 (95.1)	
Respiratory disease before age 16 years, n (%)				<0.001
No	5472 (95.0)	4828 (95.4)	644 (92.3)	
Yes	287 (5.0)	233 (4.6)	54 (7.7)	
History of tuberculosis, n (%)				<0.001
No	5722 (99.4)	5038 (99.5)	684 (98.0)	
Yes	37 (0.6)	23 (0.5)	14 (2.0)	
Occupational exposure to vapors, gases, dust, and/or fumes (VGDF), n (%)				<0.001
No	1633 (28.4)	1507 (29.8)	126 (18.1)	
Yes	4126 (71.6)	3554 (70.2)	572 (81.9)	
Smoking exposure (pack-years), n (%)				<0.001
None	4053 (70.4)	3717 (73.4)	336 (48.1)	
<10 pack-years	1051 (18.2)	885 (17.5)	166 (23.8)	
≥10 pack-years	655 (11.4)	459 (9.1)	196 (28.1)	
Household woodsmoke exposure (years), n (%)				<0.001
None	3797 (65.9)	3376 (66.7)	421 (60.3)	
<20 years	732 (12.7)	657 (13.0)	75 (10.7)	
≥20 years	1230 (21.4)	1028 (20.3)	202 (28.9)	

Values are presented as mean ± SD or n (%). COPD was defined by post-bronchodilator FEV_1/FVC <0.70 (fixed-ratio definition). COPD (–) indicates participants without COPD and COPD (+) those meeting the spirometric definition. BMI = body mass index; VGDF = exposure to vapors, gases, dust, and/or fumes at work. "Respiratory disease before age 16 years" and "history of tuberculosis" correspond to questionnaire-based exposures. P values correspond to comparisons between COPD (+) and COPD (–) groups.

Table 2. Multivariable analysis for COPD (GOLD definition, fixed ratio <0.7)

Variable	OR	Lower	Upper	p value
Age ≥64 years	4.01	3.34	4.81	<0.001
Sex, male	1.64	1.36	1.98	<0.001
Respiratory disease before age 16 years [1]	2.69	1.90	3.80	<0.001
History of tuberculosis [2]	5.73	2.70	12.17	<0.001
Education level: high school or lower	2.29	1.57	3.35	<0.001
Municipality of residence (population type)				
• Barranquilla (reference)	Reference			<0.001
• Medellín	1.14	0.82	1.58	0.433
• Cali	0.88	0.63	1.24	0.474
• Bogotá	0.72	0.51	1.03	0.070
• Bucaramanga	0.90	0.64	1.26	0.532
• Samacá	3.34	2.34	4.75	<0.001
• Aquitania	1.22	0.81	1.84	0.354
• Santa Rosa	0.73	0.47	1.13	0.160
• San Estanislao	0.86	0.56	1.31	0.475
Occupational exposure to vapors, gases, dust, or fumes (VGDF) [3]	1.34	1.08	1.68	0.009
Smoking (pack-years)				
• 0 pack-years (reference)	Reference			<0.001
• 1–10 pack-years	1.68	1.34	2.01	<0.001
• ≥10 pack-years	3.46	2.74	4.37	<0.001
Household woodsmoke exposure (years) [4]				
• 0 years (reference)	Reference			0.046
• 1–20 years	0.87	0.66	1.16	0.337
• ≥20 years	1.28	1.01	1.63	0.043

Multivariable logistic regression with COPD (yes/no) as the dependent variable (COPD defined by post-bronchodilator FEV_1/FVC <0.70). Results are reported as adjusted odds ratios (OR) with 95% confidence intervals (CI) and p values for each covariate. For categorical predictors, the table specifies the reference category (shown as "Reference"). VGDF = vapors, gases, dust, and/or fumes (occupational exposure). Non-tobacco etiotypes: [1] early-life events (respiratory disease before age 16), [2]infections (history of tuberculosis), [3] occupational exposure, [4] household biomass exposure (woodsmoke).

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PP18

SPIROMETRY VALUES CHANGE ACCORDING TO ALTITUDE IN ETHNICALLY COMPARABLE HEALTHY ADULTS

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Introduction: Spirometry is a crucial tool for assessing pulmonary function, with FEV1, FVC and their ratio being the key variables. High altitude can significantly influence these spirometry variables through physiological adaptations to hypobaric hypoxia, including increased lung volumes and enhanced ventilation. However, evidence from comparable populations at different altitudes remains limited.

Methods: We conducted a multicenter cross-sectional analysis of prospectively recruited healthy adults (≥18 years) in Colombia (ethnically comparable population). Healthy status was defined by the absence of respiratory symptoms or diagnoses, or major exposures. Participants were stratified by altitude of their permanent city of residence into low (<1500 m), intermediate (1500–2500 m), and high (>2500 m). Spirometry was performed with EasyOne Pro/EasyOne Pro Lab devices® under ATS/ERS standards. Quality was centrally reviewed and only grade A–B tests were included. FEV1 and FVC predicted values and z-scores were calculated using GLI race-neutral equations. Group differences were assessed using ANOVA with Tukey post hoc testing.

Results: We included 990 participants: 324 at low altitude, 109 at intermediate altitude, and 557 at high altitude. Table 1 shows their demographic characteristics: high-altitude residents were slightly younger (median 58.5 years) and had a lower proportion of women (52.2%) than intermediate (66.9%) and low altitude (68.8%) groups ($p<0.001$). Height was greater at high altitude (median 1.62 m) than at intermediate (1.56 m) and low altitude (1.58 m) ($p<0.001$). FVC increased progressively with altitude (z-score 0.03, 0.47, and 0.88 at low, intermediate, and high altitude, respectively; $p<0.001$), as did FEV1 (z-score −0.02, 0.30, and 0.61; $p<0.001$). Conversely, the FEV1/FVC ratio was lower at high altitude (z-score −0.44) at low altitude (z-score −0.021) ($p=0.003$).

Conclusion: In an ethnically comparable and representative sample, spirometric volumes (FVC and FEV1) are significantly higher while the FEV1/FVC ratio is lower as altitude increases. These findings support incorporating altitude into spirometric reference interpretation in Latin America and other regions with substantial high-altitude populations.

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Table 1. Participant distribution and key baseline characteristics by altitude

Altitude stratum (m)	Low (<1500 m)	Intermediate (1500–2500 m)	High (>2500 m)	p value
Participants, n	324	109	557	-
Age, years; median (IQR)	57.9 (49.8–65.4)	60.8 (48.0–67.1)	58.5 (50.2–64.5)	0.009
Women, %	68.8	66.9	52.2	<0.001
Height, m; median (IQR)	1.58 (1.54–1.67)	1.56 (1.53–1.64)	1.62 (1.55–1.69)	<0.001

Data are presented as n, median (IQR), or % as shown. P values correspond to between-group comparisons as reported.

Table 2. Spirometry differences by altitude (GLI race-neutral z-scores)

Variable (z-score)	Low (<1500 m)	Intermediate (1500–2500 m)	High (>2500 m)	p value
FVC z-score	0.03	0.47	0.88	<0.001
FEV_1 z-score	−0.02	0.30	0.61	<0.001
FEV_1/FVC z-score	−0.021	-	−0.44	0.003

Z-scores were calculated using GLI race-neutral reference equations. Reported values reflect the altitude gradient described in the Results. For FEV1/FVC, the document reports low- and high-altitude z-scores; the intermediate-altitude value is not specified in the abstract text.

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PP19

EXPOSURE TO INDOOR WOOD SMOKE, RATHER THAN HYPOXEMIA, IS A RISK FACTOR FOR COGNITIVE IMPAIRMENT IN COPD PATIENTS LIVING AT HIGH ALTITUDE

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Introduction: Cognitive impairment (CI) has been described in patients with chronic obstructive pulmonary disease (COPD) and linked to hypoxemia and vascular comorbidity. Biomass smoke exposure has recently been proposed as a direct causal contributor to CI in general population. This association has not been evaluated in COPD patients living at high altitude, where greater hypoxemia may be expected.

Methods: A cross-sectional analytical study was conducted in patients with stable COPD residing at high altitude (Bogotá, Colombia, 2,640 m) and attending a high-complex respiratory reference center (Fundacion Neumológica Colombiana). COPD was defined by a post-bronchodilator FEV1/FVC ratio <0.70. Patients were grouped by COPD risk-factor profile: woodsmoke (WS) (≥10 years of WS exposure and <10 pack-years of smoking), tobacco (≥10 pack-years and <10 years of WS exposure), or mixed (WS and tobacco). CI was assessed with the Mini-Mental State Examination (MMSE). We measured education level, comorbidities (Charlson index), dyspnea (mMRC), treatment, exacerbations in the last year, arterial blood gases, diffusing capacity (DLCO), and six-minute walk test (6MWT). Groups with normal vs abnormal MMSE were compared using chi-square and t tests. Multivariable logistic regression estimated odds ratios (OR) for abnormal MMSE.

Results: Among 199 COPD patients included, 16.1% had CI (abnormal MMSE), most frequently mild impairment (68.8%). Table 1 shows the clinical and functional characteristics. Patients with CI had more often WS exposure as COPD risk factor (p<0.001), were older (p=0.017), had lower educational level (p=0.007), lower PaO2 (p=0.032) and DLCO (p=0.036), and fewer meters on the 6MWT (p=0.007). There were no between-group differences in sex, airflow obstruction severity, comorbidities, dyspnea, or exacerbations. In multivariable analysis, WS-related COPD (vs tobacco-related COPD) was independently associated with abnormal MMSE (OR 5.46; 95% CI 2.18–13.66), after adjustment for age, education, and PaO2 (Table 2).

Conclusion: In COPD patients living at high altitude, WS exposure is strongly and independently associated with cognitive impairment beyond age, education, hypoxemia, and lung function. This finding could be related to systemic vascular damage due to WS exposure, which usually starts antenatal and early in life. Cognitive screening and targeted management should be considered in WS-exposed COPD populations.

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Table 1. Clinical and functional characteristics of COPD patients with and without cognitive impairment

Variable	Total (N=199)	Normal MMSE (N=167)	Abnormal MMSE (N=32)	p value
Age, years	70.2 ± 6.7	69.7 ± 6.5	72.8 ± 7.4	0.017
Male sex, n (%)	128 (64.3)	109 (65.3)	19 (59.4)	0.524
Body mass index, kg/m²	26.6 ± 4.3	26.6 ± 4.5	26.9 ± 3.6	0.745
Education, n (%)				0.007
• Technical/University	50 (25.1)	48 (28.7)	2 (6.3)	
• High school or less	149 (74.9)	119 (71.3)	30 (93.7)	
Charlson index, median (IQR)	1.0 (1.0–2.0)	1.0 (1.0–3.0)	1.0 (1.0–2.0)	0.405
COPD risk factor, n (%)				<0.001
• Tobacco	145 (72.9)	132 (79.0)	13 (40.6)	
• Woodsmoke	38 (19.1)	22 (13.2)	16 (50.0)	
• Woodsmoke + tobacco	16 (8.0)	13 (7.8)	3 (9.4)	
Dyspnea (mMRC), n (%)				0.572
• 0	38 (19.1)	32 (19.2)	6 (18.8)	
• 1–2	155 (77.9)	131 (78.4)	24 (75.0)	
• 3–4	6 (3.0)	4 (2.4)	2 (6.2)	
Exacerbations in prior year, n (%)				0.899
• 0	151 (75.9)	127 (76.0)	24 (75.0)	
• ≥1	48 (24.1)	40 (24.0)	8 (25.0)	
FVC, % predicted	97.8 ± 16.2	97.2 ± 15.5	100.6 ± 19.4	0.351
FEV_1, % predicted	67.6 ± 17.3	68.3 ± 17.0	65.1 ± 18.1	0.858
FEV_1/FVC, %	54.3 ± 10.0	54.5 ± 9.5	53.2 ± 12.4	0.509
DL_{CO}, % predicted	73.1 ± 20.9	71.8 ± 20.9	80.2 ± 19.8	0.036
Airflow obstruction severity (GOLD), n (%)				0.263
• 1	49 (24.6)	38 (22.8)	11 (34.4)	
• 2	121 (60.8)	105 (62.9)	16 (50.0)	
• 3	24 (12.1)	21 (12.5)	3 (9.4)	
• 4	5 (2.5)	3 (1.8)	2 (6.2)	
$PaCO_2$, mmHg	35.3 ± 3.4	35.1 ± 3.5	35.8 ± 2.8	0.301
PaO_2, mmHg	56.2 ± 4.2	56.4 ± 4.4	55.0 ± 3.3	0.032
SaO_2, %	89.3 ± 2.4	89.4 ± 2.6	89.0 ± 1.8	0.308
A–a O_2 gradient (P[A–a]O2), mmHg	8.5 ± 3.9	8.5 ± 3.9	8.4 ± 3.9	0.825
6-minute walk test (6MWT)				-
• Distance, meters	518.7 ± 82.0	525.5 ± 82.8	482.9 ± 68.9	0.007
• Distance, % predicted	85.0 ± 11.6	85.7 ± 11.6	80.9 ± 11.0	0.029
• Initial SpO_2, %	89.3 ± 2.4	89.3 ± 2.4	89.5 ± 2.2	0.693
• Final SpO_2, %	80.0 ± 4.5	79.9 ± 4.5	80.3 ± 4.8	0.667

Data are presented as mean ± SD, n (%), or median (IQR), as appropriate. Cognitive impairment was defined as an abnormal Mini-Mental State Examination (MMSE) score. COPD was defined by post-bronchodilator FEV_1/FVC <0.70. Education was categorized as technical/university vs high school or less. COPD risk-factor profile was classified as tobacco, woodsmoke, or mixed (woodsmoke + tobacco) as defined in the Methods. mMRC: modified Medical Research Council dyspnea scale; DL_{CO}: diffusing capacity of the lung for carbon monoxide; PaO_2/$PaCO_2$: arterial partial pressures of oxygen/carbon dioxide; SaO_2: arterial oxygen saturation; A–a O_2 gradient (P[A–a]O_2): alveolar–arterial oxygen gradient; SpO_2: peripheral oxygen saturation; 6MWT: six-minute walk test. Group comparisons used chi-square tests for categorical variables and t tests for continuous variables.

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Table 2. Multivariable analysis for abnormal MMSE in COPD patients

	OR	95% CI for OR		p
		LI	LS	
Age, years	1.06	0.99	1.14	0.099
COPD Risk factor				
• Tobacco				0.018
• Wood smoke	4.82	1.62	14.33	0.005
• Tobacco & Wood smoke	1.91	0.45	8.14	0.380
Elementary or high school	3.08	0.64	14.72	0.160
PaO_2, mmHg	0.95	0.85	1.07	0.399
DL_{CO}, % of predicted	1.00	0.98	1.03	0.695
Meters in the 6MWT, % of predicted	0.97	0.93	1.02	0.226

Multivariable logistic regression model for abnormal MMSE (cognitive impairment). Tobacco-related COPD was the reference category for the COPD risk-factor variable. Results are shown as regression coefficient (B), standard error (S.E.), Wald statistic, p value, and odds ratio (OR) with 95% confidence intervals (CI). PaO_2 is expressed in mmHg and age in years. Model calibration was assessed with the Hosmer–Lemeshow goodness-of-fit test.

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PP20

OXYGEN DESATURATION IS NOT A DETERMINANT OF SIX-MINUTE WALK DISTANCE IN COPD PATIENTS LIVING AT HIGH ALTITUDE

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Introduction: The six-minute walk test (6MWT) is widely used to assess functional capacity in COPD, but determinants of walk distance may differ at high altitude because chronic environmental hypoxia lowers resting oxygenation and may induce adaptive responses. We aimed to identify resting variables associated with 6MWT distance in stable COPD patients permanently residing in Bogotá (2,640 m).

Methods: Cross-sectional analytic study including patients ≥40 years with stable COPD (post-bronchodilator FEV_1/FVC <0.70) followed in a specialized respiratory program (2019–2024). We collected demographic, anthropometric, and clinical variables, Charlson comorbidity index, tobacco exposure (pack-years), and woodsmoke exposure (years). Post-bronchodilator spirometry and altitude-adjusted DLCO were obtained following ATS/ERS standards. The 6MWT was performed per ATS recommendations using a high-altitude reference equation; baseline and end-test SpO_2 were recorded. Robust multiple linear regression (Huber–White) was used to identify independent associations with walked distance.

Results: We included 264 patients (69.3% men), median age 71 (65–77) years. The most frequent COPD risk factor was tobacco (45.8%), followed by combined tobacco plus woodsmoke exposure (42.4%); 58.3% were GOLD stage 2. Median 6MWT distance was 468.5 (403.0–525.0) m, corresponding to 76.1% (68.0–84.3) of predicted. Mean baseline SpO_2 was 88.7% and end-test SpO_2 79.6%, with a mean decrease of 9.1%. In multivariable analysis, older age (β −5.16 m/year) and higher Body mass index (BMI) (β −6.12 m/kg/m²) were negatively associated with distance, whereas male sex (β +60.61 m), higher post-bronchodilator FEV_1 % predicted (β +1.01 m/%), and higher DLCO % predicted (β +0.67 m/%) were positively associated. Baseline SpO_2 was not associated with distance (p=0.579; model R^2=0.374).

Conclusion: In COPD patients living at high altitude, 6MWT distance is primarily determined by airflow limitation, gas transfer, age, and BMI, while resting oxygen saturation and exercise desaturation are not independent determinants. These findings support the need for altitude-specific functional assessment models in chronically hypoxic environments.

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Table 1. Characteristics of COPD patients living at high altitude (Bogotá, 2,640 m)

Variable	Value (n=264)
Age, years; median (IQR)	71.0 (65.0–77.0)
Male sex, n (%)	183 (69.3)
Height, m; median (IQR)	1.61 (1.50–1.61)
BMI, kg/m²; median (IQR)	25.8 (23.1–29.1)
Charlson comorbidity index; median (IQR)	4 (3–6)
COPD risk factor, n (%)	
• Tobacco	121 (45.8)
• Woodsmoke >10 years	31 (11.7)
• Tobacco + woodsmoke	112 (42.4)
Pack-years; median (IQR)	33.4 (18.7–50.0)
FVC, % predicted; median (IQR)	93.8 (81.6–107.8)
FEV1, % predicted; median (IQR)	65.3 (49.5–76.5)
FEV1/FVC, %; median (IQR)	67.1 (54.6–81.6)
DLCO (altitude-adjusted), % predicted; median (IQR)	85.0 (65.0–110.0)
GOLD stage, n (%)	
• 1	35 (13.2)
• 2	154 (58.3)
• 3	64 (24.2)
• 4	11 (4.2)
Home oxygen use, n (%)	151 (57.2)
6MWT distance, m; median (IQR)	468.5 (403.0–525.0)
6MWT distance, % predicted; median (IQR)	76.1 (68.0–84.3)
Baseline SpO2, %; mean ± SD	88.7 ± 2.9
End-test SpO2, %; mean ± SD	79.6 ± 6.4
SpO2 decrease (baseline–end), %; mean ± SD	9.1 ± 5.3

Values are median (IQR) or n (%), except SpO_2 variables shown as mean ± SD. DLCO = diffusing capacity for carbon monoxide; BMI = Body mass index; FVC = forced vital capacity; FEV_1 = forced expiratory volume in 1 second; GOLD = Global Initiative for Chronic Obstructive Lung Disease spirometric stage; 6MWT = six-minute walk test; SpO_2 = pulse oximetry oxygen saturation.

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Table 2. Robust multiple linear regression model for 6MWT distance (meters walked)

Predictor	Beta coefficient (β)	Robust SE	95% CI	p value
Age, years	-5.16	0.72	-6.57 to -3.75	<0.001
Male sex	60.61	10.43	40.08 to 81.15	<0.001
BMI, kg/m²	-6.12	1.35	-8.77 to -3.46	<0.001
Baseline SpO2, %	1.14	2.05	-2.90 to 5.18	0.579
Post-bronchodilator FEV1, % predicted	1.01	0.32	0.38 to 1.64	0.002
DLCO, % predicted	0.67	0.19	0.30 to 1.04	<0.001
Constant	718.17	196.46	331.23 to 1105.11	<0.001

Robust multiple linear regression (Huber–White standard errors). Outcome: 6MWT distance (meters). BMI = body mass index; SpO_2 = pulse oximetry oxygen saturation; FEV_1 = forced expiratory volume in 1 second; DLCO = diffusing capacity for carbon monoxide. Model fit: $R^2 = 0.374$; $F(6, 248) = 18.06$; $p < 0.001$.

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PP21

REAL WORLD DATA OF PATIENTS WITH EOSINOPHILIC GRANULOMATOSIS WITH POLYANGIITIS ON ANTI-IL5 TREATMENT

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Background: Eosinophilic granulomatosis with polyangiitis (EGPA) commonly affects the respiratory tract, and is also characterized by hyper-eosinophilia and multi-system involvement with corticosteroid dependence. Recently, mepolizumab, a humanized monoclonal antibody targeting interleukin 5 (IL-5), is considered a therapeutic option in refractory or relapsing EGPA given its usefulness as a steroid-sparing agent. However, real life evidence about its use in clinical practice is scarce. In this study, we report the experience of our center in the treatment of EGPA patients with mepolizumab in a real-world setting.

Methods: We retrospectively evaluated patients that received mepolizumab for EGPA with a follow-up of at least 3 months. Demographic and clinical manifestations of the disease, eosinophil cell count, as well as pulmonary function tests, were recorded for each patient.

Results: Eight patients were included, 6 (75%) were females, with a median age at mepolizumab initiation 66 years (IQR: 51-74). High resolution computed tomography (HRCT) of the chest confirmed airway disease in 2 patients. NSIP/OP pattern was detected in 2 patients, NSIP in 3 patients and probable UIP in 1 patient. Asthma and sinonasal abnormalities were diagnosed in 4 (50%). Three patients (37.5%) had renal involvement, while one presented also with neurological complications, cardiac and skin involvement. Median eosinophil count was 1100 (IQR: 425-3225) cells/μL and p-ANCA/anti-MPO were positive in 4 patients (50%). Before starting mepolizumab, most patients were on corticosteroids (75%), whilst one has received cyclophosphamide and one rituximab.

Conclusion: In this real-world monocentric cohort, we report 8 patients who received mepolizumab for EGPA highlighting the potential of new biologics targeting the IL-5 pathway as corticosteroid sparing agents in this population.

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PP22

IMPACT OF DELAYED BIOLOGIC INITIATION ON CLINICAL OUTCOMES AND LIFETIME HEALTH LOSSES IN SEVERE ASTHMA WORLDWIDE

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Introduction: Biologics improve control and reduce exacerbations in severe asthma, yet many patients experience prolonged delays before receiving them. Using data from the International Severe Asthma Registry (ISAR), we characterised how long patients live with objective impairment before starting biologics and examined how later initiation relates to exacerbations, healthcare use, and lifetime health losses. As delays to appropriate therapy also contribute to avoidable healthcare utilisation and reduced long-term health value, understanding the clinical and economic implications of delayed initiation is important for service planning.

Methods: We used ISAR data from 26 countries, including 11,423 adults with severe asthma who initiated biologic therapy and had ≥12 months' follow-up. Time to biologic was conceptualised from registry entry, then anchored to the earliest pre-biologic spirometry showing impaired lung function (FEV_1 <80% predicted or FEV_1/FVC <0.70). Among patients with qualifying spirometry (n = 4,145), we summarised delays overall and by early versus late initiation at the 75th percentile of lung function–based delay. Multinomial models related timing (late vs early on the registry-based scale) to exacerbations, hospitalisations, and emergency department visits across 1–2, 3–4, and 4–5 years, adjusted for prior exacerbations, oral corticosteroid exposure, and a biologic access score. Relative risks from these models were applied in a validated lifetime asthma model to quantify downstream health loss, expressed as quality-adjusted life-years (QALYs), and to contextualise the potential long-term impact of delayed escalation.

Results: Among 4,145 patients with impaired pre-biologic spirometry, the median time from earliest recorded impairment to biologic initiation was 0.39 years (IQR 0.02–1.76). One quarter experienced substantial delays, with the late group showing a median 4.76-year delay (IQR 2.78–7.49, maximum 16.0) (Table 1). Late initiation was consistently associated with higher exacerbation burden, with unadjusted relative risks for ≥1 exacerbation ranging from 1.22 to 2.16 across follow-up windows and attenuated but still elevated adjusted risks in the first 1–2 years. Lifetime modelling suggested that a 1.3-year delay resulted in a loss of 0.056 QALYs (≈20 days of perfect health), increasing further with longer delays (Table 2), indicating measurable long-term consequences of delayed escalation beyond short-term symptom burden.

Conclusion: Many patients with severe asthma live for years with impaired lung function before receiving biologics. Later initiation is associated with a higher exacerbation burden and meaningful long-term health losses, underscoring the need for earlier referral, clearer escalation triggers, and service pathways that support timely biologic access.

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Table 1. Grouped summary statistics of time to biologics

Group	Patients, n	Median time,years	IQR, years (Q1–Q3)	Range, years (min–max)
Overall (qualifying impaired spirometry)	4 145	0.39	0.02–1.76	0.00–16.03
Early initiation (≤ 75th percentile)*	3 109	0.15	0.00–0.57	0.00–1.76
Late initiation (> 75th percentile)*	1 036	4.76	2.78–7.49	1.77–16.0

Table 2: Lifetime discounted results

Outcome	SoC alone	Incremental (Biologic + SoC vs. SoC alone)	Incremental (SoC to Biologic + SoC alone)†
Mild exacerbations (event rate)*	1.271	-0.624	-0.596
Moderate exacerbations (event rate)*	0.231	-0.123	-0.117
Severe exacerbations (event rate)*	0.424	-0.156	-0.149
Discounted life years	18.52	0.244	0.244
Discounted quality-adjusted life years (QALYs)	13.64	0.997	0.941

**Sum of exacerbations over lifetime/total life years gained*
† Based on 1.3 year lag from initiating biologic therapy

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CONQUEST ADVANCE: ASSESSING THE IMPACT OF A QUALITY IMPROVEMENT PROGRAMME ON THE ACHIEVEMENT OF COPD QUALITY INDICATORS IN UK PRIMARY CARE PRACTICES

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Introduction: Integrated disease management has improved outcomes for patients with COPD. The CONQUEST Quality Improvement Programme aims to improve the diagnosis and management of patients with potential and diagnosed modifiable high-risk [MHR] COPD i.e. those with a history of recent exacerbations and opportunities for treatment optimisation. 1

AIM: To measure achievement of quality indicators aligned with CONQUEST quality standards in UK general practices implementing CONQUEST [exposed], versus matched non-participating practices [usual-care].

Methods: ADVANCE is an observational cohort study utilising the CONQUEST registry and Optimum Patient Care (OPC) Research Database. Changes in COPD quality indicator attainment were assessed over 12 months among potentially undiagnosed, newly diagnosed and already-diagnosed MHR COPD patients in

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exposed and matched usual-care practices (Figure 1). In the exposed arm, newly diagnosed and already-diagnosed patients were restricted to those receiving OPC-led CONQUEST clinics. Outcomes were compared using difference-in-difference generalised linear models with overlap propensity weighting.

Results: Across 168 UK practices, we identified 113,574 potentially undiagnosed (59,706 exposed, 53,868 usual-care), 1,591 newly diagnosed (252 exposed, 1,339 usual-care) and 16,776 already-diagnosed (392 exposed, 16,384 usual-care). Potentially undiagnosed patients in exposed practices were more likely to receive a spirometry-confirmed COPD diagnosis (1.0% vs 0.6%; adjusted ratio-of-risk-ratios [ARRR]:1.55, 95%CI: 1.19-2.01) versus usual-care practices (Figure 2). Optimisation to guideline-appropriate inhaled therapy was more likely in exposed practices among OPC-supported newly diagnosed (96.4% vs 55.7%; ARRR: 1.71, 95%CI: 1.41-2.06) and already-diagnosed (91.6% vs 39.8%; ARRR: 1.94, 95%CI: 1.77-2.12) patients, versus usual-care. In particular, presciption of inhaled corticosteroids for patients with moderate/severe exacerbations and blood eosinophil counts ≥100 cells/μL was also more likely in OPC-supported already-diagnosed (86.9% vs 58.7%, ARRR=1.42, 95%CI: 1.31-1.55) and newly diagnosed patients (56.2% vs 49.8%, ARRR=1.38, 95%CI: 1.14-1.67) in exposed practices versus usual-care. Compared to usual-care, recording of symptom scores (CAT or mMRC) was more likely at exposed practices among OPC-supported already-diagnosed (99.5% vs 62.8%, ARRR=1.33, 95%CI: 1.18-1.51) and newly diagnosed (100.0% vs 72.0%, ARRR=1.39, 95%CI: 1.19-1.62) patients.

Conclusion: CONQUEST is associated with measurable improvements in quality indicator attainment, including higher rates of spirometry-confirmed COPD diagnosis and treatment optimisation. The effect of this on clinical outcomes will be investigated in the PREVAIL cluster randomised trial (ISRCTN15819828).

Reference:

1. **Alves L et al. CONQUEST:** A Quality Improvement Program for Defining and Optimizing Standards of Care for Modifiable High-Risk COPD Patients. Patient Relat Outcome Meas. 2022 Feb 23; 13:53–68.

Figure 1: Assessment of patient level quality indicators between exposed and control practices, pre- and post-exposure to the CONQUEST Quality Improvement Programme (QIP). Exact dates and 12-month periods of assessment vary between patient cohorts.

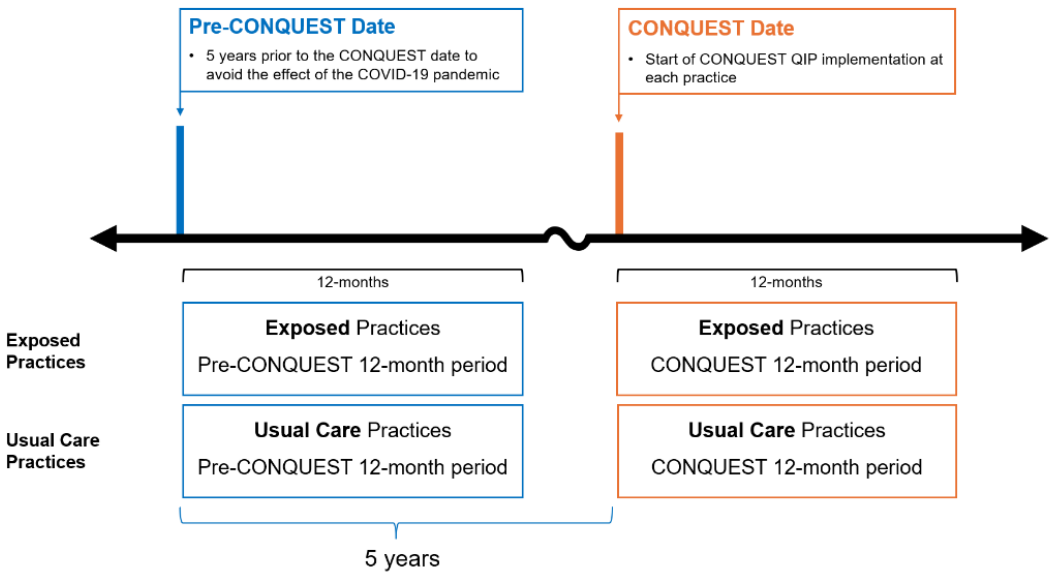

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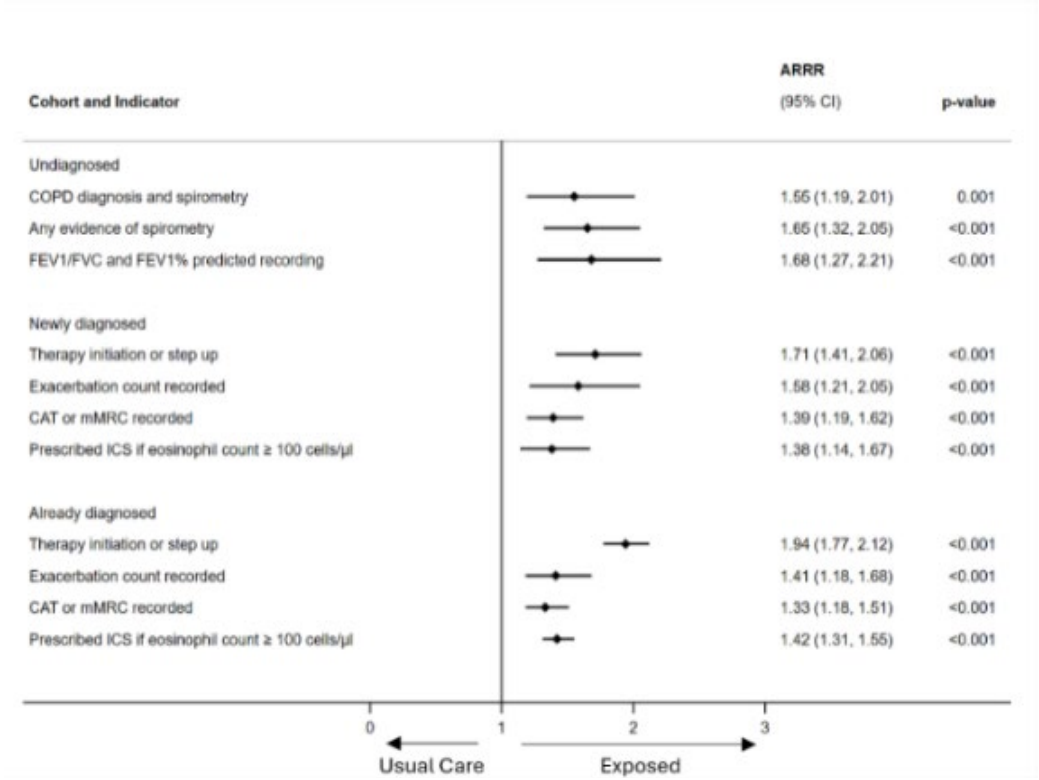
Figure 2: Plot of Adjusted Ratio of Risk Ratios (ARRRs) of primary and secondary outcomes across potentially undiagnosed, newly diagnosed, and already-diagnosed MHR COPD patient cohorts.



Abbreviations: ARRR: Adjusted Ratio of Risk Ratios; CAT: COPD Assessment Test; CI: Confidence Interval; COPD: Chronic Obstructive Pulmonary Disease; CONQUEST: The COllaboratioN on QUality improvement initiative for achieving Excellence in STandards of COPD care; FEV1: Forced Expiratory Volume in 1 second; FVC: Forced Vital Capacity; ICS: Inhaled Corticosteroids; mMRC: modified Medical Research Council.

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EFFECTS OF SWITCHING TO EXTRAFINE TRIPLE THERAPY VERSUS ESCALATION OF DUAL-THERAPY REGIMEN IN PATIENTS WITH ASTHMA OR ASTHMA WITH COMORBID COPD PREVIOUSLY TREATED WITH MEDIUM-STRENGTH DUAL THERAPY

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Introduction: For patients whose asthma remains uncontrolled on medium strength (MS) ICS/LABA, the Global Initiative for Asthma (GINA) recommends step-up to high strength (HS) ICS/LABA, or medium-strength (MS) ICS/LABA/LAMA is an alternative, such as beclometasone/formoterol/glycopyrronium (BDP/FF/G – 'Trimbow'). However, real-world evidence comparing these two treatment options is lacking.

Aims: To investigate whether stepping up from MS ICS/LABA to MS BDP/FF/G for asthma improves clinical outcomes compared to escalating to HS ICS/LABA, while mitigating the need for ICS dose escalation and reducing steroid exposure.

Methods: This historical cohort study utilized the Optimum Patient Care Research Database, a UK wide electronic medical record database. Adult patients with asthma, with or without a co-diagnosis of chronic obstructive pulmonary disease (COPD), escalated to MS BDP/FF/G or HS ICS/LABA on/after 1/1/2017 from MS ICS/LABA were included. The primary outcome was severe exacerbation, with a pre-specified non-inferiority margin of incidence rate ratio (IRR) of 1.15. Secondary outcomes included risk domain asthma control (RDAC), overall asthma control (OAC), and their components. Exploratory outcomes included the following separately: number of short-acting beta-agonist (SABA) inhalers prescribed, number of ICS inhalers prescribed, mean daily ICS exposure and mean daily oral corticosteroid (OCS) exposure. Confounding was minimized by propensity score-based overlap weighting, prior event rate ratio (PERR) adjustment and difference-in-difference regression.

Results: Overall, 2,292 patients escalated to MS BDP/FF/G and 13,196 patients escalated to HS ICS/LABA. MS BDP/FF/G was non-inferior to HS ICS/LABA in terms of the primary outcome (PERR-adjusted weighted IRR: 0.995 (95% confidence interval (CI): 0.896-1.107), non-inferiority=0.005), risk domain asthma control, overall asthma control, and their components. The MS BDP/FF/G arm had fewer ICS inhaler prescriptions and lower ICS exposure with comparable oral corticosteroid exposure.

CONCLUSION: Extra-fine MS BDP/FF/G is an effective alternative to HS ICS/LABA for escalation from MS ICS/LABA in patients with asthma or asthma-COPD overlap, avoiding the need for ICS dose increase.

References: 1. Global Initiative for Asthma. Global strategy for asthma management and prevention. 2025 update. 2025

Keywords: asthma; asthma-COPD overlap; BDP/FF/G; triple therapy; cohort; prior event rate ratio; difference-in-difference

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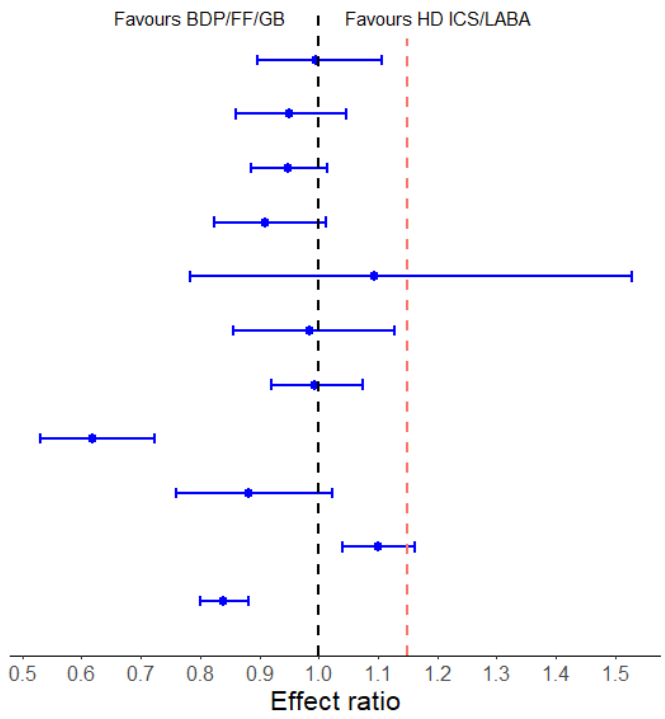
Figure 1: Forest plot of the effect measures for all study outcomes. The red dotted line indicates the non-inferiority margin.

Outcome	Effect measure	Estimate (95% CI)
ATS exacerbations	IRR (PERR)	0.995 (0.896, 1.107)
Risk domain asthma control	HR (PERR)	0.951 (0.861, 1.047)
Overall asthma control	HR (PERR)	0.949 (0.887, 1.014)
OCS (time to)	HR (PERR)	0.909 (0.825, 1.013)
Hospital (time to)	HR (PERR)	1.094 (0.783, 1.527)
LRTI (time to)	HR (PERR)	0.984 (0.857, 1.128)
Third SABA (time to)	HR (PERR)	0.994 (0.921, 1.074)
Mean daily ICS	Ratio (DiD)	0.619 (0.530, 0.723)
Mean daily OCS	Ratio (DiD)	0.881 (0.759, 1.023)
No. of SABA inhalers	IRR (PERR)	1.099 (1.039, 1.163)
No. of ICS inhalers	IRR (PERR)	0.838 (0.800, 0.881)



ABBREVIATIONS:

ATS – AMERICAN THORACIC SOCIETY

BDP/FF/G – BECLOMETASONE DIPROPIONATE / FORMOTEROL FUMARATE / GLYCOPYRRONIUM (ICS/LABA/LAMA TRIPLE THERAPY)

CI – CONFIDENCE INTERVAL

COPD- CHRONIC OBSTRUCTIVE PULMONARY DISEASE

DID – DIFFERENCE-IN-DIFFERENCE REGRESSION

EMR – ELECTRONIC MEDICAL RECORD

GINA – GLOBAL INITIATIVE FOR ASTHMA

HR -HAZARD RATIO

HS – HIGH-STRENGTH

ICS – INHALED CORTICOSTEROID

ICS/LABA/LAMA – TRIPLE INHALED THERAPY COMBINING INHALED CORTICOSTEROID, LONG-ACTING BETA-AGONIST, AND LONG-ACTING MUSCARINIC ANTAGONIST

IRR – INCIDENCE RATE RATIO

LABA – LONG-ACTING BETA-AGONIST

LAMA – LONG-ACTING MUSCARINIC ANTAGONIST

LRTI – LOWER RESPIRATORY TRACT INFECTION

MS – MEDIUM-STRENGTH

OAC – OVERALL ASTHMA CONTROL

OCS – ORAL CORTICOSTEROID

PERR – PRIOR EVENT RATE RATIO

RDAC – RISK DOMAIN ASTHMA CONTROL

SABA – SHORT-ACTING BETA-AGONIST

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ASSOCIATION BETWEEN CLINICAL AND BIOLOGICAL RESPONSE TO ANTI-IL5/5R BIOLOGIC TREATMENTS IN SEVERE ASTHMA

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Introduction: Biologics improve clinical outcomes, but response is variable. Understanding the relationship between T2-driven biomarker suppression and clinical response could help optimise treatment.

Methods: We used data from patients in the International Severe Asthma Registry receiving an anti-IL5/5R biologic. We evaluated the improvement in clinical outcomes from baseline (pre-biologic initiation) to one year post-initiation, stratified by the magnitude of change in T2 biomarkers (blood eosinophil count [BEC] vs highest in the year prior, and fractional exhaled nitric oxide [FeNO] vs most recent prior). We also compared baseline characteristics, and one-year outcomes based on attainment of T2 biomarker suppression (BEC<150 cells/μL and FeNO<25 ppb) at one-year post biologic initiation. Comparisons used linear regression, Kruskall-Wallis, chi-square, and Fisher's exact tests as appropriate for the data types. The Jonckheere-Terpstra test was used to test for trends in clinical response across ordered groups of biomarker change.

Results: Among 1734 adults from 22 countries, 14, 27, 28, 18 and 12% decreased BEC (cells/μL) by >1000, 500-1000, 250-500, 0-250, or 0-increase, respectively. Patients with post-biologic BEC decreases >1000 cells/μL had greater improvements in exacerbations (median -2 vs -1 per year, p<0.001) and FEV1 (median 305 vs 30mL, p<0.001) compared to those with no decrease or an increase. Those with at least 50 ppb decrease in FeNO had a greater improvement in FEV1 (200 vs 40mL, p=0.004) but similar change in exacerbations (-2 vs -2, p=0.6) compared to those with ≥25 increase (Figure). Patients achieving biomarker suppression had lower pre-biologic BEC (median 500 vs 690, p=0.007) and FeNO (median 21 vs 55, p<0.001) than those, in whom both biomarkers remained elevated. After one year, exacerbation outcomes (median 0 vs 0, p=0.101) and FEV1 (mean 2.23 vs 2.40L, p=0.117) were similar among patients achieving biomarker suppression and those with elevated levels of both biomarkers (Table).

Conclusion: Greater decreases in T2 biomarkers after anti-IL5/5R initiation were associated with more improved lung function and reduced exacerbations. There was little evidence of better clinical outcomes among patients achieving biomarker suppression one-year after biologic initiation.

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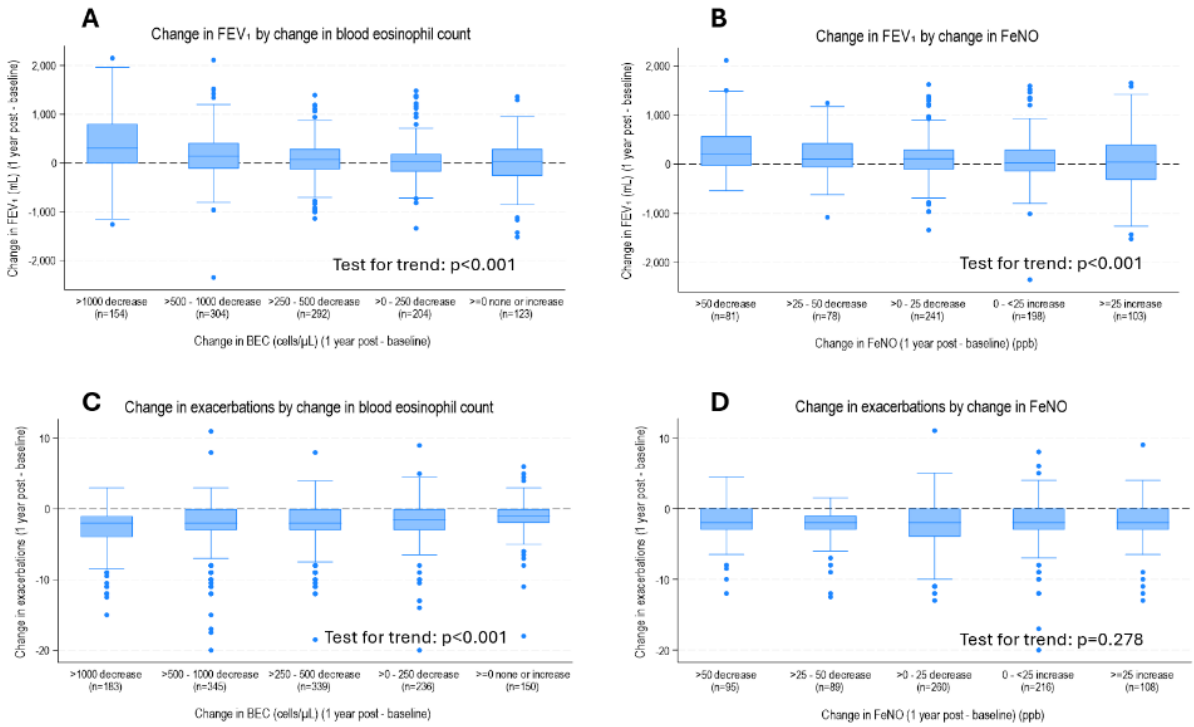
Table. Patient characteristics stratified by BEC (cells/μL) and FeNO (ppb) response groups

Figure – Association between biomarker reduction and post-biologic improvements in FEV_1 and exacerbation rates



Jonckheere-Terpstra non-parametric test for trend across increasing groups of biomarker change. Baseline BEC: highest measured in the year prior, baseline FeNO: most recent pre-biologic

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	BEC and FeNO at 1 year post biologic initiation				
	(BEC<150, FeNO<25)	(BEC≥150, FeNO<25)	(BEC<150, FeNO≥25)	(BEC≥150, FeNO≥25)	P-value
	(N=288)	(N=64)	(N=442)	(N=111)	
Baseline characteristics (pre-biologic)					
Age at biologic initiation (y)	56.2 (13.7)	53.7 (12.5)	55.7 (13.0)	52.7 (13.5)	0.070
Female	190 (66.0%)	31 (48.4%)	242 (54.8%)	62 (55.9%)	0.007
BMI (kg/m2)	28 [24, 32]	29 [25, 33]	27 [24, 31]	26 [23, 30]	0.007
Smoking status					
Never smoker	165 (57.9%)	31 (49.2%)	284 (64.5%)	73 (65.8%)	0.063
Ex-smoker	107 (37.5%)	29 (46.0%)	146 (33.2%)	37 (33.3%)	
Current smoker	13 (4.6%)	3 (4.8%)	10 (2.3%)	1 (0.9%)	
Age at asthma onset (y)	35 [20, 50]	36 [10, 44]	34 [18, 49]	32 [16, 46]	0.771
FEV_1 (mL)	2098 (795)	2052 (751)	2185 (856)	2335 (846)	0.073
Percent predicted FEV_1	74.2 (22.1)	68.8 (21.5)	75.3 (22.1)	75.9 (20.4)	0.250
FEV_1/FVC ratio	0.68 (0.13)	0.64 (0.12)	0.66 (0.13)	0.69 (0.11)	0.130
Exacerbations	2 [1, 4]	2 [1, 4]	3 [1, 4]	2 [1, 4]	0.512
Uncontrolled asthma	154 (73.3%)	31 (72.1%)	239 (69.9%)	58 (71.6%)	0.987
LTOCS in preceding year	93 (34.1%)	27 (43.5%)	182 (42.6%)	41 (39.8%)	0.137
Chronic rhinosinusitis	140 (60.1%)	31 (52.5%)	236 (67.6%)	64 (72.7%)	0.021
Allergic rhinitis	104 (48.8%)	21 (39.6%)	143 (48.8%)	45 (59.2%)	0.170
Eczema / Atopic dermatitis	47 (16.5%)	7 (10.9%)	39 (8.9%)	21 (19.1%)	0.003
Nasal polyps	91 (31.9%)	24 (37.5%)	170 (38.7%)	43 (39.4%)	0.268
Allergies	94 (36.4%)	26 (47.3%)	185 (47.2%)	52 (50.5%)	0.022
Anxiety / depression	30 (12.1%)	6 (10.5%)	29 (7.6%)	15 (15.8%)	0.071
Osteoporosis	27 (13.4%)	3 (6.0%)	31 (10.0%)	9 (12.3%)	0.407
Diabetes	16 (8.3%)	2 (4.5%)	22 (8.2%)	8 (10.5%)	0.725
Highest BEC in preceding year (baseline) (cells/µL)	500 [300, 810]	520 [370, 855]	560 [300, 900]	690 [300, 1080]	0.048
Most recent FeNO (baseline) (ppb)	21 [12, 39]	24 [14, 36]	56 [33, 91]	55 [33, 87]	<0.001
Most recent IgE (baseline) (IU/mL)	100 [32, 304]	121 [46, 334]	146 [61, 372]	179 [56, 476]	0.008
Outcomes 1-year post biologic					
Uncontrolled asthma	86 (38.6%)	16 (34.8%)	121 (35.5%)	26 (32.9%)	0.031
FEV_1 (mL)	2233 (849)	2144 (813)	2355 (886)	2395 (787)	0.118
Change in FEV_1 (mL)	100 [-60, 320]	110 [-110, 290]	70 [-160, 370]	80 [-190, 420]	0.738
Percent predicted FEV_1	80.3 (22.9)	74.7 (22.8)	82.0 (21.8)	81.2 (18.1)	0.160
FEV_1/FVC ratio	0.68 (0.13)	0.66 (0.14)	0.68 (0.12)	0.70 (0.10)	0.326
Exacerbations	0 [0, 1]	0 [0, 2]	0 [0, 1]	0 [0, 2]	0.270
Change in exacerbations	-2 [-4, 0]	-1 [-2, 0]	-2 [-3, 0]	-2 [-3, 0]	0.040
LTOCS use	92 (32.3%)	28 (44.4%)	176 (40.1%)	43 (38.7%)	0.117
BEC (cells/µL) nearest to 1 year post	30 [0, 80]	341 [220, 600]	42 [0, 90]	400 [213, 700]	<0.001
Change in BEC (cells/µL)	-440 [-785, -250]	-100 [-365, 28]	-510 [-867, -270]	-100 [-600, 130]	<0.001
FeNO (ppb) nearest to 1 year post	15 [10, 20]	15 [9, 19]	50 [34, 79]	56 [35, 100]	<0.001
Change in FeNO (ppb)	-7 [-22, 1]	-9 [-22, -1]	0 [-27, 22]	6 [-20, 28]	<0.001
IgE (IU/mL) nearest to 1 year post	72 [34, 220]	123 [41, 343]	166 [67, 413]	173 [58, 329]	0.002
Change in IgE (IU/mL)	-2 [-38, 9]	0 [-21, 3]	-1 [-55, 21]	0 [-76, 61]	0.806

Notes
Mean (SD), n (%), or median [IQR] are shown
P-values are for any differences between the 4 biomarker groups for each variable. Means compared using linear regression, medians compared using Kruskal-Wallis test, percentages compared using chi-square or Fisher's exact tests.
Change in all outcomes is calculated as level at 1-year post-biologic minus baseline level

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PP26

COMPARISON OF EGPA/HES PATIENTS IN AUSTRALIAN AND UK PRIMARY CARE

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Introduction: Eosinophilic granulomatosis with polyangiitis (EGPA) and hyper-eosinophilic syndrome (HES) are complex diseases characterised by elevated eosinophil counts and eventual end organ damage1. Clinical presentation varies with dermatological, cardiac, pulmonary and renal involvement reported2. EGPA is specifically associated with comorbid asthma3. Recent prevalence figures are unavailable in the United Kingdom (UK), and little is known about Australian prevalence and disease burden. We aimed to compare prevalence, clinical characteristics and healthcare utilization of patients with EGPA or HES between Australian and UK primary care.

Methods: A retrospective cohort study was conducted comparing prevalence, comorbidities and secondary care utlization between 2005 and 2025 for patients with EGPA or HES diagnosis from the Optimum Patient Care Research Database (OPCRD, n=431) and Optimum Patient Care Research Database Australia (OPCRDA, n=65). OPCRD and OPCRDA contain primary care electronic medical record data collected from Quality Improvement programmes in the UK and Australia respectively. Patients were identified from OPCRD by EGPA or HES diagnostic codes and from OPCRDA by either diagnostic codes or presence of disease related search terms within clinical notes.

Results: Within UK, prevalence of EGPA/HES increased by 73.6% from 51.4 to 89.2 per million active patients in OPCRD between 2005 and 2024. In 2024, EGPA/HES prevalence was higher in England than Australia (89.2 vs. 71.3 cases per 1 million patients). Comorbidities were common and patients had substantial healthcare utilisation with 76% receiving an OCS prescription, 20% attending the emergency department (ED) and 35% admitted to hospital in the prior year. The most common UK treatment regimens were azathioprine (24%) and methotrexate (15%). A lesser proportion of patients in Australia had concomitant asthma (20% vs. 81%) or OCS-prescription in the year prior to diagnosis (35% vs. 76%), however a greater proportion had been admitted to hospital (71% vs. 35%) compared to patients from the UK.

Conclusion: EGPA/HES prevalence has increased substantially over time in the UK. Comorbidities are

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common with substantial disease burden including high rates of OCS use and secondary care utilisation. Substantial differences in clinical presentation exist between patients from the UK and Australia noticeably in concomitant asthma. This difference may arise from varying proportions of EGPA and HES patients with differing presentation profiles in Australia and the UK. Our findings highlight the need for further investigations into these conditions and targeted patient management to address treatment gaps.

Key Words: EGPA, Asthma, HES

Table 1

	United Kingdom N = 431	Australia N = 65
Age Group		
≥65	163 (38%)	41 (63.1%)
Female	206 (48%)	30 (46.2%)
BMI category		
Overweight (25-29)	142 (33%)	15 (23.1%)
Obese (30.0+)	75 (17%)	24 (36.9%)
Smoking status		
Missing	7 (1.6%)	3 (4.6%)
Current	26 (6.0%)	9 (13.8%)
Ex-smoker	136 (32%)	15 (23.1%)
Non-smoker	261 (61%)	29 (44.6%)
Comorbidities		
Potentially T2-related		
Allergic rhinitis	103 (24%)	8 (12.3%)
Chronic rhinosinusitis	69 (16%)	4 (6.2%)
Disease Related		
Asthma	350 (81%)	13 (20%)
COPD	68 (16%)	8 (12.3%)
Hypertension	205 (48%)	N/A
Gastroesophageal reflux disease	79 (18%)	20 (30.8%)
Rheumatoid arthritis	31 (7.2%)	0 (0%)
Chest pain	136 (32%)	8 (12.3%)
Peripheral neuropathy	91 (21%)	1 (1.5%)
Potentially OCS-related		
Osteoporosis	80 (19%)	13 (20%)
Type 2 Diabetes	65 (15%)	15 (23.1%)
Chronic Kidney disease	87 (20%)	4 (6.2%)
Anxiety or depression	176 (41%)	29 (44.6%)
Stroke	22 (5.1%)	6 (9.2%)
Myocardial infarction	39 (9.1%)	11 (16.9%)
Heart failure	60 (14%)	3 (4.6%)
Glaucoma	9 (2.1%)	6 (9.2%)
Cataract	35 (8.1%)	3 (4.6%)
Secondary Care Utilization		
All-cause inpatient stay	152 (35%)	46 (70.8%)
All-cause A&E visits	87 (20%)	8 (12.3%)

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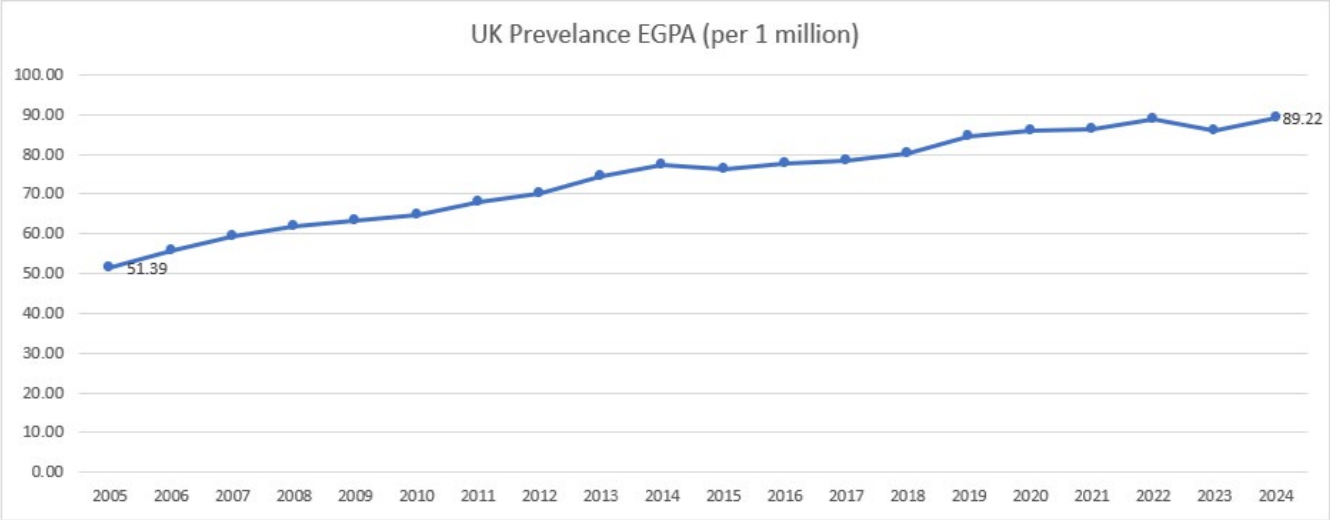
Figure 1



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