

Table S1 Sensitivity analyses: Death rates, adjusted hazard ratios (HRs), and standardised mortality ratios (SMRs) with 95% confidence intervals (CIs) for the associations of ABCD groups with all-cause mortality among women in the HUNT2 Lung Study

ABCD groups generated from alternate dyspnoea measures^a	Person-years	Observed deaths	Death rate^b (95% CI)^b	Age-adjusted HR^c	Multi-adjusted HR^d (95% CI)^d	Expected deaths	SMR^e (95% CI)^e
<u>Wheeze or dyspnoea (n=584)</u>							
Group A	1327	50	37.68 (28.56 to 49.72)	1.00	1.00 (Reference)	43	1.16 (0.86 to 1.55)
Group B	4775	141	29.53 (25.03 to 34.83)	1.06	1.07 (0.77-1.50)	106	1.33 (1.13 to 1.57)
Group C	165	9	54.50 (28.36 to 104.75)	2.06	2.60 (1.26-5.35)	3	2.80 (1.23 to 6.16)
Group D	1126	73	64.85 (51.56 to 81.57)	2.07	2.35 (1.63-3.40)	30	2.48 (1.87 to 3.23)
<u>Dyspnoea at rest (n=583)</u>							
Group A	4310	139	32.25 (27.31 to 38.09)	1.00	1.00 (Reference)	116	1.20 (1.01 to 1.42)
Group B	1789	51	28.52 (21.67 to 37.52)	1.21	1.42 (1.02-1.97)	33	1.53 (1.18 to 1.98)
Group C	557	37	66.43 (48.13 to 91.68)	2.04	2.28 (1.58-3.30)	15	2.45 (1.68 to 3.51)
Group D	734	45	61.33 (45.79 to 82.14)	2.13	2.69 (1.90-3.82)	18	2.56 (1.75 to 3.66)
<u>Health status (n=580)</u>							
Group A	2576	59	22.90 (17.74 to 29.56)	1.00	1.00 (Reference)	58	1.02 (0.80 to 1.30)
Group B	3479	131	37.66 (31.73 to 44.69)	1.46	1.42 (1.04 to 1.94)	89	1.48 (1.23 to 1.76)
Group C	228	15	65.93 (39.75 to 109.36)	2.76	3.31 (1.86 to 5.89)	6	2.71 (1.30 to 5.12)
Group D	1063	67	63.01 (49.60 to 80.06)	2.47	2.75 (1.92 to 3.92)	27	2.46 (1.85 to 3.26)

^a ABCD groups defined as follows; A = Low symptom burden, GOLD 1 or 2, and ≤ 1 exacerbation last 12 months; B = High symptom burden, GOLD 1 or 2, and ≤ 1 exacerbation last 12 months; C = Low symptom burden, and GOLD 3 or 4 or ≥ 2 exacerbations last 12 months; D = High symptom burden, and GOLD 3 or 4 or ≥ 2 exacerbations last 12 months.

^b Per 1000 person-years.

^c Adjusted for age (as the time scale).

^d Adjusted for age (as the time scale), smoking (never, former, current, unknown), and education (<10 , ≥ 10 years, unknown).

^e Standardised according to sex, 5 year age bands, and 5 year calendar periods.

Table S2 Sensitivity analyses: Death rates, adjusted hazard ratios (HRs), and standardised mortality ratios (SMRs) with 95% confidence intervals (CIs) for the associations of ABCD groups with all-cause mortality among men in the HUNT2 Lung Study

ABCD groups generated from alternate dyspnoea measures ^a	Person-years	Observed deaths	Death rate ^b (95% CI) ^b	Age-adjusted HR ^c	Multi-adjusted HR ^d (95% CI) ^d	Expected deaths	SMR ^e (95% CI) ^e
Wheeze or dyspnoea (n=956)							
Group A	2140	92	42.99 (35.04 to 52.73)	1.00	1.00 (Reference)	84	1.10 (0.91 to 1.34)
Group B	6652	314	47.21 (42.26 to 52.73)	1.10	1.00 (0.79-1.26)	255	1.23 (1.11 to 1.37)
Group C	249	16	64.19 (39.33 to 104.78)	1.17	1.18 (0.69-2.01)	12	1.33 (0.80 to 2.17)
Group D	1716	142	82.76 (70.21 to 97.55)	1.57	1.54 (1.18-2.01)	82	1.72 (1.45 to 2.03)
Dyspnoea at rest (n=953)							
Group A	6335	299	47.20 (42.14 to 52.86)	1.00	1.00 (Reference)	251	1.19 (1.07 to 1.33)
Group B	2433	105	43.17 (35.65 to 52.26)	1.01	1.00 (0.80-1.26)	86	1.22 (1.02 to 1.46)
Group C	1051	97	92.28 (75.63 to 112.60)	1.43	1.54 (1.22-1.94)	58	1.67 (1.35 to 2.07)
Group D	909	60	66.00 (51.25 to 85.01)	1.39	1.44 (1.09-1.90)	36	1.66 (1.31 to 2.08)
Health status (n=948)							
Group A	4071	150	36.84 (31.39 to 43.24)	1.00	1.00 (Reference)	138	1.09 (0.93 to 1.27)
Group B	4628	253	54.67 (48.33 to 61.84)	1.16	1.07 (0.87 to 1.32)	199	1.27 (1.13 to 1.43)
Group C	463	30	64.79 (45.30 to 92.67)	1.18	1.17 (0.79 to 1.73)	23	1.28 (0.89 to 1.82)
Group D	1486	128	86.14 (72.43 to 102.43)	1.70	1.74 (1.36 to 2.22)	70	1.82 (1.53 to 2.17)

^a ABCD groups defined as follows; A = Low symptom burden, GOLD 1 or 2, and ≤ 1 exacerbation last 12 months; B = High symptom burden, GOLD 1 or 2, and ≤ 1 exacerbation last 12 months; C = Low symptom burden, and GOLD 3 or 4 or ≥ 2 exacerbations last 12 months; D = High symptom burden, and GOLD 3 or 4 or ≥ 2 exacerbations last 12 months.

^b Per 1000 person-years.

^c Adjusted for age (as the time scale).

^d Adjusted for age (as the time scale), smoking (never, former, current, unknown), and education (<10 , ≥ 10 years, unknown).

^e Standardised according to sex, 5 year age bands, and 5 year calendar periods.

Table S3 Area under the receiver operating characteristic curve (AUC) and pseudo R² from logistic regression models^a of spirometric Global Initiative for Chronic Obstructive Lung Disease (GOLD) grades and ABCD groups related to all-cause mortality among participants with chronic obstructive pulmonary disease (COPD) in the HUNT2 Lung Study

COPD classification	Women (n=468) ^b		Men (n=736) ^b	
	AUC	R ²	AUC	R ²
GOLD grades ^c	0.873	0.355	0.889	0.395
ABCD groups ^d	0.847	0.299	0.882	0.384

^a All models were adjusted for age (continuous), smoking (never, former, current, unknown), and education (<10, ≥10 years, unknown). The most informative model has the highest value of AUC or R².

^b People with missing data on dyspnoea were excluded so that the results from the spirometric GOLD and the ABCD groups could be compared.

^c COPD defined as forced expiratory volume in one second (FEV₁)/ forced vital capacity (FVC) <0.70 and graded as follows; GOLD 1 = % predicted FEV₁ (ppFEV₁) ≥80; GOLD 2 = 50 ≤ ppFEV₁ <80; GOLD 3 = 30 ≤ ppFEV₁ <50; GOLD 4 = ppFEV₁ <30.

^d ABCD groups defined as follows; A = Dyspnoea ≤ grade 1, GOLD 1 or 2, and ≤1 exacerbation last 12 months; B = Dyspnoea ≥ grade 2, GOLD 1 or 2, and ≤1 exacerbation last 12 months; C = Dyspnoea ≤ grade 1, and GOLD 3 or 4 or ≥2 exacerbations last 12 months; D = Dyspnoea ≥ grade 2, and GOLD 3 or 4 or ≥2 exacerbations last 12 months.

Table S4 Sensitivity analyses with alternate measures of symptom burden: Informativeness^a of spirometric Global Initiative for Chronic Obstructive Lung Disease (GOLD) grades and ABCD groups related to all-cause mortality among participants with chronic obstructive pulmonary disease (COPD) in the HUNT2 Lung Study

COPD classification	Women						Men					
	Wheeze or dyspnoea		Dyspnoea at rest		Health status		Wheeze or dyspnoea		Dyspnoea at rest		Health status	
	(n=584)		(n=583) ^b		(n=580) ^c		(n=956)		(n=953) ^b		(n=948) ^c	
	χ^2	(%)	χ^2	(%)	χ^2	(%)	χ^2	(%)	χ^2	(%)	χ^2	(%)
GOLD grades ^d	79.33	(100)	79.33	(100)	78.67	(100)	42.66	(100)	42.17	(100)	44.41	(100)
ABCD groups ^e	32.52	(41)	37.15	(47)	37.65	(48)	18.15	(43)	16.91	(40)	22.33	(50)

^a The null Cox model included age (as the time scale), smoking (never, former, current, unknown), and education (<10, ≥10 years, unknown). The alternative Cox models included spirometric GOLD grades or ABCD groups in addition to all in the null model. The χ^2 shows the difference in twice the log-likelihood between the null model and the alternative model. The most informative model has the highest value of χ^2 and has been set to 100%. All p < 0.001.

^b One woman and three men were excluded from these models due to missing data on dyspnoea.

^c Four women and eight men were excluded from these models due to missing data on health status.

^d COPD defined as forced expiratory volume in one second (FEV₁)/ forced vital capacity (FVC) < 0.70 and graded as follows; GOLD 1 = % predicted forced expiratory volume in one second (ppFEV₁) ≥ 80; GOLD 2 = 50 ≤ ppFEV₁ < 80; GOLD 3 = 30 ≤ ppFEV₁ < 50; GOLD 4 = ppFEV₁ < 30.

^e ABCD groups defined as follows; A = Dyspnoea ≤ grade 1, GOLD 1 or 2, and ≤ 1 exacerbation last 12 months; B = Dyspnoea ≥ grade 2, GOLD 1 or 2, and ≤ 1 exacerbation last 12 months; C = Dyspnoea ≤ grade 1, and GOLD 3 or 4 or ≥ 2 exacerbations last 12 months; D = Dyspnoea ≥ grade 2, and GOLD 3 or 4 or ≥ 2 exacerbations last 12 months.

Table S5 Sensitivity analyses with alternate measures of symptom burden: Area under the receiver operating characteristic curve (AUC) and pseudo R^2 from logistic regression models^a of spirometric Global Initiative for Chronic Obstructive Lung Disease (GOLD) grades and ABCD groups related to all-cause mortality among participants with chronic obstructive pulmonary disease (COPD) in the HUNT2 Lung Study

COPD classification	Women						Men					
	Wheeze or dyspnoea (n=584)		Dyspnoea at rest (n=583) ^b		Health status (n=580) ^c		Wheeze or dyspnoea (n=956)		Dyspnoea at rest (n=953) ^b		Health status (n=948) ^c	
	AUC	R ²	AUC	R ²	AUC	R ²	AUC	R ²	AUC	R ²	AUC	R ²
GOLD grades ^d	0.881	0.369	0.880	0.369	0.881	0.370	0.885	0.377	0.886	0.379	0.886	0.382
ABCD groups ^e	0.856	0.320	0.858	0.324	0.861	0.329	0.880	0.366	0.881	0.368	0.882	0.370

^a All models were adjusted for age (continuous), smoking (never, former, current, unknown), and education (<10, ≥10 years, unknown). The most informative model has the highest value of AUC or R².

^b One woman and three men were excluded from these models due to missing data on dyspnoea.

^c Four women and eight men were excluded from these models due to missing data on health status.

^d COPD defined as forced expiratory volume in one second (FEV₁)/ forced vital capacity (FVC) <0.70 and graded as follows; GOLD 1 = % predicted forced expiratory volume in one second (ppFEV₁) ≥80; GOLD 2 = 50 ≤ ppFEV₁ <80; GOLD 3 = 30 ≤ ppFEV₁ <50; GOLD 4 = ppFEV₁ <30.

^e ABCD groups defined as follows; A = Dyspnoea ≤ grade 1, GOLD 1 or 2, and ≤1 exacerbation last 12 months; B = Dyspnoea ≥ grade 2, GOLD 1 or 2, and ≤1 exacerbation last 12 months; C = Dyspnoea ≤ grade 1, and GOLD 3 or 4 or ≥2 exacerbations last 12 months; D = Dyspnoea ≥ grade 2, and GOLD 3 or 4 or ≥2 exacerbations last 12 months.