GOLD REPORT 2027 KEY CHANGES SUMMARY

Document Layout, References & Figures

In total **150 new references** have been added to the GOLD 2027 report as listed alphabetically at the end of this document. PubMed links (where available) have been included in the reference list.

An extra **12 new figures** have been introduced for 2027 as listed in the 'Table of Figures' below and denoted by an asterisk*. In addition, many existing figures have been edited and updated.

Key Changes

i. A new section on **'Addressing the Global Challenges of COPD and Asthma: a shared vision from GOLD & GINA'** and a new figure have been added (**Figure A**; Page 2).
ii. In Chapter 1 the definitions for 'Early COPD,' 'Mild COPD,' 'COPD in young people' and 'Pre-COPD' have been updated and refined (Page 13).
iii. A new figure (**Figure 1.3**) on the topic of pre-COPD has been added (Page 14).
iv. The section on **'Spirometric Criteria to Define Airflow Obstruction'** has been expanded and a new figure has been added (**Figure 2.8**; Page 32).
v. The **'Case for Universal Spirometry'** has been revised and new references included (Page 40).
vi. The **'Computed Tomography'** section has been updated (Page 51).
vii. **'Use of CT in COPD'** has been expanded (**Figure 2.16**; Page 53).
viii. In Chapter 2 and Chapter 3 the sections on '**Non-Pharmacological Treatment of COPD'** including **Rehabilitation, Physical Activity, Self-management and Integrated Care** have been updated (Page 77).
ix. Five new figures (**Figure 2.14**, **Figure 3.17**, **Figure 3.18**, **Figure 3.19**, **Figure 3.20**) have been added to expand the sections on Rehabilitation, Physical Activity, Self-management and Integrated Care; **Figure 3.15** has been revised (Page 77).
x. Information on **new inhaler propellants** has been added (Pages 62 & 170).
xi. **Vaccination** information has been updated (Page 62).
xii. The initial treatment recommendation for GOLD group A has been changed in the text and in **Figure 3.8** (Page 66).
xiii. In Chapter 2, Chapter 4 and Chapter 5, the sections on '**Cardiovascular Diseases'** have been revised and expanded (Page 126).
xiv. Two new figures (**Figure 4.5** and **Figure 5.3**) have been added to the cardiovascular disease information (Pages 112 & 128).
xv. Information on **new biologic treatments** has been included (Page 172).
xvi. A new figure (**Figure 6.1**) has been added to the **'AI in COPD'** chapter (Page 147).
xvii. New checklists for pharmacological and non-pharmacological treatment have been added (Appendix 2 & Appendix 3).
xviii. The evidence for non-pharmacological therapy (Appendix 6) has been updated with new text and references.
xix. **References** have been checked and updated throughout the document.

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*Denotes new figure for 2027

NEW REFERENCES ADDED

New references added to the GOLD 2027 report (listed alphabetically):[1-150]

Agusti A, Vila M, Faner R, et al. How artificial intelligence could improve the diagnosis and management of COPD: a perspective from GOLD. *Am J Respir Crit Care Med* 2026: 10.1093/ajrccm/aamag337 https://pubmed.ncbi.nlm.nih.gov/42377276.

Alahmari AD, Kowlessar BS, Patel AR, et al. Physical activity and exercise capacity in patients with moderate COPD exacerbations. *Eur Respir J* 2016; **48**(2): 340-9 10.1183/13993003.01105-2015 https://pubmed.ncbi.nlm.nih.gov/27126688.

Alexiou C, Ward L, Hume E, Armstrong M, Wilkinson M, Vogiatzis I. Effect of interval compared to continuous exercise training on physiological responses in patients with chronic respiratory diseases: A systematic review and meta-analysis. *Chron Respir Dis* 2021; **18**: 14799731211041506 10.1177/14799731211041506 https://pubmed.ncbi.nlm.nih.gov/34666528.

Alkandari S, Nuhmani S, AlSubaiei M, Abualait T. The efficacy of pulmonary rehabilitation on cognitive functions in patients with chronic obstructive pulmonary disease: systematic review. *Front Med (Lausanne)* 2026; **13**: 1753968 10.3389/fmed.2026.1753968 https://pubmed.ncbi.nlm.nih.gov/41924729.

Almeida M, Salvadori M, Corradi M, et al. Switching to a Low Global Warming Potential Propellant in a Pressurized Metered-Dose Inhaler Does Not Affect the Pharmacokinetics of Combined Beclometasone Dipropionate/Formoterol Fumarate. *Clin Ther* 2026; **48**(8): 757-63 10.1016/j.clinthera.2026.04.009 https://pubmed.ncbi.nlm.nih.gov/42120272.

Alves IGN, da Silva ESCM, Martinez BP, de Queiroz RS, Gomes-Neto M. Effects of neuromuscular electrical stimulation on exercise capacity, muscle strength and quality of life in COPD patients: A Systematic Review with Meta-Analysis. *Clin Rehabil* 2022; **36**(4): 449-71 10.1177/02692155211067983 https://pubmed.ncbi.nlm.nih.gov/35014892.

Ammous O, Feki W, Lotfi T, et al. Inspiratory muscle training, with or without concomitant pulmonary rehabilitation, for chronic obstructive pulmonary disease (COPD). *Cochrane Database Syst Rev* 2023; **1**(1): Cd013778 10.1002/14651858.CD013778.pub2 https://pubmed.ncbi.nlm.nih.gov/36606682.

An X, Chen Y, Wang Y, et al. Association Between Sleep Disorders and Adverse Cardiovascular Outcomes in Patients with Chronic Obstructive Pulmonary Disease: Insights from the UK Biobank. *Int J Chron Obstruct Pulmon Dis* 2026; **21**: 607991 10.2147/copd.S607991 https://pubmed.ncbi.nlm.nih.gov/42306044.

Arne M, Lisspers K, Ställberg B, et al. How often is diagnosis of COPD confirmed with spirometry? *Respir Med* 2010; **104**(4): 550-6 10.1016/j.rmed.2009.10.023 https://pubmed.ncbi.nlm.nih.gov/19931443.

Bhatt SP, Adibi A, Bodduluri S, et al. Discriminative performance and clinical utility of chronic obstructive pulmonary disease exacerbation categories for predicting future exacerbations. *Am J Respir Crit Care Med* 2026; **212**(8): 1721-9 10.1093/ajrccm/aamag118 https://pubmed.ncbi.nlm.nih.gov/42085195.

Bhatt SP, Casaburi R, Mosher CL, Rochester CL, Garvey C. Telehealth Pulmonary Rehabilitation: A Call for Minimum Standards. *Am J Respir Crit Care Med* 2024; **210**(2): 145-6 10.1164/rccm.202402-0392VP https://pubmed.ncbi.nlm.nih.gov/38536108.

Bhatt SP, Nath HP, Kim YI, et al. Centrilobular emphysema and coronary artery calcification: mediation analysis in the SPIROMICS cohort. *Respir Res* 2018; **19**(1): 257 10.1186/s12931-018-0946-1 https://pubmed.ncbi.nlm.nih.gov/30563576.

Bhatt SP, Sun Y, Wang Y, et al. Life Expectancy in Chronic Obstructive Pulmonary Disease. *JAMA Intern Med* 2026; **186**(7): 852-60 10.1001/jamainternmed.2026.0207 https://pubmed.ncbi.nlm.nih.gov/42143630.

Birch H, Pascoe A, McCormick A, et al. Diversity and inclusivity in clinical trial populations for maintenance inhaler therapy in people with COPD: a systematic review. *ERJ Open Res* 2026; **12**(1): 10.1183/23120541.00610-2025 https://pubmed.ncbi.nlm.nih.gov/41601582.

Blumenthal RS, Morris PB, Gaudino M, et al. 2026 ACC/AHA/AACVPR/ABC/ACPM/ADA/AGS/APhA/ASPC/NLA/PCNA Guideline on the Management of Dyslipidemia: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. *J Am Coll Cardiol* 2026; **87**(19): 2624-757 10.1016/j.jacc.2025.11.016 https://pubmed.ncbi.nlm.nih.gov/41824590.

Borges RC, Carvalho CR. Impact of resistance training in chronic obstructive pulmonary disease patients during periods of acute exacerbation. *Arch Phys Med Rehabil* 2014; **95**(9): 1638-45 10.1016/j.apmr.2014.05.007 https://pubmed.ncbi.nlm.nih.gov/24879965.

Bosma CB, Aaron SD, Celli BR, et al. Airway mucus plugs in asthma and chronic obstructive pulmonary disease: pathobiology, imaging, and implications for clinical trials. *Am J Respir Crit Care Med* 2026; **212**(9): 1947-61 10.1093/ajrccm/aamag309 https://pubmed.ncbi.nlm.nih.gov/42330343.

Bourbeau J, Lavoie KL, Sedeno M. Comprehensive Self-Management Strategies. *Semin Respir Crit Care Med* 2015; **36**(4): 630-8 10.1055/s-0035-1556059 https://pubmed.ncbi.nlm.nih.gov/26238647.

Bourbeau J, LeBlanc C. Integrated care in COPD. *Presse Med* 2026; **55**(1): 104320 10.1016/j.lpm.2025.104320 https://pubmed.ncbi.nlm.nih.gov/41175926.

Bourbeau J, Sebaldt RJ, Day A, et al. Practice patterns in the management of chronic obstructive pulmonary disease in primary practice: the CAGE study. *Can Respir J* 2008; **15**(1): 13-9 10.1155/2008/173904 https://pubmed.ncbi.nlm.nih.gov/18292848.

Candy S, Reeve J, Dobson R, et al. The Impact of Patient Preference on Attendance and Completion Rates at Centre-Based and mHealth Pulmonary Rehabilitation: A Non-Inferiority Pragmatic Clinical Trial. *Int J Chron Obstruct Pulmon Dis* 2023; **18**: 1419-29 10.2147/copd.S408423 https://pubmed.ncbi.nlm.nih.gov/37465821.

Casaburi R, Merrill D, Leidy NK, et al. Validation of Constant Work Rate Cycling Endurance Time for Use in Chronic Obstructive Pulmonary Disease Clinical Trials. *Ann Am Thorac Soc* 2024; **21**(5): 727-39 10.1513/AnnalsATS.202305-480OC https://pubmed.ncbi.nlm.nih.gov/38109693.

Celeski M, Segreti A, Polito D, et al. Traditional and Advanced Echocardiographic Evaluation in Chronic Obstructive Pulmonary Disease: The Forgotten Relation. *Am J Cardiol* 2024; **217**: 102-18 10.1016/j.amjcard.2024.02.022 https://pubmed.ncbi.nlm.nih.gov/38412881.

Chalkias S, Dennis P, Petersen D, et al. Efficacy, immunogenicity, and safety of a next-generation mRNA-1283 COVID-19 vaccine compared with the mRNA-1273 vaccine (NextCOVE): results from a phase 3, randomised, observer-blind, active-controlled trial. *Lancet Infect Dis* 2025; **25**(11): 1230-42 10.1016/s1473-3099(25)00236-1 https://pubmed.ncbi.nlm.nih.gov/40639387.

Charbonnier JP, Pompe E, Moore C, et al. Airway wall thickening on CT: Relation to smoking status and severity of COPD. *Respir Med* 2019; **146**: 36-41 10.1016/j.rmed.2018.11.014 https://pubmed.ncbi.nlm.nih.gov/30665516.

Chen S, Shang B, Bi Y, et al. Exercise Training Improves Depression and Anxiety in Patients with COPD: A Dose-Response Meta-Analysis of Randomized Controlled Trials. *Int J Chron Obstruct Pulmon Dis* 2026; **21**: 578054 10.2147/copd.S578054 https://pubmed.ncbi.nlm.nih.gov/42117057.

Cheung CC, Ng GL, Li TS, et al. The Combined Efficacy of Adjunctive Psychological Interventions and Pulmonary Rehabilitation in People With Chronic Obstructive Pulmonary Disease - A Systematic Review and Meta-Analysis. *Chronic Obstr Pulm Dis* 2026; **13**(5): 416-32 10.15326/jcopdf.2026.0768 https://pubmed.ncbi.nlm.nih.gov/42622334.

Choi JY, Yoon HK, Moon JY, et al. Prognostic Impact of Single Moderate Exacerbation in Patients With COPD: Analysis of 12-Year Mortality and Future Exacerbation Risk. *Chest* 2026: 10.1016/j.chest.2026.07.5219 https://pubmed.ncbi.nlm.nih.gov/42526633.

Çolak Y, Afzal S, Nordestgaard BG, Vestbo J, Lange P. Prognosis of asymptomatic and symptomatic, undiagnosed COPD in the general population in Denmark: a prospective cohort study. *Lancet Respir Med* 2017; **5**(5): 426-34 10.1016/s2213-2600(17)30119-4 https://pubmed.ncbi.nlm.nih.gov/28389225.

Colucci RL, Garshick E, White J, et al. Identification and management of incidental findings in a Veteran's lung cancer screening program. *Respir Res* 2025; **27**(1): 24 10.1186/s12931-025-03466-5 https://pubmed.ncbi.nlm.nih.gov/41421986.

Cox NS, McDonald CF, Mahal A, et al. Telerehabilitation for chronic respiratory disease: a randomised controlled equivalence trial. *Thorax* 2022; **77**(7): 643-51 10.1136/thoraxjnl-2021-216934 https://pubmed.ncbi.nlm.nih.gov/34650004.

Criner GJ, Bourbeau J, Diekemper RL, et al. Prevention of acute exacerbations of COPD: American College of Chest Physicians and Canadian Thoracic Society Guideline. *Chest* 2015; **147**(4): 894-942 10.1378/chest.14-1676 https://pubmed.ncbi.nlm.nih.gov/25321320.

Criner GJ, Browning RF, Jr, Abu-Hijleh M, et al. Metered-Dose Liquid Nitrogen Cryospray for Chronic Bronchitis: Results From the Prospective, Sham-Controlled Trial (SPRAY-CB). *American Journal of Respiratory and Critical Care Medicine* 2026: 10.1093/ajrccm/aamag502

Criner GJ, Browning RF, Jr., Abu-Hijleh M, et al. Metered-Dose Liquid Nitrogen Cryospray for Chronic Bronchitis: Results From the Prospective, Sham-Controlled Trial (SPRAY-CB). *Am J Respir Crit Care Med* 2026: 10.1093/ajrccm/aamag502 https://pubmed.ncbi.nlm.nih.gov/42768446.

Cruz AA, Mortimer KJ, Sepúlveda-Pachón IT, Vroling H, Williams C. Global herpes zoster burden in adults with COPD: a systematic review and meta-analysis. *Eur Respir Rev* 2026; **35**(179): 10.1183/16000617.0167-2025 https://pubmed.ncbi.nlm.nih.gov/41638875.

Cruz J, Jácome C, Oliveira A, et al. Construct validity of the brief physical activity assessment tool for clinical use in COPD. *Clin Respir J* 2021; **15**(5): 530-9 10.1111/crj.13333 https://pubmed.ncbi.nlm.nih.gov/33484059.

Cunha BLM, Costa LSP, Porfírio PV, de Sousa Dantas D, de Melo Marinho PE. Effects of whole-body vibration exercise on functional capacity, muscle strength, and quality of life in individuals with severe chronic obstructive pulmonary disease: a systematic review and meta-analysis. *Physiother Theory Pract* 2025; **41**(4): 861-71 10.1080/09593985.2024.2374053 https://pubmed.ncbi.nlm.nih.gov/38953511.

Currow D, Chang S, Fazekas B, et al. The Subjective Experiences of Ceasing Regular, Low-Dose, Sustained-Release Morphine when Treating Moderate to Severe Chronic Breathlessness. *J Palliat Med* 2026; **29**(5): 651-8 10.1177/10966218251403316 https://pubmed.ncbi.nlm.nih.gov/41472644.

de-Torres JP, Casanova C, Zagaceta J, et al. Cardiovascular Events in COPD: Complementary Role of Cardiac Risk and Coronary Artery Calcium Scores. *Chest* 2026; **169**(3): 631-40 10.1016/j.chest.2025.09.133 https://pubmed.ncbi.nlm.nih.gov/41101639.

de Torres JP, Bastarrika G, Zagaceta J, et al. Emphysema presence, severity, and distribution has little impact on the clinical presentation of a cohort of patients with mild to moderate COPD. *Chest* 2011; **139**(1): 36-42 10.1378/chest.10-0984 https://pubmed.ncbi.nlm.nih.gov/20705800.

Demeyer H, Mohan D, Burtin C, et al. Objectively Measured Physical Activity in Patients with COPD: Recommendations from an International Task Force on Physical Activity. *Chronic Obstr Pulm Dis* 2021; **8**(4): 528-50 10.15326/jcopdf.2021.0213 https://pubmed.ncbi.nlm.nih.gov/34433239.

Deng Y, Zhu Y, Chen C, Xu W, Yao W. Divergent Trajectories and Risk Factor Attribution of Chronic Obstructive Pulmonary Disease Burden in China and the United States, 1990-2023: An Age-Period-Cohort Analysis with Projections to 2035 Based on the Global Burden of Disease Study 2023. *Int J Chron Obstruct Pulmon Dis* 2026; **21**: 581670 10.2147/copd.S581670 https://pubmed.ncbi.nlm.nih.gov/41853750.

Dhand R, Treat S, Ferris J, et al. Safety, Efficacy, and Feasibility of Nebulized Long-Acting Bronchodilators vs Short-Acting Bronchodilators in Hospitalized Patients With Acute Exacerbations of COPD: A Phase IV, Randomized, Parallel-Group Clinical Trial. *CHEST Pulm* 2024; **2**(4): 100105 10.1016/j.chpulm.2024.100105 https://pubmed.ncbi.nlm.nih.gov/42548489.

Di Marco F, Verga M, Santus P, Morelli N, Cazzola M, Centanni S. Effect of formoterol, tiotropium, and their combination in patients with acute exacerbation of chronic obstructive pulmonary disease: a pilot study. *Respir Med* 2006; **100**(11): 1925-32 10.1016/j.rmed.2006.03.007 https://pubmed.ncbi.nlm.nih.gov/16626956.

Diaz AA, Grumley S, Yen A, et al. Eosinophils, mucus plugs and clinical outcomes: findings from two COPD cohorts. *Eur Respir J* 2024; **64**(6): 10.1183/13993003.01005-2024 https://pubmed.ncbi.nlm.nih.gov/39572219.

Diciolla NS, Yuste-Sánchez MJ, Torres-Lacomba M, Paixão C, Marques A. Physical activity coaching in people with chronic obstructive pulmonary disease: a systematic literature review with meta-analysis. *Ann Behav Med* 2025; **59**(1): 10.1093/abm/kaaf044 https://pubmed.ncbi.nlm.nih.gov/40673868.

Ding N, Qiu W, Chen J, et al. Prevalence and Risk Factors of Arrhythmias in Patients with Acute Exacerbations of Chronic Obstructive Pulmonary Disease: A Systematic Review and Meta-Analysis. *Int J Chron Obstruct Pulmon Dis* 2025; **20**: 3059-72 10.2147/copd.S545658 https://pubmed.ncbi.nlm.nih.gov/40922983.

Du D, He S, Guo S, et al. Performance of multiple case-finding approaches in detecting chronic obstructive pulmonary disease: a systematic review and network meta-analysis. *Public Health* 2026; **257**: 106349 10.1016/j.puhe.2026.106349 https://pubmed.ncbi.nlm.nih.gov/42214892.

Esteban C, Gascón M, Tabernero E, et al. Frailty in COPD hospitalized patients: Associated factors from a multicentre cohort study. *Respir Med Res* 2026; **89**: 101239 10.1016/j.resmer.2025.101239 https://pubmed.ncbi.nlm.nih.gov/41512562.

Evans RA, Singh SJ. Minimum important difference of the incremental shuttle walk test distance in patients with COPD. *Thorax* 2019; **74**(10): 994-5 10.1136/thoraxjnl-2018-212725 https://pubmed.ncbi.nlm.nih.gov/31147399.

Farias R, Sedeno M, Beaucage D, et al. Innovating the treatment of COPD exacerbations: a phone interactive telesystem to increase COPD Action Plan adherence. *BMJ Open Respir Res* 2019; **6**(1): e000379 10.1136/bmjresp-2018-000379 https://pubmed.ncbi.nlm.nih.gov/31178998.

Fisk M, McMillan V, Brown J, et al. Inaccurate diagnosis of COPD: the Welsh National COPD Audit. *Br J Gen Pract* 2019; **69**(678): e1-e7 10.3399/bjgp18X700385 https://pubmed.ncbi.nlm.nih.gov/30559109.

Freixa X, Portillo K, Paré C, et al. Echocardiographic abnormalities in patients with COPD at their first hospital admission. *Eur Respir J* 2013; **41**(4): 784-91 10.1183/09031936.00222511 https://pubmed.ncbi.nlm.nih.gov/23018914.

Gao Q, Li P, Han X, et al. Comparative efficacy of mind-body exercises for treating chronic obstructive pulmonary disease: a systematic review and network meta-analysis. *Clin Rehabil* 2026; **40**(10): 1340-52 10.1177/02692155261444584 https://pubmed.ncbi.nlm.nih.gov/42053497.

Garcia-Aymerich J, Puhan MA, Corriol-Rohou S, et al. Validity and responsiveness of the Daily- and Clinical visit-PROactive Physical Activity in COPD (D-PPAC and C-PPAC) instruments. *Thorax* 2021; **76**(3): 228-38 10.1136/thoraxjnl-2020-214554 https://pubmed.ncbi.nlm.nih.gov/33479044.

Garcia AR, Vollmer I, Blanco I, et al. Characterization of CT Imaging-Derived Pulmonary Vascular Abnormalities Associated With Pulmonary Hypertension in Chronic Lung Disease. *Chest* 2026: 10.1016/j.chest.2026.05.027 https://pubmed.ncbi.nlm.nih.gov/42208731.

Garrod R, Bestall JC, Paul EA, Wedzicha JA, Jones PW. Development and validation of a standardized measure of activity of daily living in patients with severe COPD: the London Chest Activity of Daily Living scale (LCADL). *Respir Med* 2000; **94**(6): 589-96 10.1053/rmed.2000.0786 https://pubmed.ncbi.nlm.nih.gov/10921765.

Geidl W, Schlesinger S, Mino E, Miranda L, Pfeifer K. Dose-response relationship between physical activity and mortality in adults with noncommunicable diseases: a systematic review and meta-analysis of prospective observational studies. *Int J Behav Nutr Phys Act* 2020; **17**(1): 109 10.1186/s12966-020-01007-5 https://pubmed.ncbi.nlm.nih.gov/32843054.

Global Initiative for Chronic Obstructive Lung Disease (GOLD). Global strategy for the diagnosis, management, and prevention of chronic obstructive pulmonary disease. 2026 Report. 2026. http://www.goldcopd.org/.

Graham BL, Steenbruggen I, Miller MR, et al. Standardization of Spirometry 2019 Update. An Official American Thoracic Society and European Respiratory Society Technical Statement. *Am J Respir Crit Care Med* 2019; **200**(8): e70-e88 10.1164/rccm.201908-1590ST https://pubmed.ncbi.nlm.nih.gov/31613151.

Griffiths B, Alajmi R, Clifton IJ, Birch RJ, Peckham D, Price OJ. Physical inactivity in chronic airways disease: an important candidate in the treatable traits paradigm. *Eur Respir Rev* 2026; **35**(179): 10.1183/16000617.0165-2025 https://pubmed.ncbi.nlm.nih.gov/41741005.

Grydeland TB, Dirksen A, Coxson HO, et al. Quantitative computed tomography measures of emphysema and airway wall thickness are related to respiratory symptoms. *Am J Respir Crit Care Med* 2010; **181**(4): 353-9 10.1164/rccm.200907-1008OC https://pubmed.ncbi.nlm.nih.gov/19926869.

Grydeland TB, Dirksen A, Coxson HO, et al. Quantitative computed tomography: emphysema and airway wall thickness by sex, age and smoking. *Eur Respir J* 2009; **34**(4): 858-65 10.1183/09031936.00167908 https://pubmed.ncbi.nlm.nih.gov/19324952.

Gutiérrez-Villegas C, Herrero-Montes M, Fernández Cacho LM, et al. Global Economic and Social Burden of Chronic Obstructive Pulmonary Disease: A Systematic Review (2020-2024). *Int J Chron Obstruct Pulmon Dis* 2026; **21**: 608107 10.2147/copd.S608107 https://pubmed.ncbi.nlm.nih.gov/42292532.

Halpin DMG, Dickens AP, Skinner D, et al. Identification of key opportunities for optimising the management of high-risk COPD patients in the UK using the CONQUEST quality standards: an observational longitudinal study. *Lancet Reg Health Eur* 2023; **29**: 100619 10.1016/j.lanepe.2023.100619 https://pubmed.ncbi.nlm.nih.gov/37131493.

Halpin DMG, Masekela R, Vogelmeier CF, et al. Addressing the global challenges of COPD and asthma: a shared vision from the Global Initiative for Chronic Obstructive Pulmonary Disease (GOLD) and the Global Initiative for Asthma (GINA). *Eur Respir J* 2026; **67**(2): 10.1183/13993003.02244-2025 https://pubmed.ncbi.nlm.nih.gov/41198399.

Halpin DMG, Masekela R, Vogelmeier CF, et al. Addressing the global challenges of chronic obstructive pulmonary disease and asthma: a shared vision from the Global Initiative for Chronic Obstructive Pulmonary Disease (GOLD) and the Global Initiative for Asthma (GINA). *Am J Respir Crit Care Med* 2026; **212**(2): 297-302 10.1164/rccm.202508-1894PP https://pubmed.ncbi.nlm.nih.gov/41104909.

Halpin DMG, Masekela R, Vogelmeier CF, et al. Addressing the Global Challenges of COPD and Asthma: A Shared Vision From the Global Initiative for Chronic Obstructive Pulmonary Disease (GOLD) and the Global Initiative for Asthma (GINA). *Respirology* 2026; **31**(2): 135-40 10.1002/resp.70178 https://pubmed.ncbi.nlm.nih.gov/41620839.

Halpin DMG, Masekela R, Vogelmeier CF, et al. Addressing the Global Challenges of COPD and Asthma: A Shared Vision from the Global Initiative for Chronic Obstructive Pulmonary Disease (GOLD) and the Global Initiative for Asthma (GINA). *Arch Bronconeumol* 2026; **62**(2): 113-7 10.1016/j.arbres.2025.10.011 https://pubmed.ncbi.nlm.nih.gov/41628954.

Halpin DMG, Masekela R, Vogelmeier CF, et al. Addressing the global challenges of COPD and Asthma: A shared vision from the Global Initiative for Chronic Obstructive Pulmonary Disease and the Global Initiative for Asthma. *J Pan Afr Thorac Soc* 2025; **6**: 33-8

Halpin DMG, Stanojevic S, McCormack MC, et al. Joint statement from GOLD/GLI regarding the use of spirometry to define airflow obstruction and diagnose COPD. *Eur Respir J* 2026; **67**(4): 10.1183/13993003.02574-2025 https://pubmed.ncbi.nlm.nih.gov/41748283.

Han MK, Aaron SD, Bui D, et al. A GOLD Science Committee Report on Universal Longitudinal Spirometry: A New Paradigm. *American Journal of Respiratory and Critical Care Medicine* 2026: 10.1093/ajrccm/aamag432

Harding S, Richardson A, Glynn A, Middleton L, Hodgson L. The Associations Between Socioeconomic Deprivation, Social Isolation and Sedentary Time in COPD: A UK Biobank Study. *Copd* 2026; **23**(1): 2713066 10.1080/15412555.2026.2713066 https://pubmed.ncbi.nlm.nih.gov/42695939.

Hipólito N, Pimenta S, Encantado J, Cruz J. Physical activity in COPD: a scoping review of methods and behaviour change techniques. *ERJ Open Res* 2026; **12**(4): 10.1183/23120541.01481-2025 https://pubmed.ncbi.nlm.nih.gov/42577517.

Hogg JC, Paré PD, Hackett TL. The Contribution of Small Airway Obstruction to the Pathogenesis of Chronic Obstructive Pulmonary Disease. *Physiol Rev* 2017; **97**(2): 529-52 10.1152/physrev.00025.2015 https://pubmed.ncbi.nlm.nih.gov/28151425.

Holland AE, Cox NS, Houchen-Wolloff L, et al. Defining Modern Pulmonary Rehabilitation. An Official American Thoracic Society Workshop Report. *Ann Am Thorac Soc* 2021; **18**(5): e12-e29 10.1513/AnnalsATS.202102-146ST https://pubmed.ncbi.nlm.nih.gov/33929307.

Holland AE, Spruit MA, Troosters T, et al. An official European Respiratory Society/American Thoracic Society technical standard: field walking tests in chronic respiratory disease. *Eur Respir J* 2014; **44**(6): 1428-46 10.1183/09031936.00150314 https://pubmed.ncbi.nlm.nih.gov/25359355.

Holland AE, Wageck B, Hoffman M, Lee AL, Jones AW. Does pulmonary rehabilitation address treatable traits? A systematic review. *Eur Respir Rev* 2022; **31**(165): 10.1183/16000617.0042-2022 https://pubmed.ncbi.nlm.nih.gov/36002168.

Huang SC, Wu JY, Kuo CY, Hsu WH, Tsai YW, Lai CC. Association Between Glucagon-Like Peptide-1 Receptor Agonists and Clinical Outcomes in Patients with Chronic Obstructive Pulmonary Disease and Obesity. *Drug Des Devel Ther* 2026; **20**: 609054 10.2147/dddt.S609054 https://pubmed.ncbi.nlm.nih.gov/42292155.

Jain N, Covar RA, Gleason MC, Newell JD, Jr., Gelfand EW, Spahn JD. Quantitative computed tomography detects peripheral airway disease in asthmatic children. *Pediatr Pulmonol* 2005; **40**(3): 211-8 10.1002/ppul.20215 https://pubmed.ncbi.nlm.nih.gov/16015663.

Jenkins CR, Martin A, Chang CL, et al. Bisoprolol to prevent adverse cardiac events (PACE) in COPD: a multicentre, double-blind, randomised, controlled, phase 3 trial. *Lancet Respir Med* 2026; **14**(3): 203-14 10.1016/s2213-2600(25)00390-x https://pubmed.ncbi.nlm.nih.gov/41579873.

Jestin-Guyon N, Ouaalaya EH, Bernady A, et al. Sex Differences and Survival Among COPD Patients in France: The Palomb Cohort. *Int J Chron Obstruct Pulmon Dis* 2026; **21**: 531894 10.2147/copd.S531894 https://pubmed.ncbi.nlm.nih.gov/41847336.

Jia P, Zhang H, Li Y, Yao Z, Wang L. The timing of the commencement of pulmonary rehabilitation in hospitalized patients with acute exacerbation of COPD: a systematic review and network meta-analysis. *BMC Medicine* 2026; **24**(1): 260 10.1186/s12916-026-04774-3

Jiang Y, Wang Y, Yang M. Association between current e-cigarette use and chronic obstructive pulmonary disease: a meta-analysis focusing on exclusive e-cigarette users. *Front Public Health* 2026; **14**: 1802572 10.3389/fpubh.2026.1802572 https://pubmed.ncbi.nlm.nih.gov/42100525.

Johnson SW, Wan ES, San Jose Estépar R, et al. Chest Computed Tomography to Improve Phenotyping in Pulmonary Hypertension Associated with Chronic Obstructive Pulmonary Disease. *Ann Am Thorac Soc* 2025; **22**(2): 175-80 10.1513/AnnalsATS.202408-878PS https://pubmed.ncbi.nlm.nih.gov/39556097.
Joseph T, Gao C, Nadarajah R, et al. Chronic obstructive pulmonary disease and risk of incident cardiovascular disease, chronic kidney disease, and death: a systematic review and meta-analysis. *EClinicalMedicine* 2026; **98**: 104131 10.1016/j.eclinm.2026.104131 https://pubmed.ncbi.nlm.nih.gov/42602993.
Kahnert K, Jörres RA, Kauczor HU, et al. Relationship between clinical and radiological signs of bronchiectasis in COPD patients: Results from COSYCONET. *Respir Med* 2020; **172**: 106117 10.1016/j.rmed.2020.106117 https://pubmed.ncbi.nlm.nih.gov/32891937.
Kapatais C, Karaoulani T, Papanikolaou A, et al. The role of artificial intelligence in predicting COPD exacerbations using multimodal data: a systematic review. *ERJ Open Res* 2026; **12**(3): 10.1183/23120541.01420-2025 https://pubmed.ncbi.nlm.nih.gov/42311877.
Kar TA, Qadri SM, Altaf J, et al. Echocardiographic Changes in Chronic Obstructive Pulmonary Disease Exacerbations: A Systematic Review of Pre- and Post-treatment Findings. *Cureus* 2025; **17**(8): e89985 10.7759/cureus.89985 https://pubmed.ncbi.nlm.nih.gov/40951198.
Kim KY, Yoo KH, Choi HS, et al. Nationwide quality assessment of treatment for chronic obstructive pulmonary disease. *J Thorac Dis* 2020; **12**(12): 7174-81 10.21037/jtd-20-905 https://pubmed.ncbi.nlm.nih.gov/33447406.
Koefoed MM, dePont Christensen R, Søndergaard J, Jarbøl DE. Lack of spirometry use in Danish patients initiating medication targeting obstructive lung disease. *Respir Med* 2012; **106**(12): 1743-8 10.1016/j.rmed.2012.09.012 https://pubmed.ncbi.nlm.nih.gov/23044193.
Kovacs G, Zeder K, Humbert M, et al. European Respiratory Society clinical practice guidelines update for the treatment of pulmonary arterial hypertension. *Eur Respir J* 2026: 10.1183/13993003.01178-2026 https://pubmed.ncbi.nlm.nih.gov/42705705.
Labaki WW, Xia M, Murray S, et al. Quantitative Emphysema on Low-Dose CT Imaging of the Chest and Risk of Lung Cancer and Airflow Obstruction: An Analysis of the National Lung Screening Trial. *Chest* 2021; **159**(5): 1812-20 10.1016/j.chest.2020.12.004 https://pubmed.ncbi.nlm.nih.gov/33326807.
Lan Y, Chen R, Zheng J, et al. Predictors of COPD exacerbations differ between grades of airflow limitation. *ERJ Open Res* 2026; **12**(1): 10.1183/23120541.00035-2025 https://pubmed.ncbi.nlm.nih.gov/41668878.
Lareau SC, Carrieri-Kohlman V, Janson-Bjerklie S, Roos PJ. Development and testing of the Pulmonary Functional Status and Dyspnea Questionnaire (PFSDQ). *Heart Lung* 1994; **23**(3): 242-50 https://pubmed.ncbi.nlm.nih.gov/8039994.
Leroux-Roels I, Huang G, Ferguson M, et al. Efficacy and Safety of an mRNA Seasonal Influenza Vaccine in Adults. *N Engl J Med* 2026; **394**(18): 1803-13 10.1056/NEJMoa2516491 https://pubmed.ncbi.nlm.nih.gov/42090792.
Li H, Yang J, Xiao Q, et al. Global prevalence of COPD-OSA overlap syndrome: A systematic review and meta-analysis. *Sleep Med* 2025; **135**: 106766 10.1016/j.sleep.2025.106766 https://pubmed.ncbi.nlm.nih.gov/40884991.
Lim R, Smith T, Usherwood T. Barriers to spirometry in Australian general practice: A systematic review. *Aust J Gen Pract* 2023; **52**(9): 585-93 10.31128/ajgp-09-22-6568 https://pubmed.ncbi.nlm.nih.gov/37666778.
Liu GY, Colangelo LA, San Jose Estepar R, et al. Low-Normal FVC Trajectory Starting in Early Adulthood and Risk of Future Interstitial Abnormalities. *Am J Respir Crit Care Med* 2023; **208**(7): 816-8 10.1164/rccm.202304-0771LE https://pubmed.ncbi.nlm.nih.gov/37490649.
Liu Z, Cheang I, Chen Y, et al. Risk of severe cardiovascular events and incidence rate of cardiopulmonary events among patients with COPD in China: a retrospective cohort study. *BMJ Open* 2026; **16**(4): e109712 10.1136/bmjopen-2025-109712 https://pubmed.ncbi.nlm.nih.gov/42009394.
Machado A, Burtin C, Spruit MA. Alternative Modes of Delivery in Pulmonary Rehabilitation: A Critical Appraisal of the Literature. *J Cardiopulm Rehabil Prev* 2024; **44**(6): 399-408 10.1097/hcr.0000000000000910 https://pubmed.ncbi.nlm.nih.gov/39485893.
MacLeod MA, Knott KD, Allinson JP, et al. Prevalence and Clinical Correlates of Radiologically Detected Coronary Artery Disease in Chronic Obstructive Pulmonary Disease: A Cross-Sectional Observational Study. *Am J Respir Crit Care Med* 2025; **211**(6): 946-56 10.1164/rccm.202404-0838OC https://pubmed.ncbi.nlm.nih.gov/39680915.
Man W, Chaplin E, Daynes E, et al. British Thoracic Society Clinical Statement on pulmonary rehabilitation. *Thorax* 2023; **78**(Suppl 4): s2-s15 10.1136/thorax-2023-220439 https://pubmed.ncbi.nlm.nih.gov/37770084.
Matsuoka S, Kurihara Y, Yagihashi K, Hoshino M, Watanabe N, Nakajima Y. Quantitative assessment of air trapping in chronic obstructive pulmonary disease using inspiratory and expiratory volumetric MDCT. *AJR Am J Roentgenol* 2008; **190**(3): 762-9 10.2214/ajr.07.2820 https://pubmed.ncbi.nlm.nih.gov/18287450.
Moy ML, Martinez CH, Kadri R, et al. Long-Term Effects of an Internet-Mediated Pedometer-Based Walking Program for Chronic Obstructive Pulmonary Disease: Randomized Controlled Trial. *J Med Internet Res* 2016; **18**(8): e215 10.2196/jmir.5622 https://pubmed.ncbi.nlm.nih.gov/27502583.
Nishi SP, Wang Y, Kuo YF, Goodwin JS, Sharma G. Spirometry use among older adults with chronic obstructive pulmonary disease: 1999-2008. *Ann Am Thorac Soc* 2013; **10**(6): 565-73 10.1513/AnnalsATS.201302-037OC https://pubmed.ncbi.nlm.nih.gov/24053440.
O'Donnell RA, Peebles C, Ward JA, et al. Relationship between peripheral airway dysfunction, airway obstruction, and neutrophilic inflammation in COPD. *Thorax* 2004; **59**(10): 837-42 10.1136/thx.2003.019349 https://pubmed.ncbi.nlm.nih.gov/15454648.

Oelsner EC, Smith BM, Hoffman EA, et al. Associations between emphysema-like lung on CT and incident airflow limitation: a general population-based cohort study. *Thorax* 2018; **73**(5): 486-8 10.1136/thoraxjnl-2017-210842 https://pubmed.ncbi.nlm.nih.gov/29074811.

Oliveira TRA, do Nascimento Sales Figueiredo Fernandes AT, Santino TA, da Silva Menescal FEP, de Miranda Silva Nogueira PA. Effects of wearable devices on physical activity monitoring in pulmonary rehabilitation programs for chronic respiratory diseases: a systematic review and meta-analysis. *Sci Rep* 2025; **15**(1): 44767 10.1038/s41598-025-28554-w https://pubmed.ncbi.nlm.nih.gov/41461724.

Oltra G, Ricciardelli M, Virgilio S, et al. High-flow nasal cannula during pulmonary rehabilitation for people with chronic obstructive pulmonary disease: A systematic review and meta-analysis. *Physiother Res Int* 2024; **29**(2): e2088 10.1002/pri.2088 https://pubmed.ncbi.nlm.nih.gov/38581398.

Papi A, Greening NJ, Bhatt SP, et al. Safety and efficacy of astegolimab for COPD with frequent exacerbations regardless of baseline blood eosinophil counts (ALIENTO and ARNASA): randomised, double-blind, placebo-controlled, phase 2b and 3 trials. *Lancet* 2026; **407**(10543): 2027-39 10.1016/s0140-6736(26)00637-9 https://pubmed.ncbi.nlm.nih.gov/42150581.

Patel S, Marchant J, Bhatt SP, Hurst JR. Rural versus urban living and COPD: a systematic review. *Eur Respir Rev* 2026; **35**(180): 10.1183/16000617.0290-2025 https://pubmed.ncbi.nlm.nih.gov/42055591.

Pérez-Padilla R, de Oca MM, Thirion-Romero I, et al. Prognostic impact of pre- and post-bronchodilator airflow obstruction and post-bronchodilator reference values in a population-based study. On behalf of the PLATINO group. *Respir Res Clin Pract* 2026; **52**(2): e20250275 10.36416/1806-3756/e20250275 https://pubmed.ncbi.nlm.nih.gov/42781375.

Petersen H, Sood A, Meek PM, et al. Rapid lung function decline in smokers is a risk factor for COPD and is attenuated by angiotensin-converting enzyme inhibitor use. *Chest* 2014; **145**(4): 695-703 10.1378/chest.13-0799 https://pubmed.ncbi.nlm.nih.gov/24008986.

Petersen H, Sood A, Polverino F, et al. The Course of Lung Function in Middle-aged Heavy Smokers: Incidence and Time to Early Onset of Chronic Obstructive Pulmonary Disease. *Am J Respir Crit Care Med* 2018; **198**(11): 1449-51 10.1164/rccm.201805-0861LE https://pubmed.ncbi.nlm.nih.gov/30114375.

Plaza V, Fernández-Rodríguez C, Melero C, et al. Validation of the 'Test of the Adherence to Inhalers' (TAI) for Asthma and COPD Patients. *J Aerosol Med Pulm Drug Deliv* 2016; **29**(2): 142-52 10.1089/jamp.2015.1212 https://pubmed.ncbi.nlm.nih.gov/26230150.

Puente-Maestu L, Palange P, Casaburi R, et al. Use of exercise testing in the evaluation of interventional efficacy: an official ERS statement. *Eur Respir J* 2016; **47**(2): 429-60 10.1183/13993003.00745-2015 https://pubmed.ncbi.nlm.nih.gov/26797036.

Radtke T, Crook S, Kaltsakas G, et al. ERS statement on standardisation of cardiopulmonary exercise testing in chronic lung diseases. *Eur Respir Rev* 2019; **28**(154): 10.1183/16000617.0101-2018 https://pubmed.ncbi.nlm.nih.gov/31852745.

Rahman S, Das A, Islam AN, et al. Prevalence and risk factors for the development of COPD among workers in stone quarries: a cross-sectional study. *BMC Pulm Med* 2025; **25**(1): 384 10.1186/s12890-025-03542-y https://pubmed.ncbi.nlm.nih.gov/40790194.

Ramon MA, Esteban C, Ortega F, et al. Discriminant Validity of a Single Clinical Question for the Screening of Inactivity in Individuals Living with COPD. *Int J Chron Obstruct Pulmon Dis* 2022; **17**: 3033-44 10.2147/copd.S378758 https://pubmed.ncbi.nlm.nih.gov/36483675.

Ritchie AI, Donaldson GC, Hoffman EA, et al. Structural Predictors of Lung Function Decline in Young Smokers with Normal Spirometry. *Am J Respir Crit Care Med* 2024; **209**(10): 1208-18 10.1164/rccm.202307-1203OC https://pubmed.ncbi.nlm.nih.gov/38175920.

Robinson SA, Burns PA, Fitzelle-Jones E, Gagnon DR, Moy ML. Pulmonary rehabilitation is associated with increased 1-year survival in stable chronic obstructive pulmonary disease. *Am J Respir Crit Care Med* 2026; **212**(6): 1227-36 10.1093/ajrccm/aamag101 https://pubmed.ncbi.nlm.nih.gov/42085209.

Rudman Spergel AK, Wu I, Deng W, et al. Immunogenicity and Safety of Influenza and COVID-19 Multicomponent Vaccine in Adults ≥50 Years: A Randomized Clinical Trial. *Jama* 2025; **333**(22): 1977-87 10.1001/jama.2025.5646 https://pubmed.ncbi.nlm.nih.gov/40332892.

Sánchez Romero EA, Zubercová AJ, Gran A, et al. Comparative effectiveness of water-based versus land-based rehabilitation in COPD: a systematic review and network meta-analysis of randomized controlled trials. *NPJ Prim Care Respir Med* 2026; **36**(1): 10.1038/s41533-026-00503-8 https://pubmed.ncbi.nlm.nih.gov/41965361.

Sciurba FC, Watz H, Bourdin A, et al. Tozorakimab to Prevent COPD Exacerbations. *N Engl J Med* 2026: 10.1056/NEJMoa2606998 https://pubmed.ncbi.nlm.nih.gov/42708515.

Seemungal TA, Wedzicha JA. Acute exacerbations of COPD: the challenge is early treatment. *Copd* 2009; **6**(2): 79-81 10.1080/15412550902806011 https://pubmed.ncbi.nlm.nih.gov/19378218.

Shah AJ, Althobiani MA, Saigal A, Ogbonnaya CE, Hurst JR, Mandal S. Wearable technology interventions in patients with chronic obstructive pulmonary disease: a systematic review and meta-analysis. *NPJ Digit Med* 2023; **6**(1): 222 10.1038/s41746-023-00962-0 https://pubmed.ncbi.nlm.nih.gov/38012218.

Shahaj O, Meiwald A, Puri Sudhir K, et al. Mapping the Common Barriers to Optimal COPD Care in High and Middle-Income Countries: Qualitative Perspectives from Clinicians. *Int J Chron Obstruct Pulmon Dis* 2024; **19**: 1207-23 10.2147/copd.S449659 https://pubmed.ncbi.nlm.nih.gov/38831892.

Singh D, Guller P, Reid F, et al. A phase 2a trial of the IL-33 monoclonal antibody tozorakimab in patients with COPD: FRONTIER-4. *Eur Respir J* 2025; **66**(1): 10.1183/13993003.02231-2024 https://pubmed.ncbi.nlm.nih.gov/40154559.
Singh D, Mancini L, Melis G, Cortellini M, Rostello C, Mathews KS. Safety and tolerability of the low global warming potential propellant HFA-152a in patients with asthma receiving beclometasone dipropionate/formoterol fumarate/glycopyrronium: The TRECOS study. *Respir Med* 2026; **256**: 108814 10.1016/j.rmed.2026.108814 https://pubmed.ncbi.nlm.nih.gov/41951188.
Singh SJ, Buxton M, Daynes E, et al. British Thoracic Society quality standard for pulmonary rehabilitation. *BMJ Open Respir Res* 2026; **13**(1): 10.1136/bmjresp-2025-003872 https://pubmed.ncbi.nlm.nih.gov/42379641.
Spence JG, Brincks J, Løkke A, Neustrup L, Østergaard EB. One-minute sit-to-stand test as a quick functional test for people with COPD in general practice. *NPJ Prim Care Respir Med* 2023; **33**(1): 11 10.1038/s41533-023-00335-w https://pubmed.ncbi.nlm.nih.gov/36922535.
Spruit MA, Gosselink R, Troosters T, et al. Muscle force during an acute exacerbation in hospitalised patients with COPD and its relationship with CXCL8 and IGF-I. *Thorax* 2003; **58**(9): 752-6 10.1136/thorax.58.9.752 https://pubmed.ncbi.nlm.nih.gov/12947130.
Sunjaya A, Edwards GD, Harvey J, et al. Validation of artificial intelligence spirometry diagnostic support software in primary care: a blinded diagnostic accuracy study. *ERJ Open Res* 2025; **11**(5): 10.1183/23120541.00116-2025 https://pubmed.ncbi.nlm.nih.gov/41031099.
Svendsen CD, Kuiper KKJ, Ostridge K, et al. Factors associated with coronary heart disease in COPD patients and controls. *PLoS One* 2022; **17**(4): e0265682 10.1371/journal.pone.0265682 https://pubmed.ncbi.nlm.nih.gov/35476713.
Tardif A, Whitmore GA, Vandemheen KL, et al. Patient Factors and Clinical Efficacy of Early Identification and Treatment of Chronic Obstructive Pulmonary Disease and Asthma. *Am J Respir Crit Care Med* 2025; **211**(11): 2053-9 10.1164/rccm.202505-1260OC https://pubmed.ncbi.nlm.nih.gov/41056133.
Troosters T, Maltais F, Leidy N, et al. Effect of Bronchodilation, Exercise Training, and Behavior Modification on Symptoms and Physical Activity in Chronic Obstructive Pulmonary Disease. *Am J Respir Crit Care Med* 2018; **198**(8): 1021-32 10.1164/rccm.201706-1288OC https://pubmed.ncbi.nlm.nih.gov/29664681.
Troosters T, Probst VS, Crul T, et al. Resistance training prevents deterioration in quadriceps muscle function during acute exacerbations of chronic obstructive pulmonary disease. *Am J Respir Crit Care Med* 2010; **181**(10): 1072-7 10.1164/rccm.200908-1203OC https://pubmed.ncbi.nlm.nih.gov/20133927.
Umer M, Jagra AS, Al Seidi J, et al. Underrepresentation of Women in COPD Pharmacologic Trials Relative to Disease Burden: A Systematic Review and Meta-Analysis. *Int J Chron Obstruct Pulmon Dis* 2026; **21**: 585685 10.2147/copd.S585685 https://pubmed.ncbi.nlm.nih.gov/41773232.
Usmani OS, Martinez FJ, Pandya H, et al. Safety of budesonide/glycopyrronium/formoterol fumarate dihydrate delivered by HFO-1234ze versus HFA-134a in chronic obstructive pulmonary disease: a phase 3, multi-site, randomised, double-blind, parallel-group, active-comparator study. *EClinicalMedicine* 2025; **87**: 103402 10.1016/j.eclinm.2025.103402 https://pubmed.ncbi.nlm.nih.gov/40831469.
Walters JA, Walters EH, Nelson M, et al. Factors associated with misdiagnosis of COPD in primary care. *Prim Care Respir J* 2011; **20**(4): 396-402 10.4104/pcrj.2011.00039 https://pubmed.ncbi.nlm.nih.gov/21687918.
Wan E, Yen A, Elalami R, et al. Airway Mucus Plugs on Chest Computed Tomography Are Associated with Exacerbations in Chronic Obstructive Pulmonary Disease. *Am J Respir Crit Care Med* 2025; **211**(5): 814-22 10.1164/rccm.202403-0632OC https://pubmed.ncbi.nlm.nih.gov/39470402.
Ward TJ, Plumptre CD, Fraser-Pye AV, et al. Understanding the effectiveness of different exercise training programme designs on V̇O(2peak) in COPD: a component network meta-analysis. *Thorax* 2023; **78**(10): 1035-8 10.1136/thorax-2023-220071 https://pubmed.ncbi.nlm.nih.gov/37263780.
World Health Organization. WHO Guidelines Approved by the Guidelines Review Committee, Global Recommendations on Physical Activity for Health. *World Health Organization, Geneva* 2010: https://pubmed.ncbi.nlm.nih.gov/26180873.
Wu F, Wan Q, Tian H, et al. Prognostic Significance of Mild Exacerbations or 1 Moderate Exacerbation in COPD: A Prospective Community-Based Cohort Study. *Chest* 2026; **170**(3): 725-38 10.1016/j.chest.2026.04.008 https://pubmed.ncbi.nlm.nih.gov/42026000.
Wuyts M, Coosemans I, Everaerts S, et al. Hybrid compared to conventional pulmonary rehabilitation: an equivalence analysis. *ERJ Open Res* 2024; **10**(4): 10.1183/23120541.00984-2023 https://pubmed.ncbi.nlm.nih.gov/39104952.
Zhang N, Gargurevich N, Murray S, et al. Mapping the trajectory from pre-COPD to COPD: predictive value of symptoms, imaging, and physiologic abnormalities. *Ann Am Thorac Soc* 2026; **23**(3): 468-71 10.1093/annalsats/aaoaf049 https://pubmed.ncbi.nlm.nih.gov/41842738.
Zhang T, Zhou R, Wang T, Xin Y, Liu X, Huang H. Effects of traditional mind-body movement therapy on chronic cardiopulmonary dyspnoea: a systematic review and meta-analysis. *Thorax* 2023; **78**(1): 69-75 10.1136/thoraxjnl-2021-218030 https://pubmed.ncbi.nlm.nih.gov/35483892.
Zhang X, Xie S, Cao X, et al. Evaluation of an air quality Alert-Based intervention in patients with stable chronic obstructive pulmonary Disease: A prospective randomized controlled trial. *Respir Med* 2026; **252**: 108668 10.1016/j.rmed.2026.108668 https://pubmed.ncbi.nlm.nih.gov/41577302.
Zhou Y, Dai C, Wu F, et al. Low-dose theophylline in mild to moderate Chronic Obstructive Pulmonary Disease: A randomized clinical trial in China. *Pulmonology* 2026; **32**(1): 2652159 10.1080/25310429.2026.2652159 https://pubmed.ncbi.nlm.nih.gov/41944062.