COPD 진단과 역학

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GOLD 2026 update

KEY POINTS:

Diagnosis

- A diagnosis of COPD should be **considered** in any patient who has dyspnea, chronic cough or sputum production, a history of recurrent lower respiratory tract infections and/or a history of exposure to risk factors; **spirometry** with post-bronchodilator FEV1/FVC < 0.7 is **mandatory** to establish the diagnosis of COPD.
- Pre-bronchodilator spirometry can be used to exclude a diagnosis of COPD.

Initial assessment

- The goals of the initial COPD assessment are to determine the severity of airflow obstruction, assess the impact of current symptoms on the patient, and their risk of future events (such as exacerbations, hospital admissions, or death), to guide therapy.

Monitoring and follow-up

- Routine follow-up of lung function, symptoms and exacerbations is essential to determine when to modify management and to identify any complications and/or comorbidities.
- Virtual and hybrid virtual/in-person care models may offer improved healthcare access, outcomes, and affordability, but use should be based on evidence.

Additional investigations

- Additional clinical assessment, including the measurement of lung volumes, diffusion capacity, exercise testing and/or lung imaging may be considered in patients with COPD who have a marked discordance between the level of airflow obstruction and the perceived symptoms.
- Concomitant chronic diseases (multimorbidity) occur frequently in patients with COPD, including cardiovascular disease, skeletal muscle dysfunction, metabolic syndrome, osteoporosis, depression, anxiety, and lung cancer. These comorbidities should be actively sought, and treated appropriately when present, because they influence health status, hospitalizations and mortality independently of the severity of airflow obstruction due to COPD.

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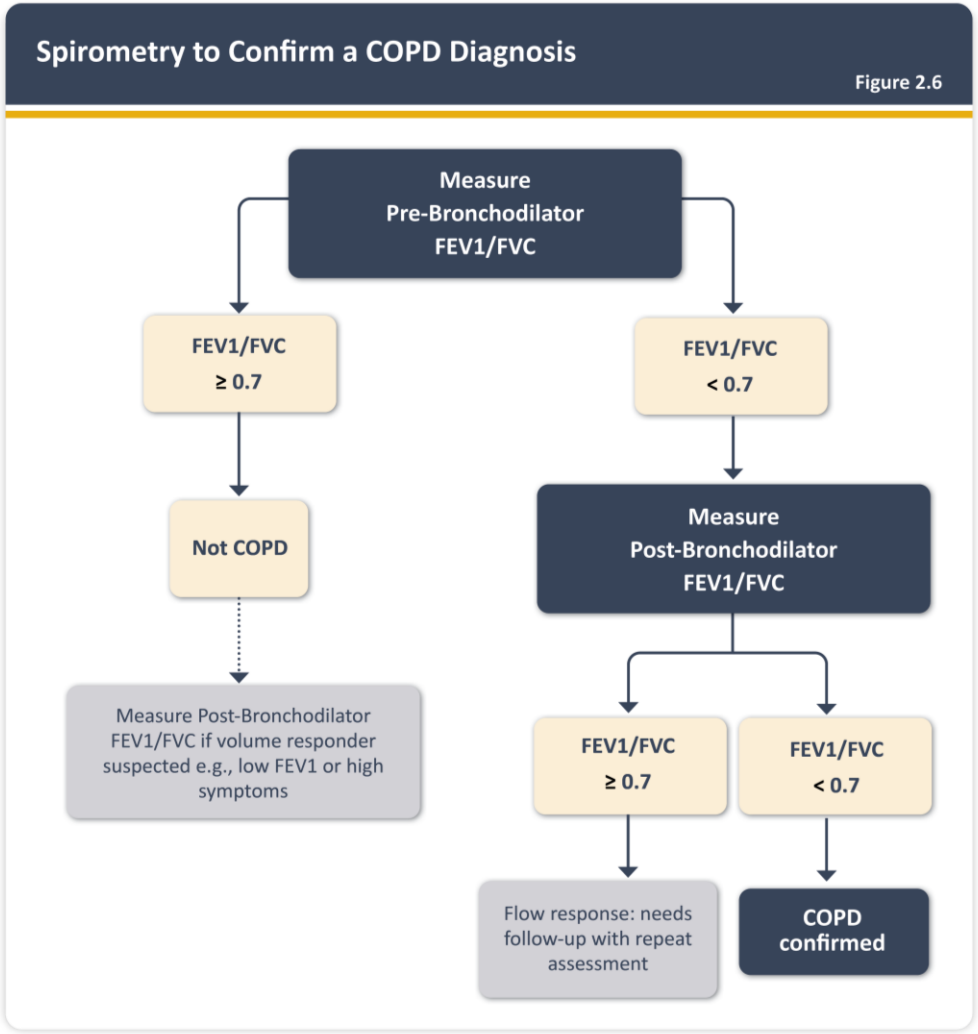
GOLD 2026 update



GOLD 2026

Pre- vs post BD spirometry

TABLE 1 Prevalence of COPD using pre- or post-bronchodilator (BD) spirometry in cohort studies

First author, year [ref.]	Sample size (n)	Age (years)	Smoking criteria	Smokers[#] (%)	Prevalence (%)[¶]		Reduction pre- *versus* post-BD (%)[+]	Smokers only: reduction pre- *versus* post-BD (%)[+]
					Pre-BD	Post-BD		
Mannino, 2011 [48] Lung Health Study	5307	35–65	Current smokers[§]	100	91.4	77.7	16.1	16.1
Tilert, 2013 [49] NHANES	5477[f]	40–79		50.6	20.9	14.0	33.0	NC
Pérez-Padilla, 2007 [50] PLATINO	5183	>40		63.5[##]	21.7	14	35.5	33.6
Johannessen, 2005 [51]	2225	15–70		61	9.6	7	27.1	20.3
Fortis, 2017 [52] COPDGene	10 000	45–80	>10 pack-years	100	50.2	44.5	11.3	11.3

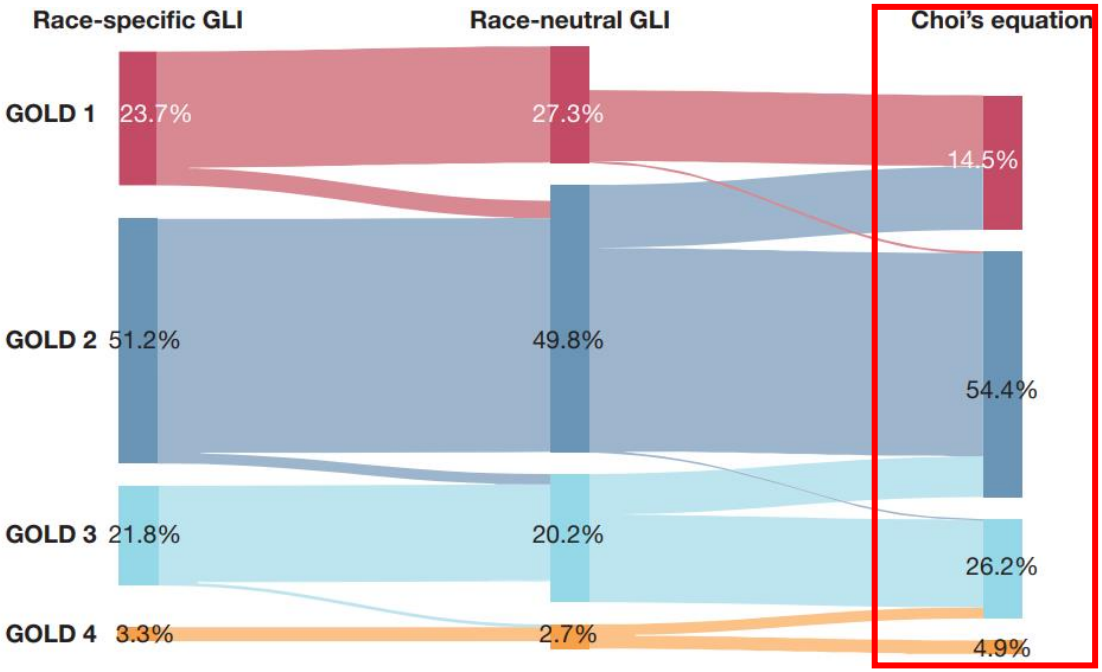
		Subjects (n)	Post-BD FEV_1 % pred	ΔFEV_1 (%)	ΔFVC (%)
COPDGene					
PREO	POSTO	4150	55.9	8.8	7.5
PREO	POSTN	866	84.7	7.7	–2.1
PREN	POSTO	301	77.3	1.5	17.7
PREN	POSTN	4683	92.6	3.0	0.9
SPIROMICS					
PREO	POSTN	175	92	8.2	1.3
PREN	POSTN	603	98	4.6	1.7

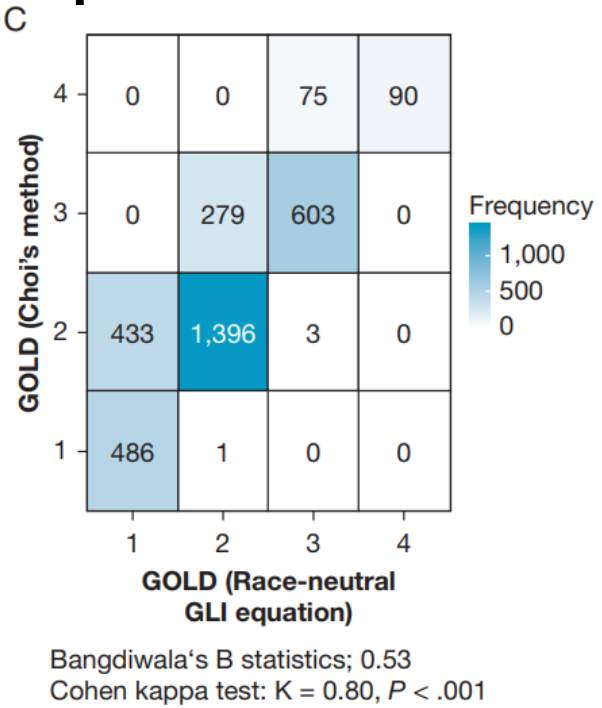
Flow responders

Volume responders

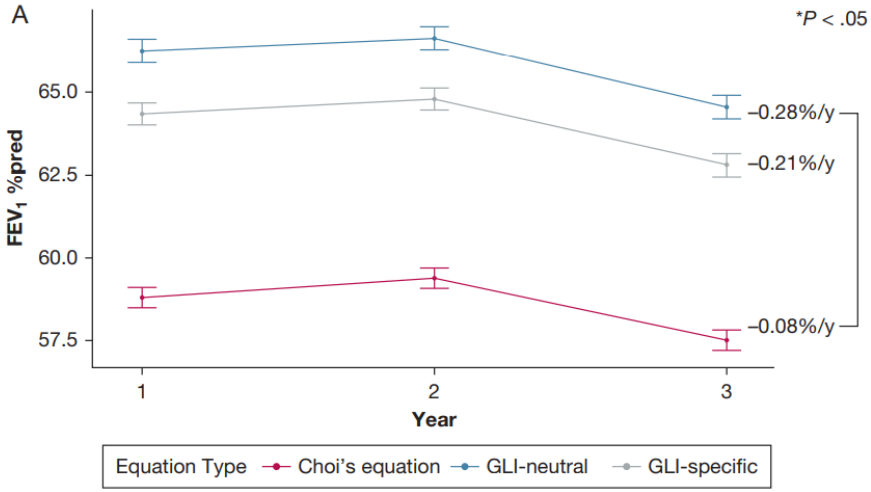
Eur Respir J. 2025 Feb 6;65(2):2401603.

GLI reference vs Choi's reference equations



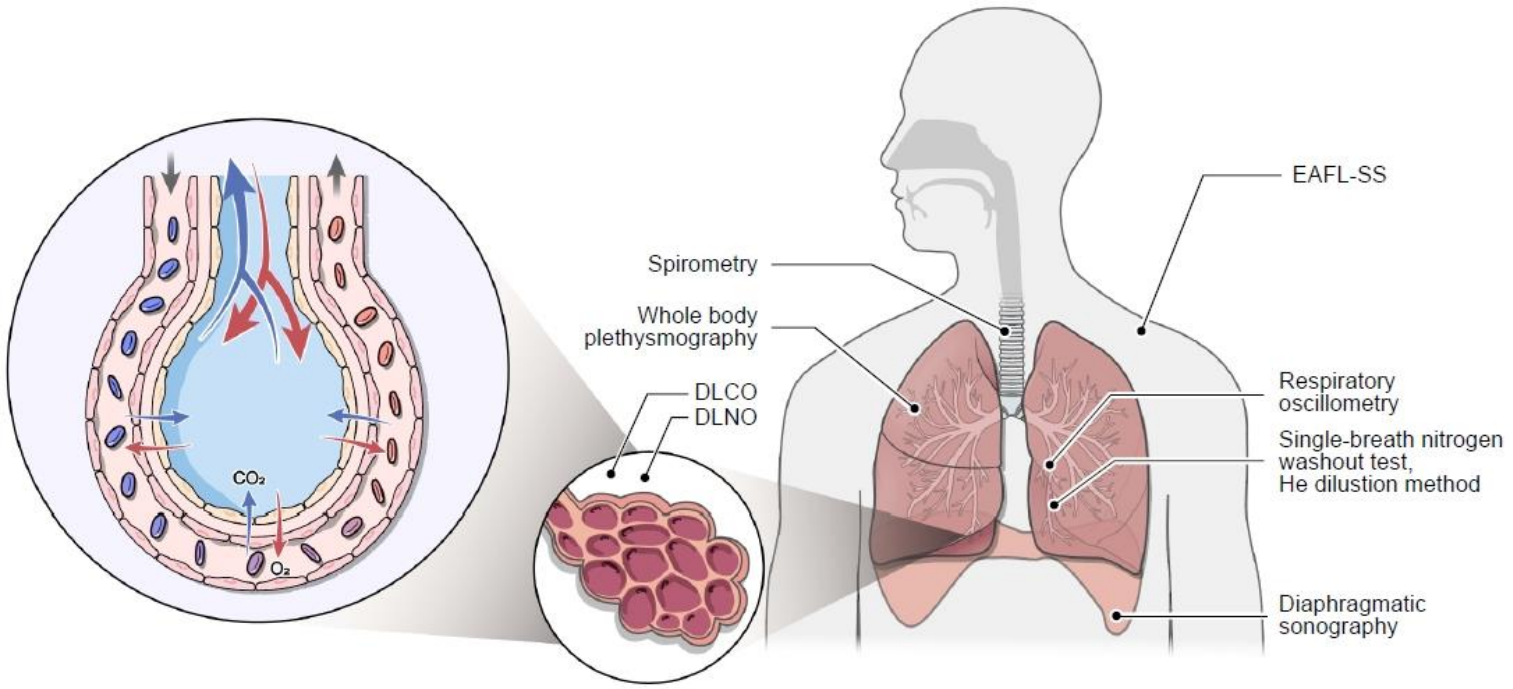


Bangdiwala's B statistics; 0.53
Cohen kappa test: K = 0.80, *P* < .001



Chest. 2025 Feb;167(2):414-424.

Various diagnostic modalities



Traditional method

- Spirometry
- Whole body plethysmography
- DLCO

New method

- EAFL-SS
- Respiratory oscillometry
- Single-breath nitrogen washout test, He dilustion method
- DLNO
- Diaphragmatic sonography
- Respiratory muscle strength

Tuberc Respir Dis (Seoul). 2025 Jan;88(1):1-13

Prognostic differences in patients with emphysema

TABLE 2] Estimated Rates of Decline of FEV_1 Between Patients With Mild-to-Moderate COPD With and Without Radiographic Emphysema

Characteristic (n = 1,916)	Mild-to-Moderate COPD	
	Without Emphysema	With Emphysema
No. of participants at baseline	561	428
No. of participants at visit 4 (n = 484)	202	157
Observation time, median (interquartile range), y	2.01 (1.03-3.01)	2.07 (1.03-3.03)
FEV_1, mean [SD], L		
At baseline	2.19 [0.64]	2.09 [0.65]
At visit 4	2.12 [0.62]	1.93 [0.68]
Unadjusted FEV_1 rate of decline (95% CI), mL/y[a]	−46.8 (−54.3 to −39.2)	−55.6 (−64.1 to −47.1)
Model 1[b]	−46.9 (−54.5 to −39.3)	−56.1 (−64.5 to −47.6)
Model 2[c]	−46.9 (−54.5 to −39.3)	−55.9 (−64.4 to −47.4)

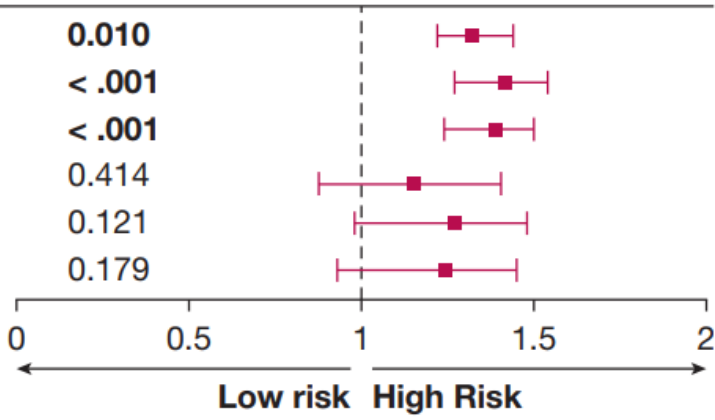
Chest. 2025 Mar;167(3):724-735.

Prognostic differences in patients with emphysema

TABLE 4] Estimated Differences in Rates of Change in COPD Outcomes Between Groups[a]

COPD Outcome	EC Group vs NEC Group		
	Difference (95% CI)[b]	*P* Value	*q* Value
Unadjusted model			
COPD Assessment Test score	0.5 (0.0 to 0.9)	**.029**	0.067
SGRQ score	1.0 (0.2 to 1.7)	**.005**	**0.019**
mMRC score	0.1 (0.0 to 0.1)	**.004**	**0.017**
6-min walk distance	−3 (−9 to 3)	.484	0.484

Outcome	Model	RR (95% CI)	*P* value	*q* value
Acute exacerbations	Unadjusted Model	**1.29 (1.22, 1.44)**	**0.002**	**0.010**
	Model 1	**1.42 (1.27, 1.54)**	**< .001**	**< .001**
	Model 2	**1.39 (1.24, 1.50)**	**< .001**	**< .001**
Severe acute exacerbations	Unadjusted Model	1.16 (0.84, 1.39)	0.290	0.414
	Model 1	1.27 (0.98, 1.48)	0.069	0.121
	Model 2	1.24 (0.93, 1.45)	0.119	0.179



Chest. 2025 Mar;167(3):724-735.

CT and rapid FEV1 rapid decline

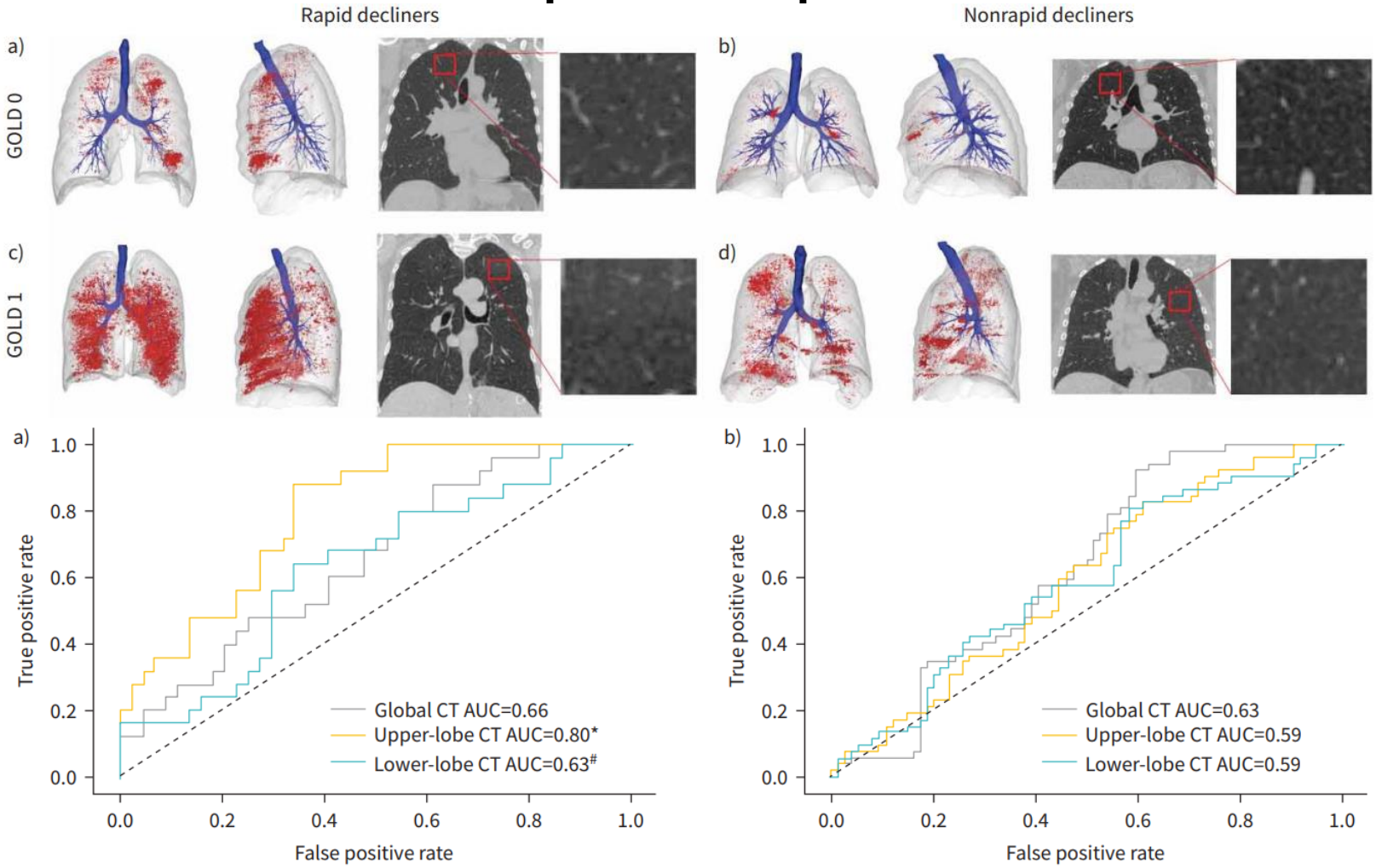


FIGURE 2 Receiver operative characteristics curves for predicting rapid forced expiratory volume in 1 s (FEV_1) decline. a) Rapid FEV_1 decline in Global Initiative for Chronic Obstructive Lung Disease (GOLD) 0. b) Rapid FEV_1 decline in COPD. DeLong's test was used to test for significant differences between area under the curve (AUC) values. Significance level is $p<0.05$. *: Significantly different AUC from global CT model. #: Significantly different AUC from upper CT model.

ERJ Open Res. 2025 Jun 30;11(3):00876-2024.

Mucus plugs on CT associated with exacerbations

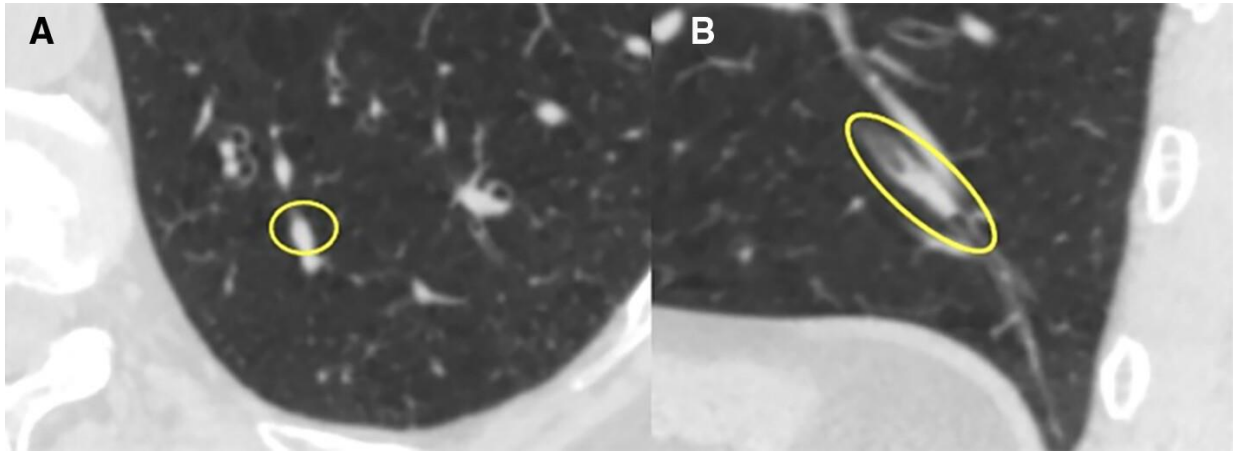
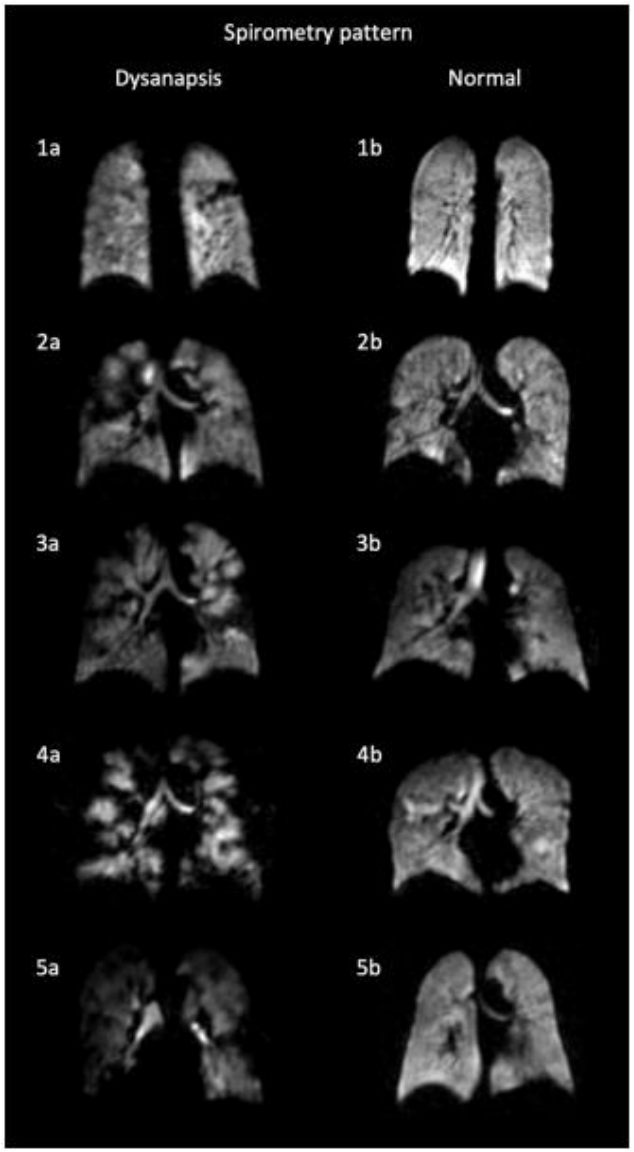


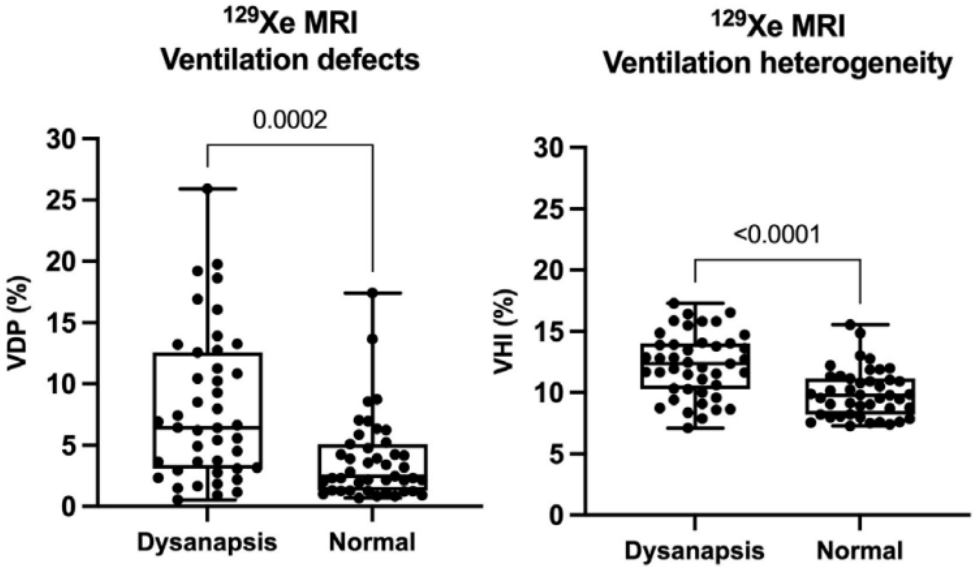
Table 2. Association between Ordinal Mucus Plug Score Groups and AEs

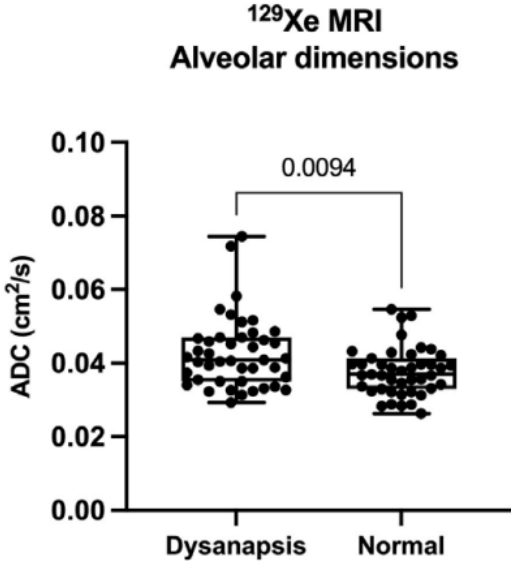
	COPDGene			ECLIPSE		
	0	1–2	⩾3	0	1–2	⩾3
No. of patients	1,808	753	689	926	373	417
Moderate to severe AEs	Ref.	1.070 (1.048–1.093)	1.145 (1.098–1.195)	Ref.	1.056 (1.019–1.094)	1.115 (1.039–1.197)
Severe AEs	Ref.	1.045 (1.008–1.084)	1.092 (1.016–1.175)	Ref.	1.169 (1.072–1.273)	1.365 (1.15–1.622)

Am J Respir Crit Care Med. 2025 May;211(5):814-822.

Xe-MR on obstructive disease

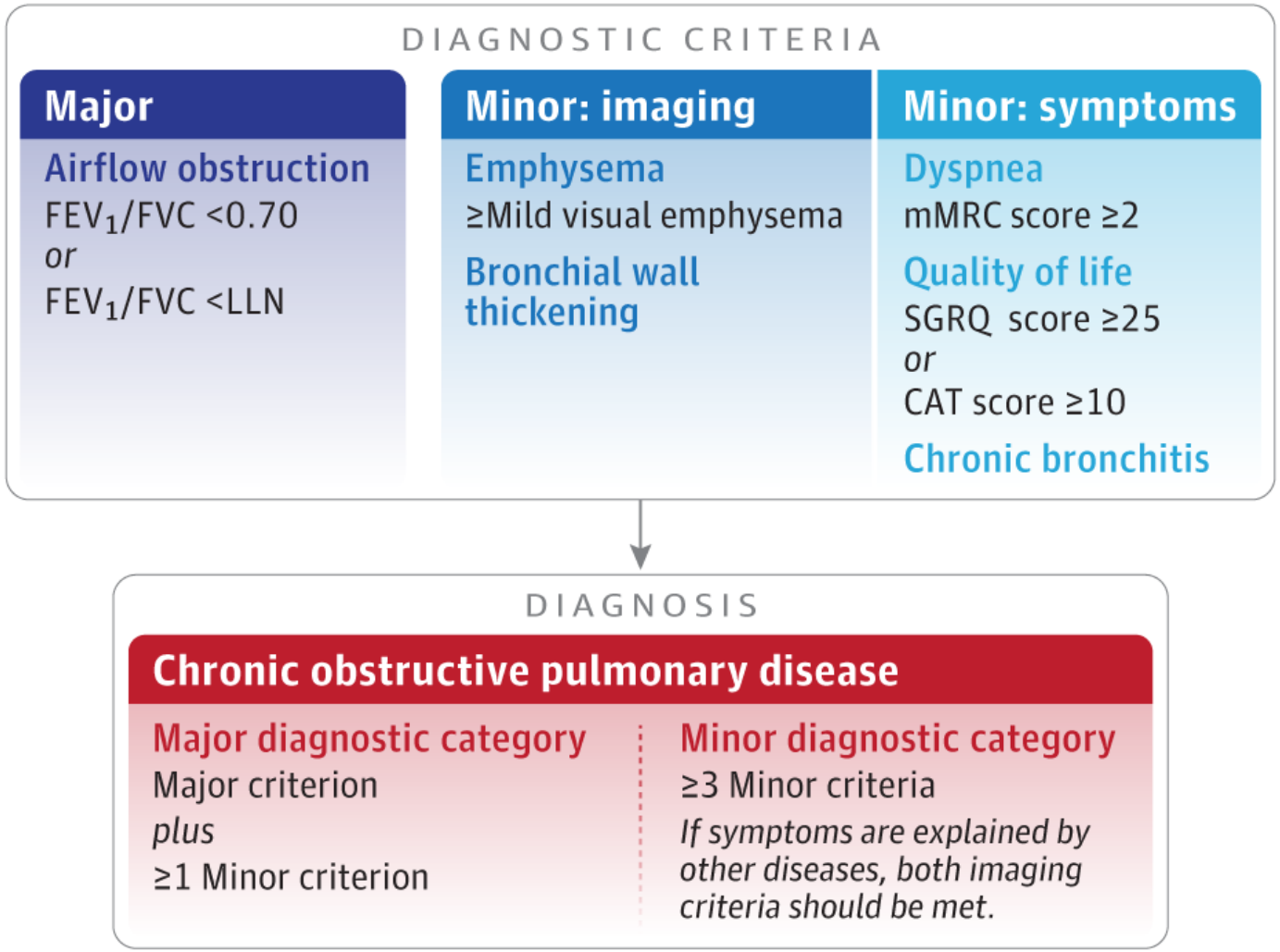






Thorax. 2025 Nov 14;80(12):909-917.

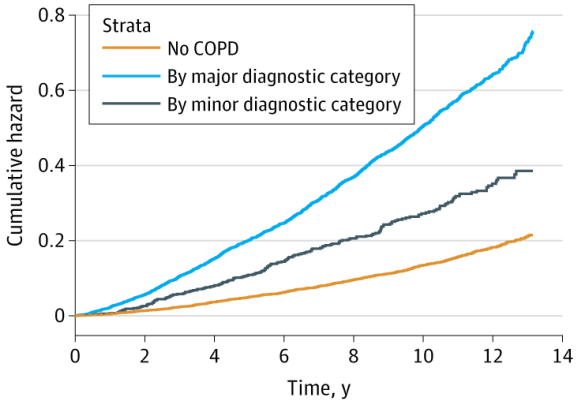
Multidimensional diagnostic approach



JAMA. 2025 Jun 24;333(24):2164-2175.

Multidimensional diagnostic approach

A Multivariable cumulative hazards plot of all-cause mortality by COPD category

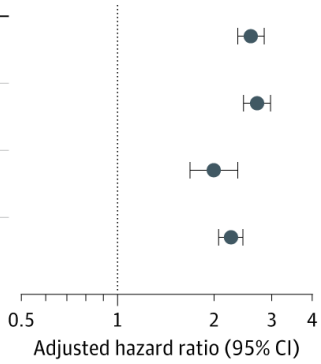


No. at risk

No COPD	4721	4183	3986	3612	3276	2932	1820
By major diagnostic category	3884	3495	3100	2626	2160	1763	1015
By minor diagnostic category	811	670	598	517	423	354	201

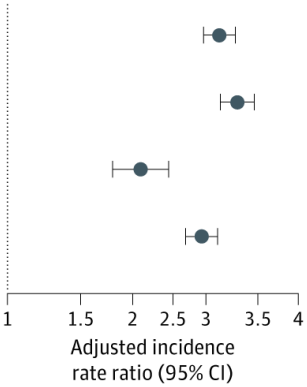
B Adjusted hazard ratio for all-cause mortality by COPD category

	Adjusted hazard ratio (95% CI)
Overall COPD by new diagnostic schema	2.58 (2.35-2.84)
COPD by major diagnostic category	2.70 (2.45-2.97)
COPD by minor diagnostic category	1.98 (1.67-2.35)
COPD per GOLD criteria	2.24 (2.05-2.44)



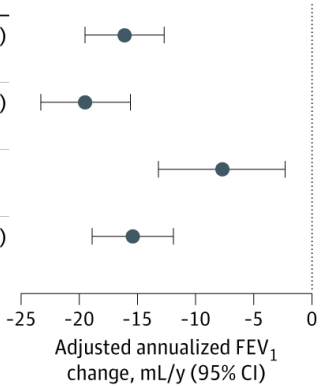
C Adjusted incidence rate ratio for exacerbations

	Adjusted incidence rate ratio (95% CI)
Overall COPD by new diagnostic schema	3.23 (2.96-3.53)
COPD by major diagnostic category	3.57 (3.25-3.92)
COPD by minor diagnostic category	2.09 (1.79-2.44)
COPD per GOLD criteria	2.93 (2.68-3.20)



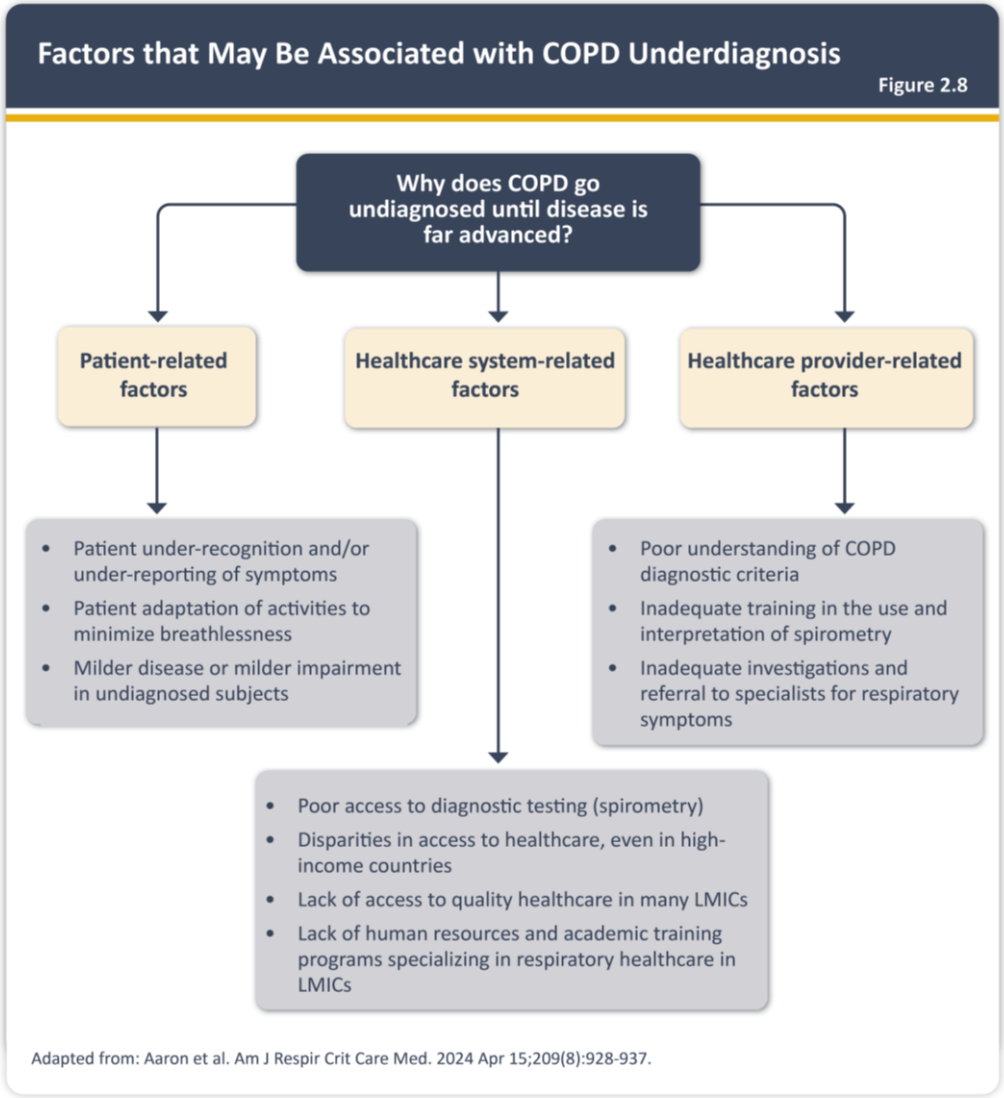
D Adjusted annualized change in FEV_1

	Adjusted annualized FEV_1 change, mL/y (95% CI)
Overall COPD by new diagnostic schema	-16.1 (-19.5 to -12.7)
COPD by major diagnostic category	-19.5 (-23.3 to -15.6)
COPD by minor diagnostic category	-7.7 (-13.2 to -2.3)
COPD per GOLD criteria	-15.4 (-18.9 to -11.9)

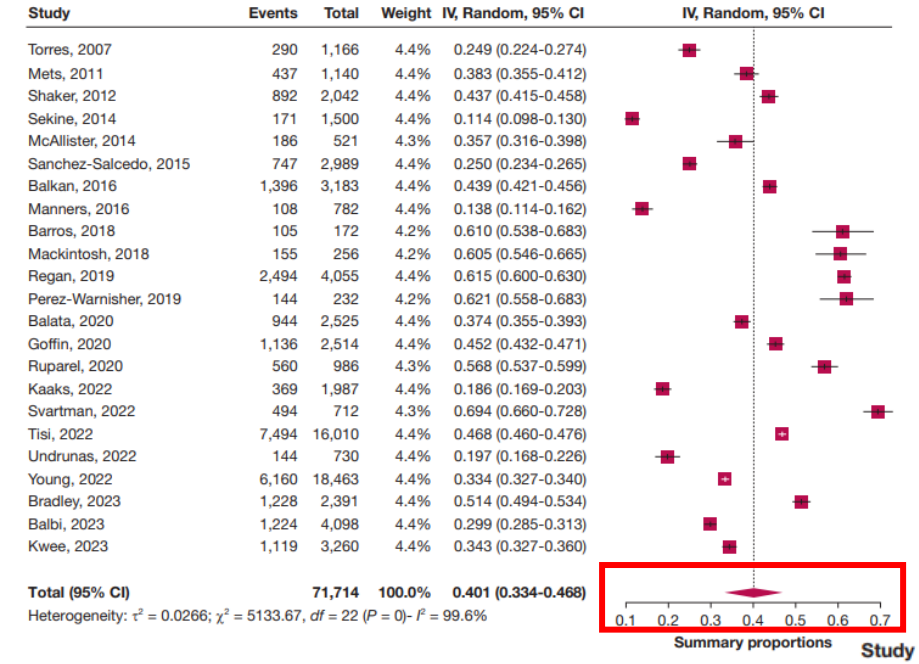


JAMA. 2025 Jun 24;333(24):2164-2175.

Emphasis of undiagnosed COPD



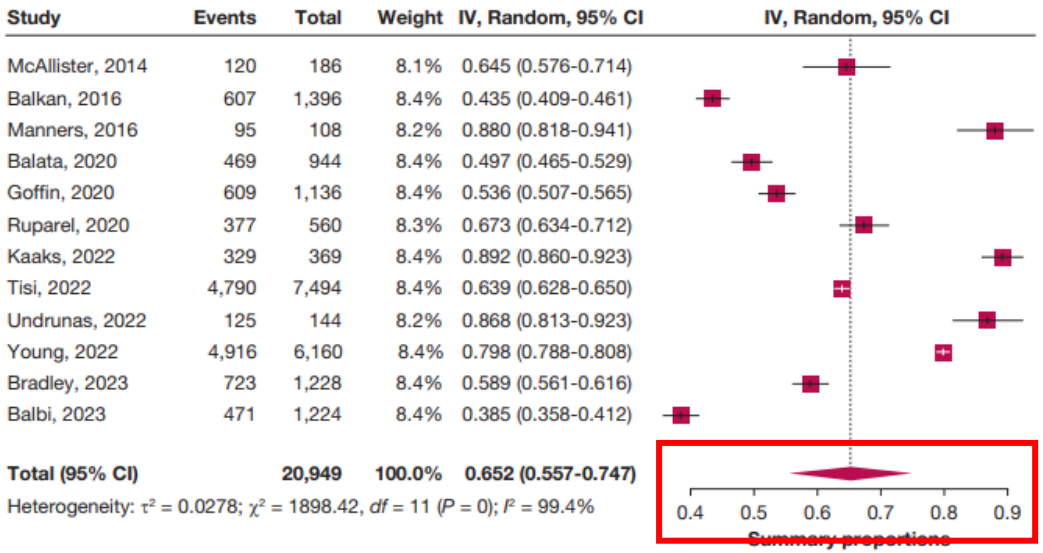
Undiagnosed airflow limitation on lung cancer



Study	Events	Total	Weight	IV, Random, 95% CI
Torres, 2007	290	1,166	4.4%	0.249 (0.224-0.274)
Mets, 2011	437	1,140	4.4%	0.383 (0.355-0.412)
Shaker, 2012	892	2,042	4.4%	0.437 (0.415-0.458)
Sekine, 2014	171	1,500	4.4%	0.114 (0.098-0.130)
McAllister, 2014	186	521	4.3%	0.357 (0.316-0.398)
Sanchez-Salcedo, 2015	747	2,989	4.4%	0.250 (0.234-0.265)
Balkan, 2016	1,396	3,183	4.4%	0.439 (0.421-0.456)
Manners, 2016	108	782	4.4%	0.138 (0.114-0.162)
Barros, 2018	105	172	4.2%	0.610 (0.538-0.683)
Mackintosh, 2018	155	256	4.2%	0.605 (0.546-0.665)
Regan, 2019	2,494	4,055	4.4%	0.615 (0.600-0.630)
Perez-Warnisher, 2019	144	232	4.2%	0.621 (0.558-0.683)
Balata, 2020	944	2,525	4.4%	0.374 (0.355-0.393)
Goffin, 2020	1,136	2,514	4.4%	0.452 (0.432-0.471)
Ruparel, 2020	560	986	4.3%	0.568 (0.537-0.599)
Kaaks, 2022	369	1,987	4.4%	0.186 (0.169-0.203)
Svartman, 2022	494	712	4.3%	0.694 (0.660-0.728)
Tisi, 2022	7,494	16,010	4.4%	0.468 (0.460-0.476)
Undrunas, 2022	144	730	4.4%	0.197 (0.168-0.226)
Young, 2022	6,160	18,463	4.4%	0.334 (0.327-0.340)
Bradley, 2023	1,228	2,391	4.4%	0.514 (0.494-0.534)
Balbi, 2023	1,224	4,098	4.4%	0.299 (0.285-0.313)
Kwee, 2023	1,119	3,260	4.4%	0.343 (0.327-0.360)
Total (95% CI)		**71,714**	**100.0%**	**0.401 (0.334-0.468)**

Heterogeneity: $\tau^2 = 0.0266$; $\chi^2 = 5133.67$, $df = 22$ ($P = 0$)- $I^2 = 99.6\%$

Figure 4 – *Forest plot showing pooled airflow limitation prevalence in lung cancer screening participants.* df = *degrees of freedom.*

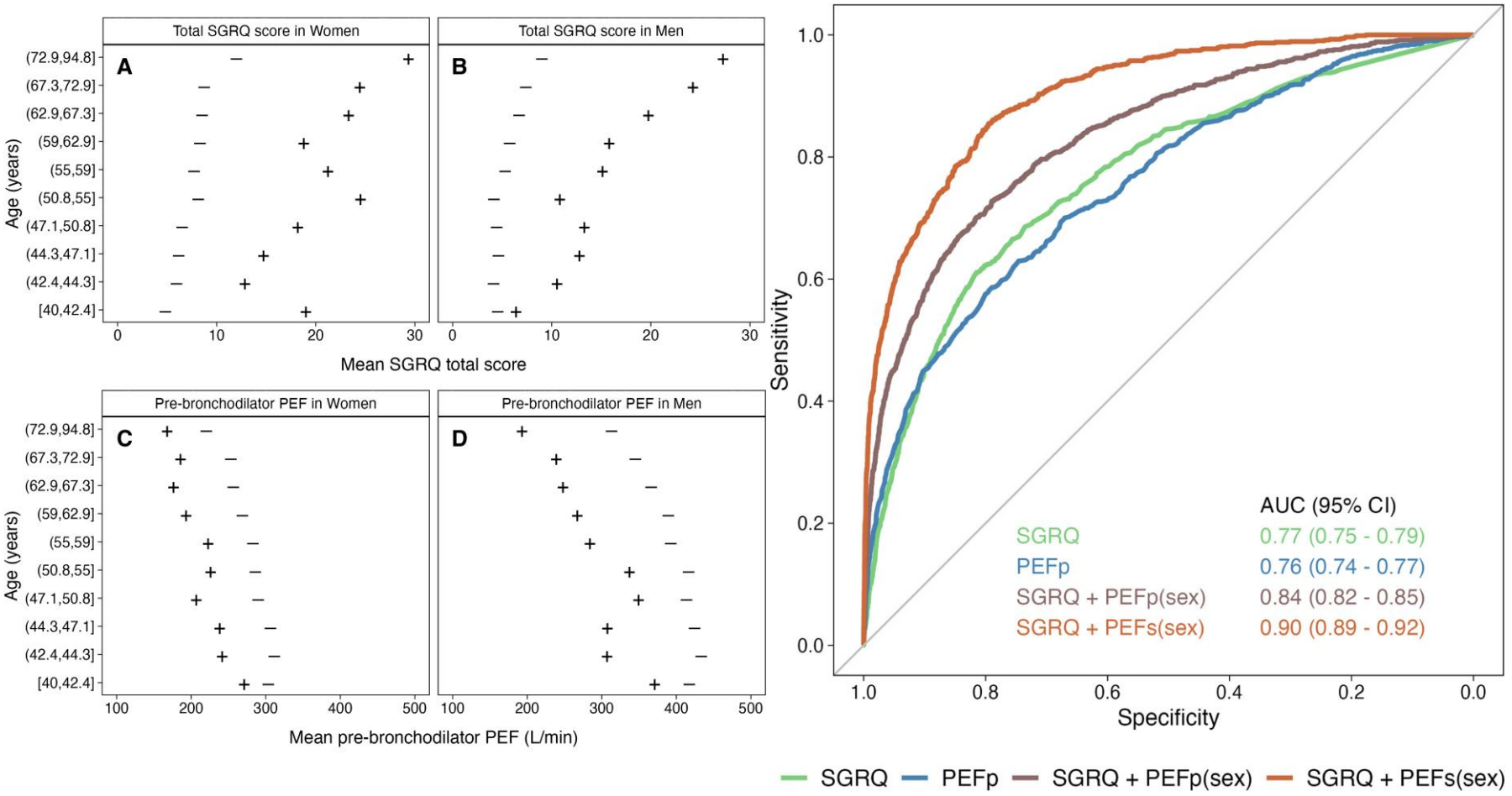


Study	Events	Total	Weight	IV, Random, 95% CI
McAllister, 2014	120	186	8.1%	0.645 (0.576-0.714)
Balkan, 2016	607	1,396	8.4%	0.435 (0.409-0.461)
Manners, 2016	95	108	8.2%	0.880 (0.818-0.941)
Balata, 2020	469	944	8.4%	0.497 (0.465-0.529)
Goffin, 2020	609	1,136	8.4%	0.536 (0.507-0.565)
Ruparel, 2020	377	560	8.3%	0.673 (0.634-0.712)
Kaaks, 2022	329	369	8.4%	0.892 (0.860-0.923)
Tisi, 2022	4,790	7,494	8.4%	0.639 (0.628-0.650)
Undrunas, 2022	125	144	8.2%	0.868 (0.813-0.923)
Young, 2022	4,916	6,160	8.4%	0.798 (0.788-0.808)
Bradley, 2023	723	1,228	8.4%	0.589 (0.561-0.616)
Balbi, 2023	471	1,224	8.4%	0.385 (0.358-0.412)
Total (95% CI)		**20,949**	**100.0%**	**0.652 (0.557-0.747)**

Heterogeneity: $\tau^2 = 0.0278$; $\chi^2 = 1898.42$, $df = 11$ ($P = 0$); $I^2 = 99.4\%$

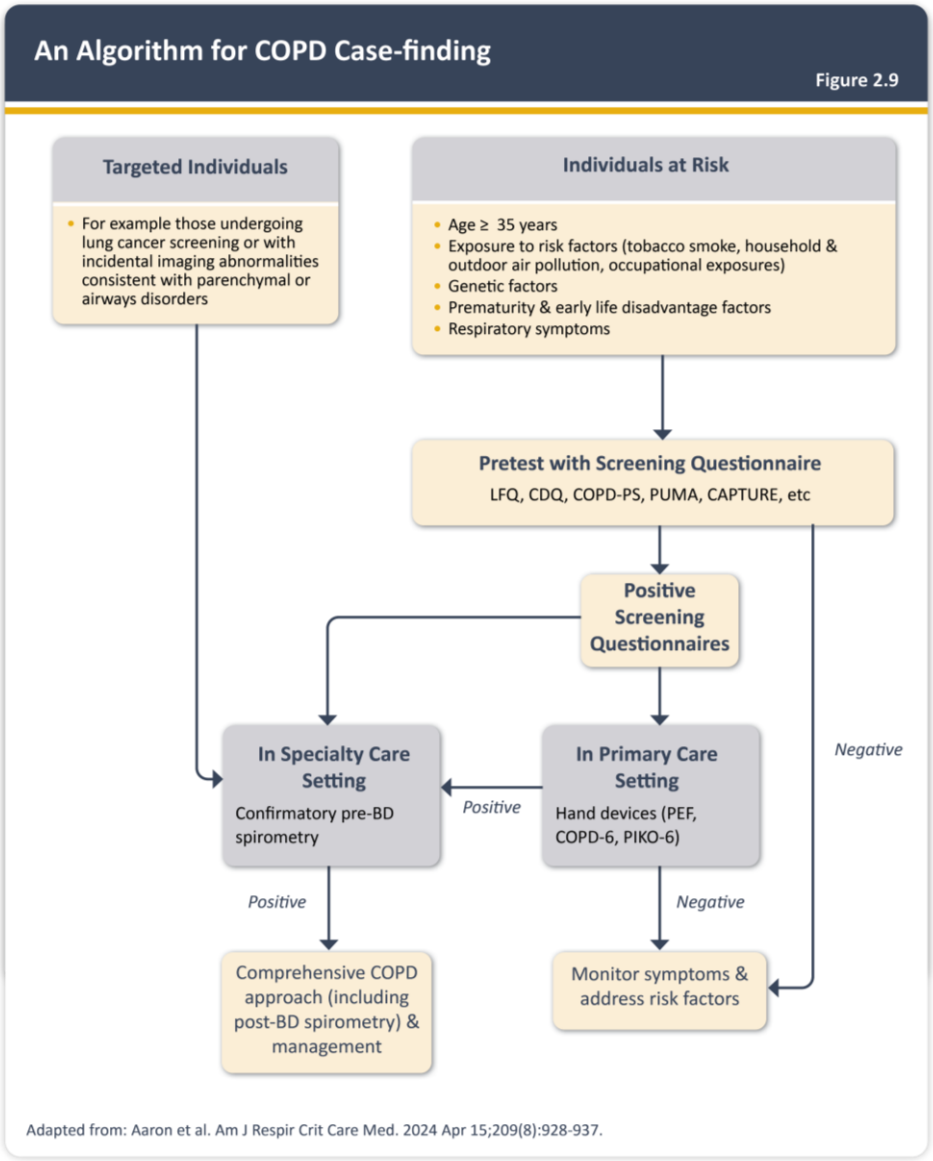
Chest. 2025 Jul;168(1):67-82.

Screening of COPD by SGRQ with PEF



Am J Respir Crit Care Med. 2025 Mar 11;211(5):779-788

GOLD 2026 update



Case-findings in COPD

Table 2. MCID Responder Analyses Classified by Low and High Baseline Disease Burden for CAT Scores, SGRQ Scores and FEV_1 (ml)

	Disease Burden			
	Low ($n=234$)	High ($n=235$)	OR (95% CI)	*P* Value
CAT score improvement ⩾2	111 (47%)	168 (71%)	2.78 (1.90–4.07)	<0.001
SGRQ score improvement ⩾4	116 (50%)	164 (70%)	2.40 (1.64–3.51)	<0.001
FEV_1 improvement ⩾100 ml	63 (32%)	116 (52%)	2.32 (1.56–3.46)	<0.001

Table 4. MCID Responder Analyses Classified by Diagnosis for CAT Score, SGRQ Score, and FEV_1

	Asthma ($n=231$)	COPD ($n=238$)	OR (95% CI)	*P* Value
CAT score improvement ⩾2	146 (63%)	133 (56%)	1.36 (0.94–1.96)	0.11
SGRQ score improvement ⩾4	149 (65%)	131 (56%)	1.47 (1.02–2.14)	0.044
FEV_1 improvement ⩾100 ml	87 (41%)	92 (44%)	0.89 (0.60–1.30)	0.54

Am J Respir Crit Care Med. 2025 Nov;211(11):2053-2059.

Questionnaires and COPD screening

Table 3. Practice-Level and Patient-Level Outcomes from 12-Month Follow-Up among CAPTURE+ Patients

Outcome	Intervention: COPD Education + CAPTURE Education and Patient-Level CAPTURE Screening Results ($n = 226$ Patients in 49 Practices)	Enhanced Usual Care: COPD Education ($n = 161$ Patients in 44 Practices)	Absolute Difference* (95% CI)	*P* Value
Practice level				
Primary (Significance level = 0.05), %				
Referral for or completion of spirometry testing, new diagnosis of COPD, newly prescribed inhaled respiratory medication, referral to a respiratory specialist, or referral for or completion of pulmonary rehabilitation	45.9	41.9	4.0 (−6.9, 15.0)	0.47
Secondary (Bonferroni-adjusted significance level = 0.01), %				
Referral for or completion of spirometry testing†	30.0	19.6	10.4 (0.1, 20.7)	0.0465
New diagnosis of COPD†	13.7	12.4	1.3 (−6.7, 9.2)	0.75
Newly prescribed inhaled respiratory medication†	25.2	27.9	−2.7 (−11.5, 6.1)	0.54
Referral to a respiratory specialist‡	17.4	12.3	−5.1 (−2.1, 12.3)	0.16
Referral for or completion of pulmonary rehabilitation program†	6.4	7.0	−0.6 (−6.4, 5.1)	0.82
Patient level (Bonferroni-adjusted significance level = 0.01)				
Change in COPD Assessment Test score (12-mo survey, baseline)§	−1.253	−0.932	−0.321 (−2.01, 1.36)	0.55‖
Acute respiratory illness¶ during follow-up, %**	24	15.3	8.7 (−0.1, 17.4)	0.05††
Hospitalization‡‡ for respiratory illness during follow-up, %	1.7	1.3	0.4 (−2.0, 2.7)	0.76
Post hoc analysis, change in CAPTURE Question 5 (12-mo survey, baseline)§§	−0.52	−0.37	−0.15 (−0.41, 0.11)	0.53‖‖

Am J Respir Crit Care Med. 2025 May;211(5):789-802.

복정책

2026년부터 56세 및 66세 국민 대상
국가건강검진에서 폐기능 검사도 함께 시행

만성폐쇄성 폐질환 검사가 **국가검진으로** 도입됩니다

보건복지부

Smoking and Non-smoking PRISM

TABLE 3] Annual Declines in Pre-BD Lung Function Among Participants With Normal Control and PRISm Stratified by Smoking Status[a]

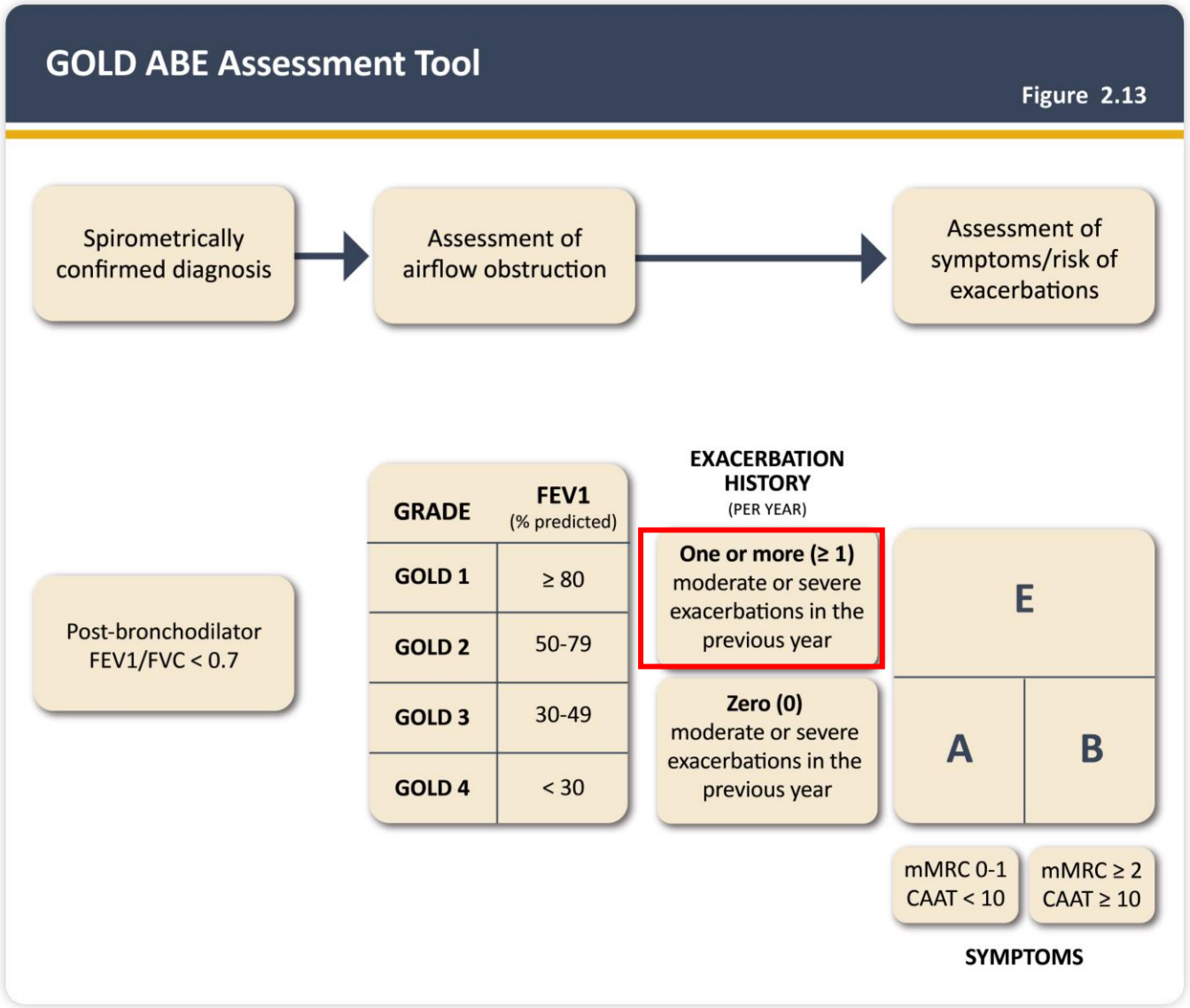
Variable	Group			Adjusted Difference Between Groups, Mean (95% CI), Adjusted *P* Value[b]		
	Normal Control (n = 2,124)	NS-PRISm (n = 470)	ES-PRISm (n = 256)	ES-PRISm vs NS-PRISm	ES-PRISm vs Normal Control	NS-PRISm vs Normal Control
Pre-BD lung function						
Annual decline in FEV_1, mL/y	−24.2 [0.6]	−8.1 [1.3]	−23.3 [1.7]	−16.3 (−21.0 to −11.6), < .001	−0.6 (−4.6 to 3.3), .924	15.7 (12.5 to 18.8), < .001
Annual decline in FEV_1 % predicted/y	−0.17 [0.03]	0.31 [0.06]	−0.15 [0.08]	−0.48 (−0.69 to −0.28), < .001	−0.03 (−0.21 to 0.15), .918	0.45 (0.31 to 0.59), < .001
Annual decline in FVC, mL/y	−18.0 [0.9]	−3.6 [1.8]	−6.6 [2.4]	−4.8 (−11.3 to 1.7), .194	9.2 (3.7 to 14.8), < .001	14.0 (9.7 to 18.4), < .001
Annual decline in FVC % predicted/y	0.02 [0.03]	0.41 [0.07]	0.29 [0.09]	−0.15 (−0.39 to 0.08), .291	0.21 (0.01 to 0.41), .033	0.37 (0.21 to 0.52), < .001
Annual decline in FEV_1/FVC	−0.32 [0.02]	−0.25 [0.04]	−0.65 [0.05]	−0.40 (−0.54 to −0.26), < .001	−0.31 (−0.43 to −0.20), < .001	0.08 (−0.01 to 0.18), .089

TABLE 5] Risk of Developing Airflow Limitation During the Follow-Up Period[a]

Group Comparison	Events,[b] No./Total No. (%)	Unadjusted		Adjusted[c]	
		HR (95% CI)	*P* Value	HR (95% CI)	*P* Value
NS-PRISm vs normal control	69/470 (14.7) vs 193/2,124 (9.1)	1.66 (1.26-2.19)	< .001	1.41 (1.07-1.87)	.016
CS-PRISm vs normal control	67/175 (38.3) vs 193/2,124 (9.1)	4.86 (3.67-6.43)	< .001	2.68 (1.90-3.78)	< .001
FS-PRISm vs normal control	28/81 (34.6) vs 193/2,124 (9.1)	5.06 (3.40-7.54)	< .001	2.70 (1.73-4.22)	< .001
CS-PRISm vs NS-PRISm	67/175 (38.3) vs 69/470 (14.7)	2.92 (2.09-4.10)	< .001	1.90 (1.27-2.83)	.002
FS-PRISm vs NS-PRISm	28/81 (34.6) vs 69/470 (14.7)	3.05 (1.96-4.74)	< .001	1.91 (1.17-3.11)	.009
FS-PRISm vs CS-PRISm	28/81 (34.6) vs 67/175 (38.3)	1.04 (0.67-1.63)	.857	1.01 (0.64-1.58)	.975

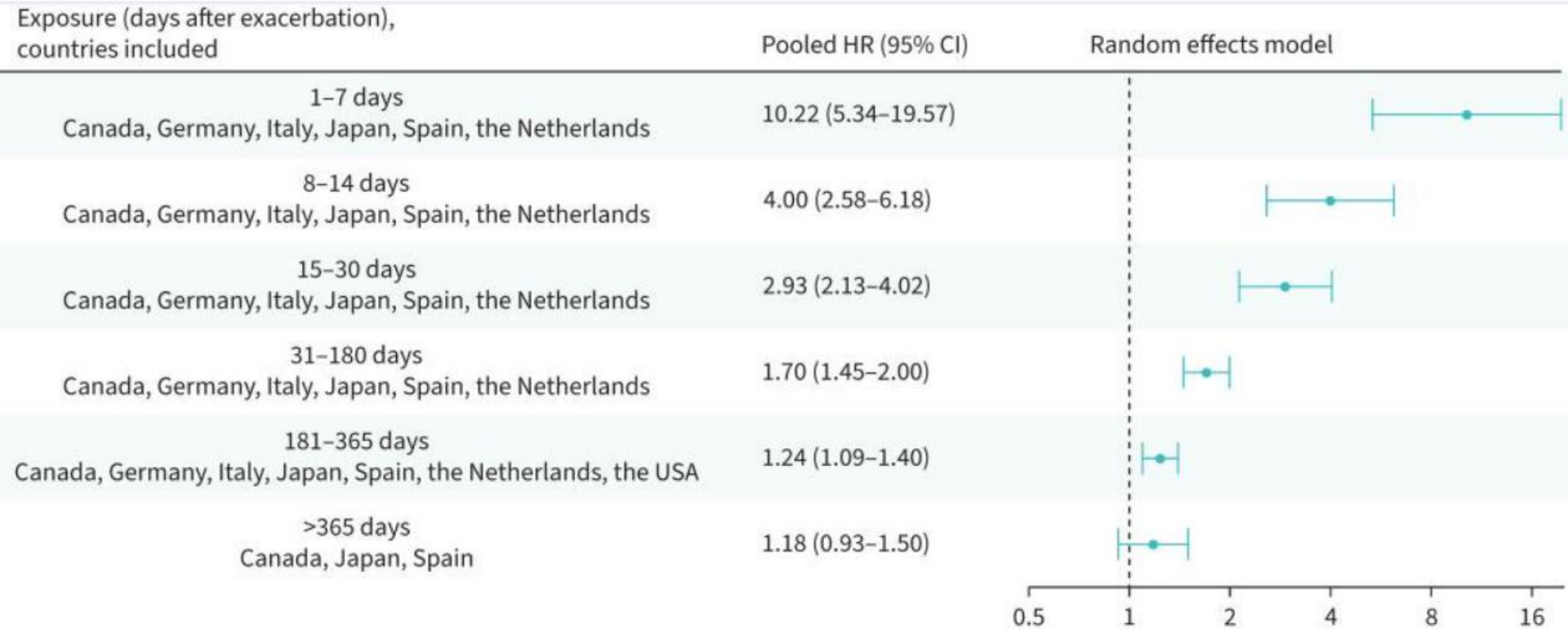
Chest. 2025 May 10:S0012-3692(25)00570-7.

GOLD 2026 update



GOLD 2026

Exacerbation and cardiovascular events



ERJ Open Res. 2025 Jun 16;11(3):01091-2024.

COPD and cardiovascular events

Table 2 Age- and sex-standardised rates of cardiovascular outcomes among individuals with cardiovascular diseases and COPD (cardiovascular-COPD cohort) versus individuals with cardiovascular diseases without COPD (cardiovascular cohort) in Ontario, Canada

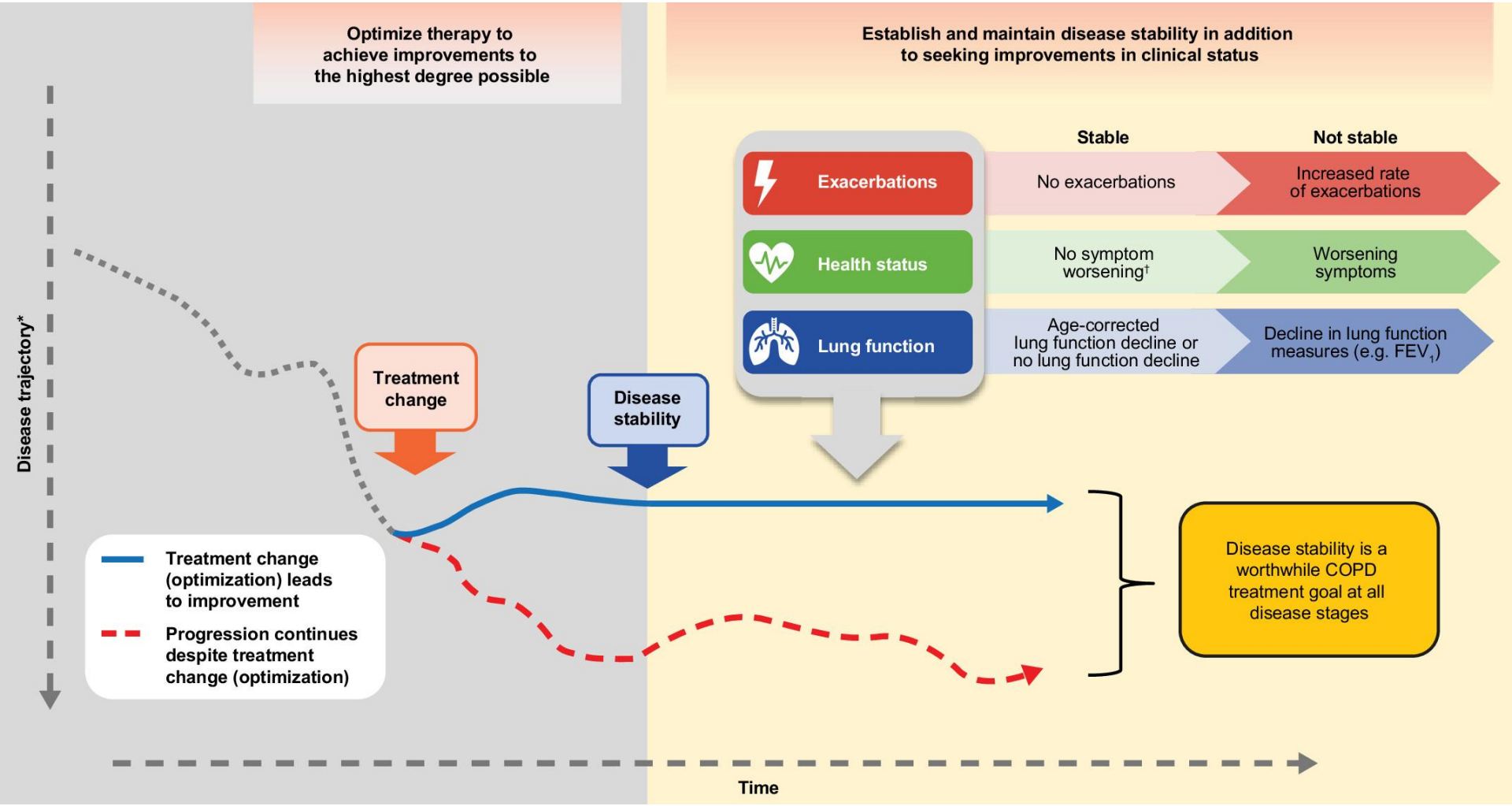
Cardiovascular outcomes	Age-sex standardised rate per 1000 person-years (95% CI)		
	Persons with cardiovascular disease and COPD	Persons with cardiovascular disease without COPD	Rate ratio (95% CI)
Primary outcome			
Major cardiovascular event (composite of AMI, stroke or cardiovascular death)	45.3 (44.5–46.3)	28.6 (28.4–28.8)	1.6 (1.7–1.6)

Table 4 HRs for a major adverse cardiovascular event (MACE: composite of hospitalisation for acute myocardial infarction or stroke or death due to cardiovascular disease) for individuals with cardiovascular diseases and COPD (CVD-COPD) compared with individuals with cardiovascular diseases without COPD (CVD)

Characteristic	Adjusted for age and sex (95% CI)	Add traditional cardiovascular risk factors and comorbidities (95% CI)	Add lab tests (95% CI)	Add income quintile, place of residence, immigration status (95% CI)	Add health services utilisation (95% CI)	Add smoking (95% CI)
Family doctor visit in last 2 years					2.26 (2.17 to 2.36)	2.25 (2.16 to 2.35)
Specialist visit in last 2 years					1.04 (1.02 to 1.06)	1.05 (1.02 to 1.07)
Cholesterol screening in previous 3 years					0.91 (0.89 to 0.92)	0.91 (0.89 to 0.93)
Diabetes screening in previous 3 years					1.11 (1.08 to 1.14)	1.11 (1.08 to 1.14)
Health examination in previous 3 years					0.81 (0.80 to 0.82)	0.81 (0.80 to 0.82)
Smoker (imputed) (ref=non smoker)						1.39 (1.28 to 1.50)

Thorax. 2025 Apr 15;80(5):291-299.

Disease stability of COPD



GOLD 2026 update

Estimated COPD Prevalence According to Different Sources

Figure 1.1

	GBD 2019[a]	GBD 2021[b]	Population-based study 2019[c]	Other sources 2020[d]
Prevalence (%)	2.6	2.5	10.3	10.6
Number of cases (per million)	212	213	392	479

References: [a]Safiri et al. BMJ 2022;378:e069679; [b]Wang et al. Respir Res 2025;26:2; [c]Adeloye et al. Lancet Respir Med 2022;10:447–458; [d]Boers et al. JAMA Netw Open 2023;6:E2346598.

Global burden and prevention

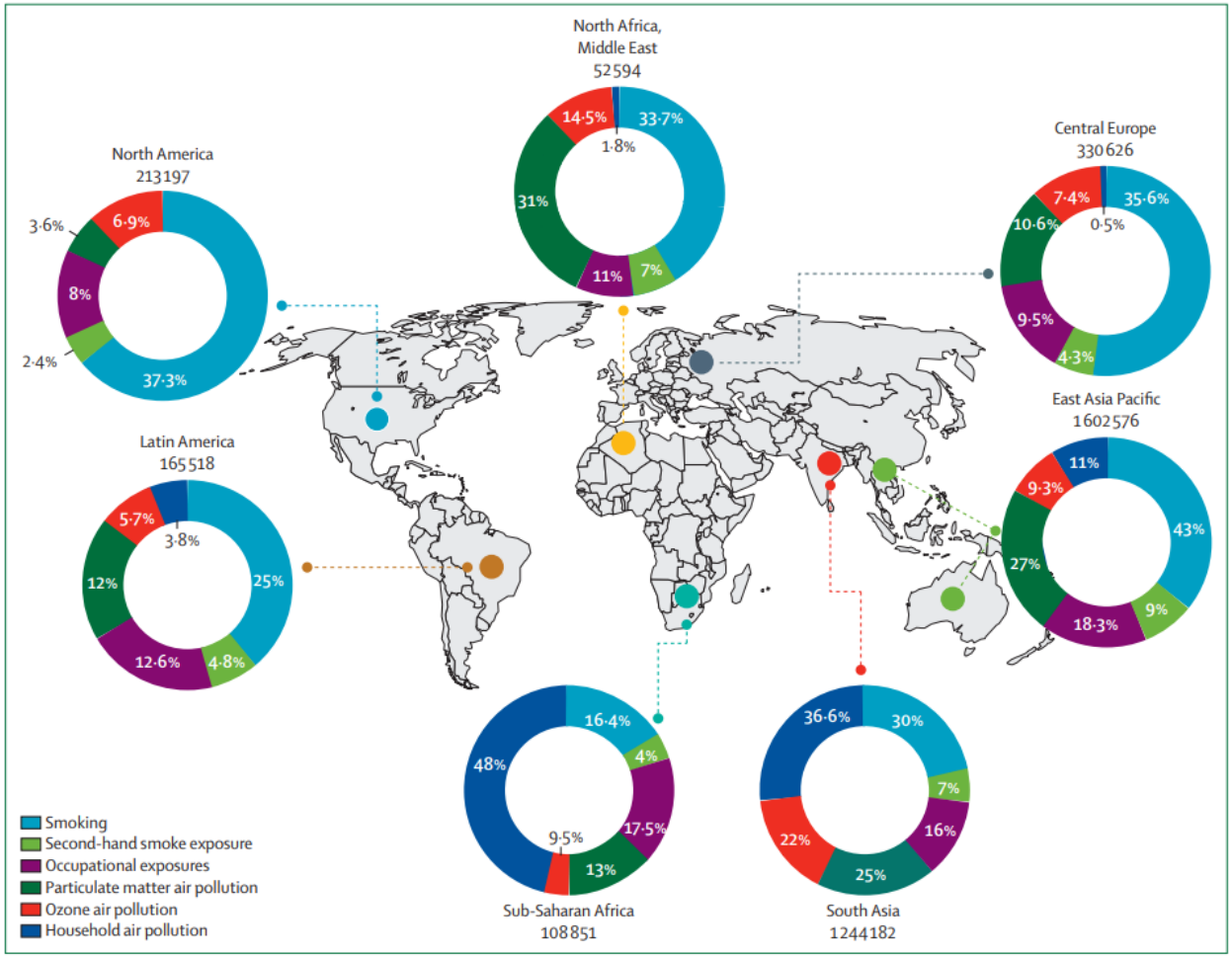


Figure 3: **Distribution of six known risk factors for COPD deaths in different regions of the world, according to GBD 2021**
Relative distribution of six known risk factors (smoking, second-hand smoke exposure, occupational exposures, particulate matter, household air pollution, and ozone) for COPD deaths in different regions (World Bank) according to GBD 2021 (age-standardised death rates). Percentages are approximate as risks overlap, and a varying proportion of COPD deaths remain unaccounted for by all evaluated risk factors. COPD=chronic obstructive pulmonary disease. GBD=Global Burden of Diseases, Injuries, and Risk Factors Study.

Lancet Respir Med. 2025 Aug;13(8):709-724.

Global burden and prevention

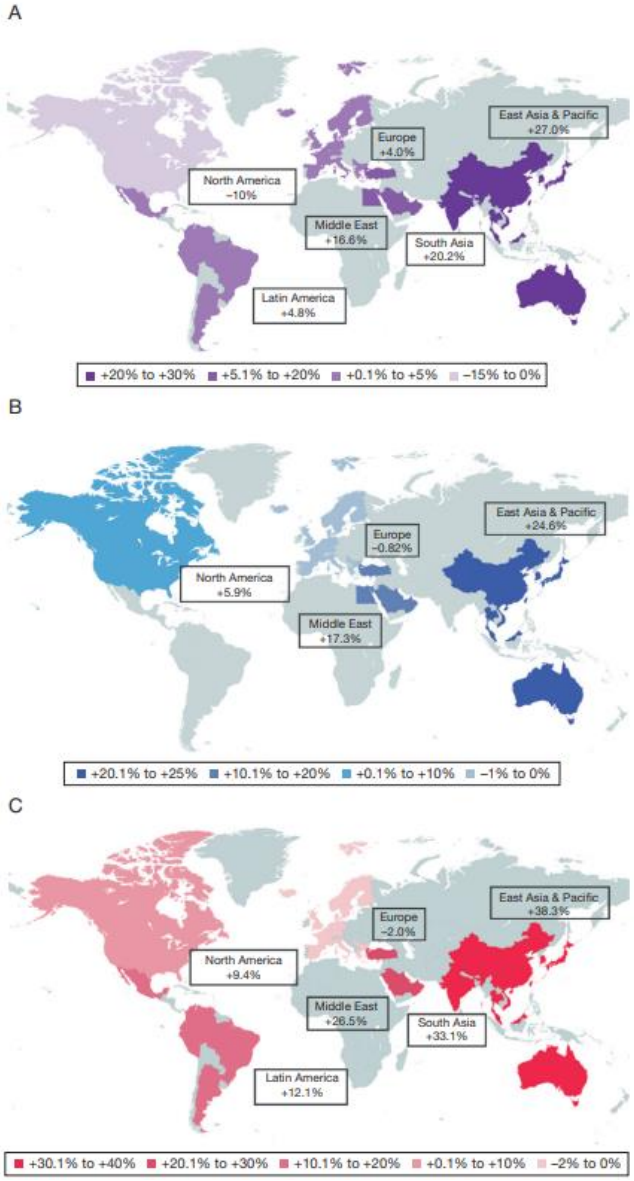
	Rate change in low SDI (%)	Rate change in low–middle SDI (%)	Rate change in middle SDI (%)	Rate change in high–middle SDI (%)	Rate change in high SDI (%)
COPD deaths					
Ambient particulate matter pollution	24% (93 to −19)	66% (153 to −9)	−4% (55 to −40)	−33% (2 to −58)	−59% (−41 to −71)
Occupational particulate matter, gases, and fumes	−12% (6 to −24)	−9% (13 to −22)	−57% (−48 to −65)	−56% (−47 to −65)	−32% (−28 to −37)
Household air pollution from solid fuels	−18% (4 to −31)	−38% (−13 to −58)	−91% (−75 to −98)	−98% (−88 to −100)	−99% (−97 to −100)
Ambient ozone pollution	50% (93 to −30)	73% (121 to 47)	−47% (−35 to −54)	−51% (−40 to −59)	−26·5% (−21 to −32)
Smoking	−26% (−7 to −40)	−23% (−4 to −37)	−58% (−49 to −67)	−57% (−48 to −65)	−40% (−36 to −44)
Second-hand smoke exposure	−23% (−3 to −35)	−23% (−1 to −36)	−61% (−52 to −69)	−59% (−49 to −67)	−48% (−43 to −53)
COPD DALYs					
Ambient particulate matter pollution	17% (79 to −22)	58% (139 to −4)	−5% (50 to −39)	−34% (−1 to −56)	−56% (−38 to −69)
Occupational particulate matter, gases, and fumes	−15% (0·2 to −26)	−13% (5 to −25)	−58% (−50 to −65)	−56% (−48 to −64)	−28% (−25 to −31)
Household air pollution from solid fuels	−21% (−2 to −34)	−42% (−20 to −60)	−91% (−75 to −98)	−98% (−88 to −100)	−99% (−97 to −100)
Ambient ozone pollution	51% (93 to −30)	59% (103 to 36)	−51% (−40 to −58))	−57% (−48 to −64)	−31% (−25 to −35)
Smoking	−26% (−7 to −39)	−28% (−12 to −38)	−60% (−52 to −68)	−57% (−50 to −65)	−35% (−28 to −44)
Second-hand smoke exposure	−22% (−3 to −36)	−28% (−9 to −38)	−62% (−54 to −68)	−58% (−49 to −65)	−44% (−40 to −47)

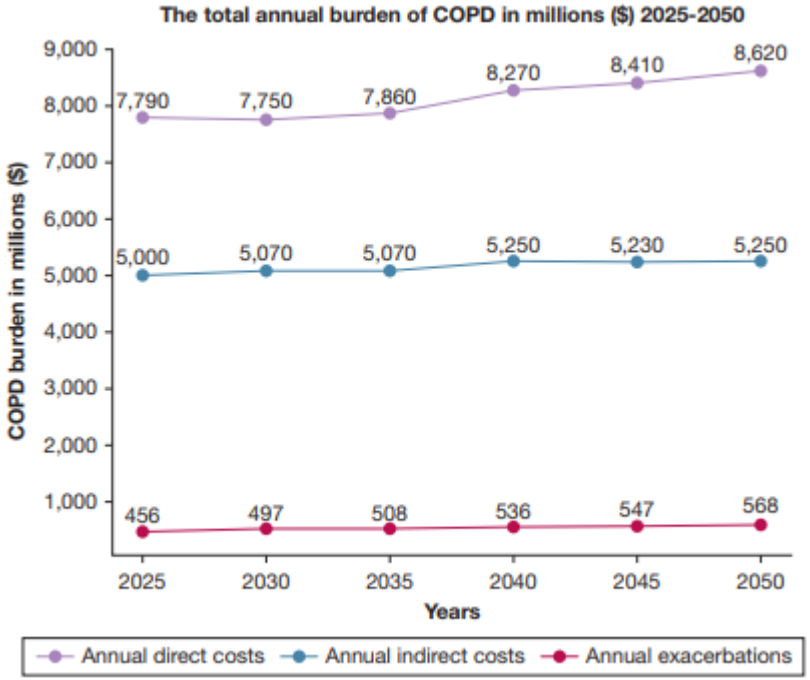
Data are % (95% CI). COPD=chronic obstructive pulmonary disease. DALYs=disability-adjusted life-years. GBD=Global Burden of Diseases, Injuries, and Risk Factors Study. SDI=sociodemographic index.

***Table 3*: Percent change of age-standardised death rates (per 100 000, from 1990 to 2021) and DALYs from chronic COPD attributed to risk factors, stratified by SDI according to GBD 2021**

Lancet Respir Med. 2025 Aug;13(8):709-724.

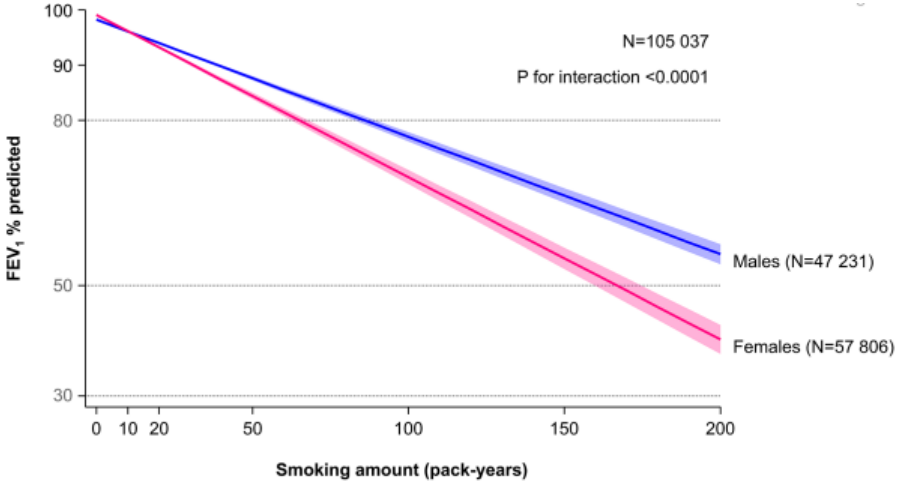
Global burden and future

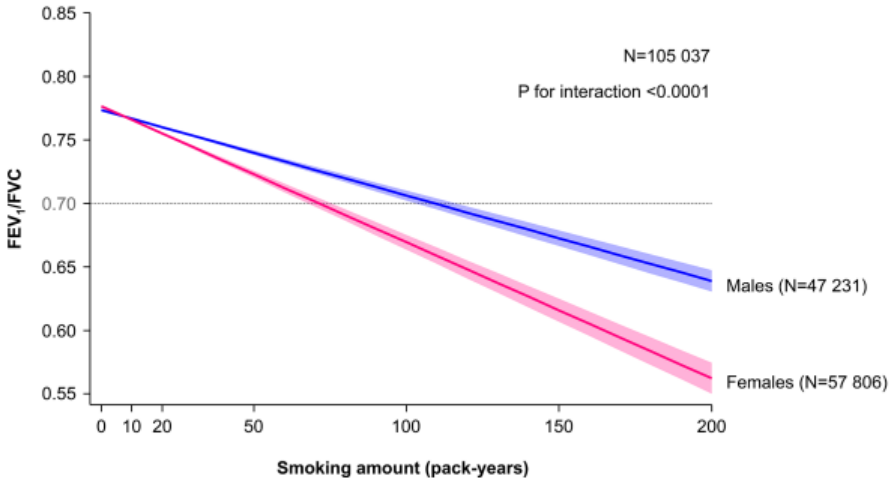




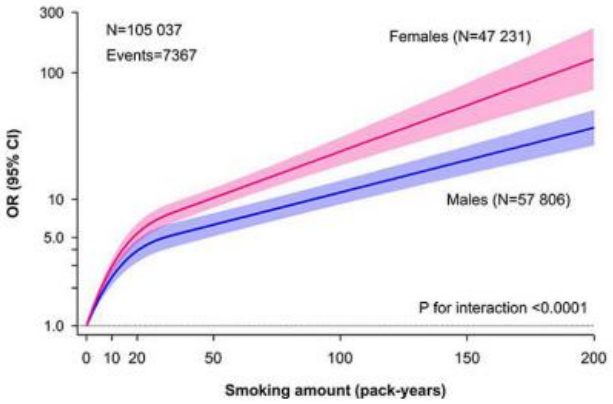
Chest. 2025 Oct;168(4):880-889.

Sex difference in COPD

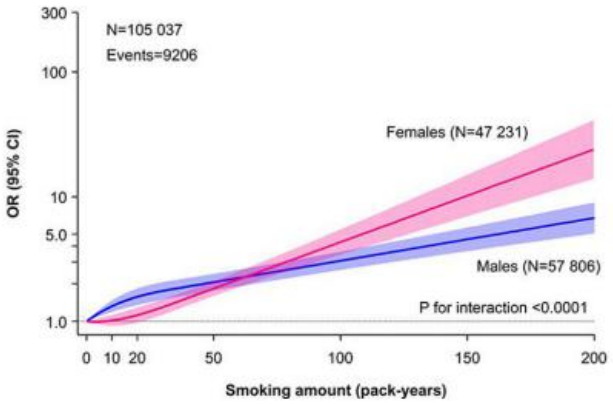




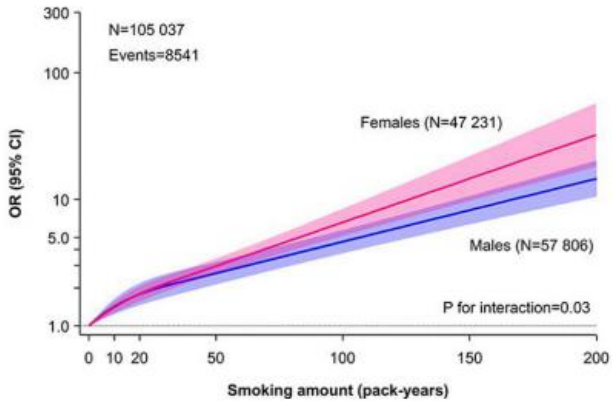
Airway obstruction



Chronic bronchitis

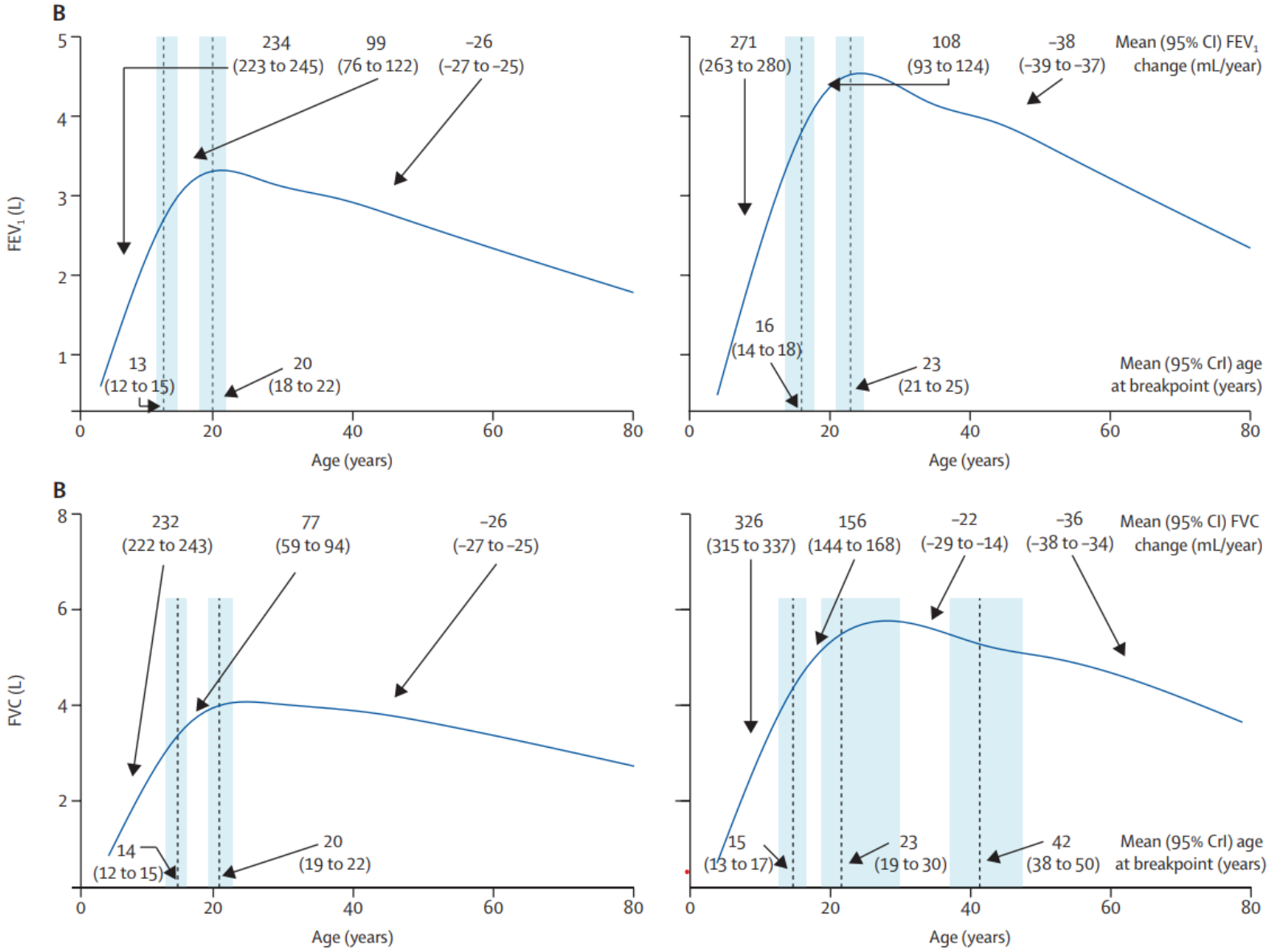


Dyspnoea



Thorax. 2025 Jul 15;80(8):512-519.

Lung function trajectories over the life course



Lancet Respir Med. 2025 Jul;13(7):611-622.

Summary

- GOLD 2026 update

  Pre-BD FEV1 as screening

  Multidimensional diagnostic approach and new techniques

  -> Xe-MRI, AI-based imaging…

  Undiagnosed COPD

  -> Case-finding vs Screening

  국내는 내년부터 PFT 국가검진도입

  한 번의 악화도 'E'로 분류

- Epidemiology

  -> 지역별 차이에 따른 원인과 증감 차이

  Lung trajectories, 성별차이, GLI