

**Table S1.** Baseline characteristics of the total study population and NP vs. SP

Features	All (n=518)	NP (n=354)	SP (n=164)	P-value
Age (years)	64.1±9.1	63.8±9.1	64.7±9.1	0.321
Male sex	288 (55.6)	184 (52.0)	104 (63.4)	0.015
BMI (kg/m <sup>2</sup> )	26.2±5.8	26.1±5.8	26.5±5.7	0.527
COPD GOLD				0.001
- A	19 (3.7)	13 (3.7)	6 (3.7)	
- B	206 (39.8)	162 (45.8)	44 (26.8)	
- C	10 (1.9)	7 (2.0)	3 (1.8)	
- D	283 (54.6)	172 (48.6)	111 (67.7)	
Current smoker	114 (22.1)	72 (20.4)	42 (25.6)	0.369
Pack years <sup>a</sup>	40.0 (30.0-50.0)	40.0 (30.0-50.0)	40.0 (28.0-50.0)	0.803
FEV <sub>1</sub> (% predicted)	48.6±20.0	49.0±20.0	47.7±19.9	0.518
FEV <sub>1</sub> /FVC (Tiffeneau)	37.5±12.2	37.9±12.1	36.7±12.4	0.300
RV (% predicted)	161.0±50.7	163.0±51.6	156.9±48.6	0.210
TLC (% predicted)	117.1±17.5	117.9±17.1	115.4±18.3	0.133
DLCO (% predicted)	49.3±17.2	49.5±17.5	48.9±16.6	0.713
LTOT	125 (24.1)	82 (23.2)	43 (26.2)	0.450
PaCO <sub>2</sub> (kPa) <sup>a</sup>	5.2 (4.7-5.6)	5.2 (4.7-5.6)	5.2 (4.8-5.7)	0.276
PaO <sub>2</sub> (kPa) <sup>a</sup>	9.5 (8.6-10.4)	9.6 (8.7-10.4)	9.3 (8.4-10.3)	0.176
Exacerbations (<1 year)				<0.001
- 0	128 (24.7)	101 (28.5)	27 (16.5)	
- 1	97 (18.7)	74 (20.9)	23 (14.0)	
- ≥ 2	293 (56.6)	179 (50.6)	114 (69.5)	
Hospitalizations (<1 year)				0.018
- 0	284 (54.8)	204 (57.6)	80 (48.8)	
- 1	124 (23.9)	87 (24.6)	37 (22.6)	
- ≥ 2	110 (21.2)	63 (17.8)	47 (28.7)	
ICU admissions (<1 year) <sup>b</sup>				0.347
- 0	463 (93.9)	312 (92.9)	151 (96.2)	
- 1	26 (5.3)	21 (6.3)	5 (3.2)	
- ≥ 2	4 (0.8)	3 (0.9)	1 (0.6)	
Symptoms of CB	167 (33.8)	89 (26.1)	78 (51.0)	<0.001
mMRC <sup>c</sup>				0.775
- 0	10 (2.0)	7 (2.0)	3 (1.9)	
- 1	85 (16.6)	62 (17.7)	23 (14.3)	
- 2	193 (37.7)	134 (38.2)	59 (36.6)	
- 3	127 (24.8)	82 (23.4)	45 (28.0)	
- 4	97 (18.9)	66 (18.8)	31 (19.3)	

**Notes:** Data are presented as mean ± SD, median (interquartile range), or n (%). <sup>a</sup>Not normally distributed; <sup>b</sup>missing n= 25 (NP n=18; SP n=7); <sup>c</sup>missing n=6 (NP n=3; SP n=3). *P*<0.05 NP vs. SP.

**Abbreviations:** BMI, Body Mass Index; COPD, Chronic Obstructive Pulmonary Disease; GOLD, Global initiative for chronic Obstructive Lung Disease; FEV<sub>1</sub>, Forced Expiratory Volume in 1 sec.; FVC, Forced Vital Capacity; RV, residual volume; TLC, total lung capacity; DLCO, diffusing capacity for carbon monoxide; LTOT, long term oxygen therapy; mMRC, modified Medical Research Council; NP, nonsputum producers; SP, sputum producers.

**Table S2.** Medication use of NP vs. SC- vs. SC+

Medication	NP (n=354)	SC- (n=111)	SC+ (n=53)	P-value
SABA	164 (46.3)	41 (36.9)	24 (45.3)	0.218
SAMA	54 (15.3)	15 (13.5)	13 (24.5)	0.170
SABA/SAMA	67 (18.9)	31 (27.9)	11 (20.8)	0.127
LABA	94 (26.6)	28 (25.2)	9 (17.0)	0.327
LAMA	247 (69.8)	84 (75.7)	38 (71.7)	0.486
ICS	69 (19.5)	23 (20.7)	11 (20.8)	0.947
ICS/LABA	238 (67.2)	77 (69.4)	39 (73.6)	0.628
Oral corticosteroids	62 (17.5)	19 (17.1)	13 (24.5)	0.443
Antibiotics	39 (11.0)	6 (5.4)	9 (17.0)	0.062

**Notes:** Data are presented as n (%).

**Abbreviations:** SABA, short-acting beta-agonist; SAMA, short-acting muscarinic antagonist; LABA, long-acting beta-agonist; LAMA, long-acting muscarinic antagonist; ICS, inhaled corticosteroids; NP, nonsputum producers; SC-, sputum producers with a negative culture; SC+, sputum producers with a positive culture.

**Table S3.** Health status and symptoms of anxiety and depression of NP vs. SP

Features	NP (n=354) <sup>a</sup>	SP (n=164) <sup>b</sup>	P-value
CAT total	21.1±6.7	22.6±6.5	0.020
CAT cough	2.3±1.3	2.9±1.2	<0.001
CAT phlegm	2.0±1.4	2.7±1.2	<0.001
SGRQ-C total	60.0±17.0	63.5±18.0	0.036
SGRQ-C symptom	59.0±18.9	67.7±18.1	<0.001
SGRQ-C impact	48.4±20.7	52.3±22.0	0.055
SGRQ-C activity	80.0±18.4	79.9±19.8	0.929
CCQ total	2.5±1.0	2.9±1.0	0.001
HADS-A	7.6±4.5	8.1±4.4	0.260
HADS-D	7.2±4.3	8.2±4.4	0.022

**Notes:** Data are presented as mean ± SD. <sup>a</sup>Missing CAT n=9; SGRQ-C n=9; CCQ n=9; HADS n=10; <sup>b</sup>missing CAT n=4; SGRQ-C n=5; CCQ n=7; HADS n=8.

**Abbreviations:** CAT, COPD Assessment Test; SGRQ-C, St. George's Respiratory Questionnaire; CCQ, Clinical COPD Questionnaire; HADS, Hospital Anxiety and Depression scale; SD, standard deviation; NP, nonsputum producers; SC-, sputum producers with a negative culture; SC+, sputum producers with a positive culture.

**Table S4.** Health status and symptoms of anxiety and depression of NP vs. SC- vs. SC+

Features	NP (n=354) <sup>a</sup>	SC- (n=111) <sup>b</sup>	SC+ (n=53) <sup>c</sup>	P-value
CAT total	21.1±6.7	21.9±6.6	23.9±6.1 <sup>d</sup>	0.013
CAT cough	2.3±1.3	2.7±1.2 <sup>d</sup>	3.1±1.1 <sup>d</sup>	<0.001
CAT phlegm	2.0±1.4	2.5±1.3 <sup>d</sup>	3.1±1.1 <sup>d,e</sup>	<0.001
SGRQ-C total	60.0±17.0	62.6±18.8	65.4±16.1	0.070
SGRQ-C symptom	59.0±18.9	66.0±18.2 <sup>d</sup>	71.3±17.5 <sup>d</sup>	<0.001
SGRQ-C impact	48.4±20.7	51.6±22.3	53.8±21.6	0.133
SGRQ-C activity	80.0±18.4	79.1±21.3	81.6±16.2	0.723
CCQ total	2.5±1.0	2.8±1.1	3.1±1.0 <sup>d</sup>	0.001
HADS-A	7.6±4.5	8.0±4.3	8.3±4.5	0.489
HADS-D	7.2±4.3	8.0±4.5	8.7±4.1 <sup>d</sup>	0.046

**Notes:** Data are presented as mean ± SD. <sup>a</sup>Missing CAT n=9; SGRQ-C n=9; CCQ n=9; HADS n=10; <sup>b</sup>missing CAT n=2; SGRQ-C n=2; CCQ n=4; HADS n=5; <sup>c</sup>missing CAT n=2; SGRQ-C n=3; CCQ n=3; HADS n=3; <sup>d</sup>P<0.05 compared to NP; <sup>e</sup>P<0.05 compared to SC-.

**Abbreviations:** CAT, COPD Assessment Test; SGRQ-C, St. George's Respiratory Questionnaire; CCQ, Clinical COPD Questionnaire; HADS, Hospital Anxiety and Depression scale; SD, standard deviation; NP, nonsputum producers; SC-, sputum producers with a negative culture; SC+, sputum producers with a positive culture.

**Table S5.** Number of patients with elevated scores on health status and symptoms of anxiety and depression

<b>Features</b>	<b>All (n=518)</b>	<b>NP (n=354)</b>	<b>SC- (n=111)</b>	<b>SC+ (n=53)</b>	<b>P-value</b>
CAT ( $\geq 10$ )	477 (94.5)	326 (94.5)	102 (93.6)	49 (96.1)	0.812
SGRQ-C ( $\geq 25$ )	489 (97.0)	334 (96.8)	105 (96.3)	50 (100)	0.413
CCQ ( $\geq 1$ )	477 (95.0)	327 (94.8)	101 (94.4)	49 (98.0)	0.586
HADS-A ( $\geq 8$ )	235 (47.0)	154 (44.8)	57 (53.8)	24 (48.0)	0.264
HADS-D ( $\geq 8$ )	238 (47.6)	156 (45.3)	53 (50.0)	29 (58.0)	0.211

**Notes:** Data are presented as n (%). Missing CAT n=13; SGRQ-C n=14; CCQ n=16; HADS n=18.

**Abbreviations:** CAT, COPD Assessment Test; SGRQ-C, St. George's Respiratory Questionnaire; CCQ, Clinical COPD Questionnaire; HADS, Hospital Anxiety and Depression scale; NP, nonsputum producer; SC-, sputum producers with a negative culture; SC+, sputum producers with a positive culture.