

Table S1 Demographics and clinical characteristics of patients reclassified to a new group per GOLD 2018 criteria (n=296)

| Characteristic | Total [†] (n=296) | Group C to A [†] (n=52) | Group D to B [§] (n=244) |
|--|----------------------------|----------------------------------|-----------------------------------|
| Age, years, mean (SD) | 65.2 (8.0) | 64.4 (8.1) | 65.3 (7.9) |
| Age group, n (%) | | | |
| <65 years | 132 (44.6) | 31 (59.6) | 101 (41.4) |
| ≥65 years | 164 (55.4) | 21 (40.4) | 143 (58.6) |
| Gender, n (%) | | | |
| Male | 265 (89.5) | 44 (84.6) | 221 (90.6) |
| BMI, kg/m ² | | | |
| Mean (SD) | 22.1 (3.4) | 22.5 (3.0) | 22.0 (3.5) |
| BMI group, n (%) | | | |
| <18.5 | 39 (13.2) | 4 (7.7) | 35 (14.3) |
| 18.5–23.9 | 174 (58.8) | 30 (57.7) | 144 (59.0) |
| 24–27.9 | 70 (23.6) | 15 (28.8) | 55 (22.5) |
| ≥28 | 13 (4.4) | 3 (5.8) | 10 (4.1) |
| Waistline measurement, cm | | | |
| n | 296 | 52 | 244 |
| Mean (SD) | 85.2 (11.3) | 82.6 (10.7) | 85.7 (11.4) |
| Smoking status, n (%) | | | |
| Never smoker | 53 (17.9) | 11 (21.2) | 42 (17.2) |
| Former smoker | 175 (59.1) | 29 (55.8) | 146 (59.8) |
| Current smoker | 68 (23.0) | 12 (23.1) | 56 (23.0) |
| Pack-years for former and current smokers [¶] | | | |
| n | 243 | 41 | 202 |
| Mean (SD) | 38.6 (25.2) | 33.8 (21.6) | 39.6 (25.8) |
| mMRC dyspnea grade, n (%) | | | |
| 0 | 17 (5.7) | 10 (19.2) | 7 (2.9) |
| 1 | 103 (34.8) | 27 (51.9) | 76 (31.1) |
| 2 | 108 (36.5) | 13 (25.0) | 95 (38.9) |
| 3 | 63 (21.3) | 2 (3.8) | 61 (25.0) |
| 4 | 5 (1.7) | 0 | 5 (2.0) |
| CAT total score, mean (SD) | 17.1 (7.7) | 5.9 (2.5) | 19.5 (6.1) |
| CAT total score category, n (%) | | | |
| 0–<10 | 52 (17.6) | 52 (100) | 0 |
| 10–<20 | 122 (41.2) | 0 | 122 (50.0) |
| 20–<30 | 111 (37.5) | 0 | 111 (45.5) |
| 30–≤40 | 11 (3.7) | 0 | 11 (4.5) |

Table S1 (continued)

Table S1 (continued)

| Characteristic | Total [†] (n=296) | Group C to A [‡] (n=52) | Group D to B [§] (n=244) |
|--|----------------------------|----------------------------------|-----------------------------------|
| Exacerbation status, n (%) ^{††} | | | |
| No exacerbations | 271 (91.6) | 44 (84.6) | 227 (93.0) |
| 1 exacerbation (not requiring hospitalization) | 25 (8.4) | 8 (15.4) | 17 (7.0) |
| ≥1 exacerbation requiring hospitalization | 0 | 0 | 0 |
| ≥2 exacerbations | 0 | 0 | 0 |
| ≥1 exacerbation requiring hospitalization or ≥2 exacerbations | 0 | 0 | 0 |
| Spirometry classification, n (%) ^{††} | | | |
| GOLD 1 | 0 | 0 | 0 |
| GOLD 2 | 0 | 0 | 0 |
| GOLD 3 | 209 (70.6) | 50 (96.2) | 159 (65.2) |
| GOLD 4 | 87 (29.4) | 2 (3.8) | 5 (34.8) |
| FEV ₁ , L, mean (SD) | 0.96 (0.3) | 1.08 (0.2) | 0.94 (0.3) |
| FEV ₁ /FVC ratio, mean (SD) | 0.40 (0.1) | 0.41 (0.1) | 0.40 (0.1) |
| FEV ₁ % predicted, mean (SD) | 35.82 (9.2) | 40.91 (6.3) | 34.73 (9.4) |

[†], Group C per GOLD 2016 reclassified to Group A per GOLD 2018 + Group D per GOLD 2016 reclassified to Group B per GOLD 2018.

[‡], Group C per GOLD 2016 reclassified to Group A per GOLD 2018. [§], Group D per GOLD 2016 reclassified to Group B per GOLD 2018.

[¶], pack-years = number of packs per day × number of smoking years. ^{††}, exacerbations in the last 12 months. ^{‡‡}, GOLD 1: mild, FEV₁ ≥ 80% predicted; GOLD 2: moderate, 50% ≤ FEV₁ < 80% predicted; GOLD 3: severe, 30% ≤ FEV₁ < 50% predicted; GOLD 4: very severe, FEV₁ < 30% predicted. Spirometry was only considered in the GOLD 2016 classification, not in the GOLD 2018 classification. BMI, body mass index; CAT, COPD Assessment Test; COPD, chronic obstructive pulmonary disease; FEV₁, forced expiratory volume in 1 second; FVC, forced vital capacity; GOLD, Global Initiative for Chronic Obstructive Lung Disease; mMRC, modified Medical Research Council; SD, standard deviation.

Table S2 Proportion of patients receiving treatment and concordance with treatment recommendations per GOLD 2016 (N=838)

| | Total | GOLD 2016 | | | | GOLD 2018 | | | |
|--|-------------|------------|------------|-----------|------------|------------|------------|-----------|------------|
| | | Group A | Group B | Group C | Group D | Group A | Group B | Group C | Group D |
| Patients, n (%) | 838 (100.0) | 162 (19.3) | 236 (28.2) | 81 (9.7) | 359 (42.8) | 214 (25.5) | 480 (57.3) | 29 (3.5) | 115 (13.7) |
| Patients receiving treatment concordant with GOLD 2016 recommendations, n (%) | 303 (36.2) | 24 (14.8) | 18 (7.6) | 39 (48.1) | 222 (61.8) | N/A | N/A | N/A | N/A |
| Patients receiving treatment concordant with the GOLD 2016 recommended first choice, n (%) | 275 (32.8) | 0 | 16 (6.8) | 38 (46.9) | 221 (61.6) | N/A | N/A | N/A | N/A |
| Patients receiving treatment concordant with the GOLD 2016 alternative choice, n (%) | 249 (29.7) | 24 (14.8) | 2 (0.8) | 1 (1.2) | 222 (61.8) | N/A | N/A | N/A | N/A |
| COPD inhaled medications, n (%) | | | | | | | | | |
| None | 286 (34.1) | 55 (34.0) | 94 (39.8) | 11 (13.6) | 126 (35.1) | 65 (30.4) | 175 (36.5) | 1 (3.4) | 45 (39.1) |
| ICS + LABA | 231 (27.6) | 44 (27.2) | 69 (29.2) | 27 (33.3) | 91 (25.3) | 59 (27.6) | 124 (25.8) | 12 (41.4) | 36 (31.3) |
| ICS + LAMA + LABA | 217 (25.9) | 35 (21.6) | 45 (19.1) | 31 (38.3) | 106 (29.5) | 55 (25.7) | 124 (25.8) | 11 (37.9) | 27 (23.5) |
| LAMA | 75 (8.9) | 24 (14.8) | 16 (6.8) | 11 (13.6) | 24 (6.7) | 31 (14.5) | 36 (7.5) | 4 (13.8) | 4 (3.5) |
| Other [†] | 12 (1.4) | 2 (1.2) | 5 (2.1) | 0 | 5 (1.4) | 2 (0.9) | 8 (1.7) | 0 | 2 (1.7) |
| SABA | 7 (0.8) | 0 | 5 (2.1) | 0 | 2 (0.6) | 0 | 7 (1.5) | 0 | 0 |
| LAMA + LABA | 6 (0.7) | 2 (1.2) | 2 (0.8) | 1 (1.2) | 1 (0.3) | 2 (0.9) | 3 (0.6) | 1 (3.4) | 0 |
| SAMA + SABA | 2 (0.2) | 0 | 0 | 0 | 2 (0.6) | 0 | 2 (0.4) | 0 | 0 |
| LABA | 1 (0.1) | 0 | 0 | 0 | 1 (0.3) | 0 | 1 (0.2) | 0 | 0 |
| SAMA | 1 (0.1) | 0 | 0 | 0 | 1 (0.3) | 0 | 0 | 0 | 1 (0.9) |

[†], the types of medication included in the “Other” category were not captured. COPD, chronic obstructive pulmonary disease; GOLD, Global Initiative for Chronic Obstructive Lung Disease; ICS, inhaled corticosteroid; LABA, long-acting β_2 -agonist; LAMA, long-acting muscarinic antagonist; N/A, not applicable; SABA, short-acting β_2 -agonist; SAMA, short-acting muscarinic antagonist.

Table S3 Patient demographics and clinical characteristics by COPD inhaled medications (N=838)

| Characteristic | Total (N=838) | LAMA or LABA (n=76) | LAMA + LABA (n=6) | ICS + LABA (n=231) | ICS + LAMA + LABA (n=217) | Other [†] (n=22) | No current COPD treatment (n=286) |
|--|---------------|---------------------|-------------------|--------------------|---------------------------|---------------------------|-----------------------------------|
| Age, years, mean (SD) | 65.7 (8.6) | 66.6 (7.2) | 59.3 (8.8) | 66.6 (8.5) | 66.8 (8.3) | 65.1 (6.5) | 63.9 (9.0) |
| Age group, n (%) | | | | | | | |
| <65 years | 347 (41.4) | 25 (32.9) | 4 (66.7) | 103 (44.6) | 84 (38.7) | 8 (36.4) | 123 (43.0) |
| ≥65 years | 491 (58.6) | 51 (67.1) | 2 (33.3) | 128 (55.4) | 133 (61.3) | 14 (63.6) | 163 (57.0) |
| Gender, n (%) | | | | | | | |
| Male | 724 (86.4) | 67 (88.2) | 5 (83.3) | 206 (89.2) | 200 (92.2) | 19 (86.4) | 227 (79.4) |
| BMI, kg/m ² | | | | | | | |
| n | 836 | 76 | 6 | 231 | 216 | 21 | 286 |
| Mean (SD) | 23.1 (3.6) | 22.4 (3.3) | 23.6 (1.0) | 23.2 (3.7) | 22.7 (3.6) | 22.3 (3.5) | 23.5 (3.7) |
| BMI group, n (%) | | | | | | | |
| <18.5 | 78 (9.3) | 9 (11.8) | 0 | 18 (7.8) | 26 (12.0) | 2 (9.5) | 23 (8.0) |
| 18.5–23.9 | 434 (51.9) | 44 (57.9) | 4 (66.7) | 125 (54.1) | 110 (50.9) | 14 (66.7) | 137 (47.9) |
| 24.0–27.9 | 250 (29.9) | 21 (27.6) | 2 (33.3) | 68 (29.4) | 64 (29.6) | 3 (14.3) | 92 (32.2) |
| ≥28 | 74 (8.9) | 2 (2.6) | 0 | 20 (8.7) | 16 (7.4) | 2 (9.5) | 34 (11.9) |
| Missing | 2 (0.2) | 0 | 0 | 0 | 1 (0.4) | 1 (4.5) | 0 |
| Waistline measurement, cm | | | | | | | |
| n | 834 | 76 | 6 | 229 | 216 | 21 | 286 |
| Mean (SD) | 86.5 (10.3) | 84.0 (11.3) | 90.5 (11.9) | 87.04 (10.1) | 87.8 (11.5) | 85.3 (11.3) | 85.8 (8.9) |
| Smoking status, n (%) | | | | | | | |
| Never smoker | 180 (21.5) | 12 (15.8) | 1 (16.7) | 44 (19.0) | 39 (18.0) | 3 (13.6) | 81 (28.3) |
| Former smoker | 449 (53.6) | 45 (59.2) | 3 (50.0) | 129 (55.8) | 124 (57.1) | 14 (63.6) | 134 (46.9) |
| Current smoker | 209 (24.9) | 19 (25.0) | 2 (33.3) | 58 (25.1) | 54 (24.9) | 5 (22.7) | 71 (24.8) |
| Pack-years for former and current smokers [‡] | | | | | | | |
| n | 658 | 64 | 5 | 187 | 178 | 19 | 205 |
| Mean (SD) | 39.05 (25.8) | 41.04 (28.8) | 54.0 (19.5) | 37.4 (24.4) | 41.9 (29.4) | 35.7 (17.3) | 37.5 (23.2) |
| mMRC dyspnea grade [§] , n (%) | | | | | | | |
| 0 | 120 (14.3) | 12 (15.8) | 2 (33.3) | 42 (18.2) | 18 (8.3) | 2 (9.1) | 44 (15.4) |
| 1 | 316 (37.7) | 38 (50.0) | 3 (50.0) | 92 (39.8) | 81 (37.3) | 10 (45.5) | 92 (32.2) |
| 2 | 269 (32.1) | 22 (28.9) | 1 (16.7) | 68 (29.4) | 83 (38.2) | 4 (18.2) | 91 (31.8) |
| 3 | 120 (14.3) | 3 (3.9) | 0 | 25 (10.8) | 30 (13.8) | 4 (18.2) | 58 (20.3) |
| 4 | 13 (1.6) | 1 (1.3) | 0 | 4 (1.7) | 5 (2.3) | 2 (9.1) | 1 (0.3) |
| CAT total score, mean (SD) | 15.0 (8.0) | 11.5 (6.7) | 11.2 (4.9) | 14.4 (7.9) | 14.8 (8.0) | 17.7 (7.0) | 16.4 (8.0) |
| CAT total score category, n (%) | | | | | | | |
| 0–<10 | 243 (29.0) | 35 (46.1) | 3 (50.0) | 71 (30.7) | 66 (30.4) | 2 (9.1) | 66 (23.1) |
| 10–<20 | 345 (41.2) | 30 (39.5) | 3 (50.0) | 96 (41.6) | 86 (39.6) | 11 (50.0) | 119 (41.6) |
| 20–<30 | 221 (26.4) | 11 (14.5) | 0 | 59 (25.5) | 55 (25.3) | 9 (40.9) | 87 (30.4) |
| 30–≤40 | 29 (3.5) | 0 | 0 | 5 (2.2) | 10 (4.6) | 0 | 14 (4.9) |

Table S3 (continued)

Table S3 (continued)

| Characteristic | Total (N=838) | LAMA or LABA (n=76) | LAMA + LABA (n=6) | ICS + LABA (n=231) | ICS + LAMA + LABA (n=217) | Other [†] (n=22) | No current COPD treatment (n=286) |
|---|---------------|---------------------|-------------------|--------------------|---------------------------|---------------------------|-----------------------------------|
| Exacerbation status, n (%) [¶] | | | | | | | |
| No exacerbations | 628 (74.9) | 59 (77.6) | 4 (66.7) | 157 (68.0) | 158 (72.8) | 16 (72.7) | 234 (81.8) |
| 1 exacerbation (not requiring hospitalization) | 64 (7.6) | 9 (11.8) | 1 (16.7) | 26 (11.3) | 21 (9.7) | 3 (13.6) | 4 (1.4) |
| ≥1 exacerbation requiring hospitalization | 118 (14.1) | 5 (6.6) | 1 (16.7) | 33 (14.3) | 31 (14.3) | 3 (13.6) | 45 (15.7) |
| ≥2 exacerbations | 46 (5.5) | 4 (5.3) | 0 | 22 (9.5) | 14 (6.5) | 1 (4.5) | 5 (1.7) |
| ≥1 exacerbation requiring hospitalization or ≥2 exacerbations | 144 (17.2) | 8 (10.5) | 1 (16.7) | 48 (20.8) | 38 (17.5) | 3 (13.6) | 46 (16.1) |
| Spirometry classification, n (%) | | | | | | | |
| GOLD 1 | 77 (9.2) | 5 (6.6) | 1 (16.7) | 26 (11.3) | 8 (3.7) | 2 (9.1) | 35 (12.2) |
| GOLD 2 | 373 (44.5) | 37 (48.7) | 3 (50.0) | 114 (49.4) | 81 (37.3) | 10 (45.5) | 128 (44.8) |
| GOLD 3 | 275 (32.8) | 24 (31.6) | 2 (33.3) | 63 (27.3) | 92 (42.4) | 7 (31.8) | 87 (30.4) |
| GOLD 4 | 113 (13.5) | 10 (13.2) | 0 (0.0) | 28 (12.1) | 36 (16.6) | 3 (13.6) | 36 (12.6) |
| FEV ₁ , L, mean (SD) | 1.39 (0.6) | 1.35 (0.5) | 1.88 (0.8) | 1.45 (0.6) | 1.26 (0.5) | 1.45 (0.6) | 1.44 (0.6) |
| FEV ₁ /FVC ratio, mean (SD) | 0.49 (0.12) | 0.48 (0.12) | 0.53 (0.12) | 0.50 (0.12) | 0.46 (0.11) | 0.46 (0.14) | 0.51 (0.11) |
| FEV ₁ % predicted, mean (SD) | 52.7 (19.4) | 52.1 (17.4) | 60.5 (19.7) | 55.2 (19.9) | 47.4 (17.3) | 53.1 (19.2) | 54.7 (20.4) |
| GOLD 2016, n (%) | | | | | | | |
| Group A | 162 (19.3) | 24 (31.6) | 2 (33.3) | 44 (19.0) | 35 (16.1) | 2 (9.1) | 55 (19.2) |
| Group B | 236 (28.2) | 16 (21.1) | 2 (33.3) | 69 (29.9) | 45 (20.7) | 10 (45.5) | 94 (32.9) |
| Group C | 81 (9.7) | 11 (14.5) | 1 (16.7) | 27 (11.7) | 31 (14.3) | 0 (0.0) | 11 (3.8) |
| Group D | 359 (42.8) | 25 (32.9) | 1 (16.7) | 91 (39.4) | 106 (48.8) | 10 (45.5) | 126 (44.1) |
| GOLD 2018, n (%) | | | | | | | |
| Group A | 214 (25.5) | 31 (40.8) | 2 (33.3) | 59 (25.5) | 55 (25.3) | 2 (9.1) | 65 (22.7) |
| Group B | 480 (57.3) | 37 (48.7) | 3 (50.0) | 124 (53.7) | 124 (57.1) | 17 (77.3) | 175 (61.2) |
| Group C | 29 (3.5) | 4 (5.3) | 1 (16.7) | 12 (5.2) | 11 (5.1) | 0 (0.0) | 1 (0.3) |
| Group D | 115 (13.7) | 4 (5.3) | 0 (0.0) | 36 (15.6) | 27 (12.4) | 3 (13.6) | 45 (15.7) |

[†], patients receiving SABA (n=7), SAMA + SABA (n=2), and SAMA (n=1) are grouped with "Other" (n=12) in the above due to small patient numbers in these categories. The types of medication included in the "Other" category (n=12) were not captured. [‡], pack-years = number of packs per day × number of smoking years. [§], Grade 0, breathless only with strenuous exercise; grade 1, breathless when hurrying on the level or walking on a slight hill; grade 2, walks slower than people of the same age on the level because of breathlessness or has to stop when walking at own pace on the level; grade 3, stops for breath after walking 100 m or after a few minutes on the level; grade 4, too breathless to leave the house or breathless when dressing or undressing. [¶], exacerbations in the last 12 months. BMI, body mass index; CAT, COPD Assessment Test; COPD, chronic obstructive pulmonary disease; FEV₁, forced expiratory volume in 1 second; FVC, forced vital capacity; GOLD, Global Initiative for Chronic Obstructive Lung Disease; ICS, inhaled corticosteroid; LABA, long-acting β₂-agonist; LAMA, long-acting muscarinic antagonist; mMRC, modified Medical Research Council; SABA, short-acting β₂-agonist; SAMA, short-acting muscarinic antagonist; SD, standard deviation.

GOLD 2016

| | | | |
|--------------------------------------|---|----|------------------------|
| GOLD airflow limitation [†] | 4 | ≥2 | Exacerbation frequency |
| | 3 | 1 | 0 |
| 2 | 1 | | |
| 1 | | | |

| | |
|--|--|
| <p style="text-align: center;">GOLD Group C GOLD 3 or GOLD 4 <i>AND/OR</i> mMRC dyspnea grade 0–1 or CAT score <10 <i>AND</i> Exacerbation frequency ≥2 or ≥1 hospitalization for exacerbation per year</p> | <p style="text-align: center;">GOLD Group D GOLD 3 or GOLD 4 <i>AND/OR</i> mMRC dyspnea grade ≥2 or CAT score ≥10 <i>AND</i> Exacerbation frequency ≥2 or ≥1 hospitalization for exacerbation per year</p> |
| <p style="text-align: center;">GOLD Group A GOLD 1 or GOLD 2 <i>AND/OR</i> mMRC dyspnea grade 0–1 or CAT score <10 <i>AND</i> Exacerbation frequency 0–1 and no hospitalization for exacerbation per year</p> | <p style="text-align: center;">GOLD Group B GOLD 1 or GOLD 2 <i>AND/OR</i> mMRC dyspnea grade ≥2 or CAT score ≥10 <i>AND</i> Exacerbation frequency 0–1 and no hospitalization for exacerbation per year</p> |
| mMRC dyspnea grade 0 or 1 or CAT score <10 | mMRC dyspnea grade ≥2 or CAT score ≥10 |
| Symptoms | |

GOLD 2018

| | | | |
|------------------------|----|---|---|
| Exacerbation frequency | ≥2 | 1 | 0 |
| | 1 | | |
| 0 | | | |

| | |
|---|---|
| <p style="text-align: center;">GOLD Group C</p> <p>mMRC dyspnea grade 0–1 or CAT score <10 <i>AND</i> Exacerbation frequency ≥2 or ≥1 hospitalization for exacerbation per year</p> | <p style="text-align: center;">GOLD Group D</p> <p>mMRC dyspnea grade ≥2 or CAT score ≥10 <i>AND</i> Exacerbation frequency ≥2 or ≥1 hospitalization for exacerbation per year</p> |
| <p style="text-align: center;">GOLD Group A</p> <p>mMRC dyspnea grade 0–1 or CAT score <10 <i>AND</i> Exacerbation frequency 0–1 and no hospitalization for exacerbation per year</p> | <p style="text-align: center;">GOLD Group B</p> <p>mMRC dyspnea grade ≥2 or CAT score ≥10 <i>AND</i> Exacerbation frequency 0–1 and no hospitalization for exacerbation per year</p> |
| mMRC dyspnea grade 0 or 1 or CAT score <10 | mMRC dyspnea grade ≥2 or CAT score ≥10 |
| Symptoms | |

Figure S1 ABCD classification criteria for GOLD 2016 and GOLD 2018. [†], GOLD 1: mild, FEV₁ ≥ 80% predicted; GOLD 2: moderate, 50% ≤ FEV₁ < 80% predicted; GOLD 3: severe, 30% ≤ FEV₁ < 50% predicted; GOLD 4: very severe, FEV₁ < 30% predicted. Only considered for GOLD 2016 criteria. CAT, COPD Assessment Test; COPD, chronic obstructive pulmonary disease; FEV₁, forced expiratory volume in 1 second; GOLD, Global Initiative for Chronic Obstructive Lung Disease; mMRC, modified Medical Research Council.