

Supplementary Table 1. Diseases, and their associated codes and weights included in the Charlson Comorbidity Index.

Disease	ICD-9-CM codes	ICD-10-CA codes	Weight
Myocardial infarction	410, 412	I21, I22, I25.2	1
Congestive heart failure	398, 402, 425, 428	I09.9, I11.0, I13.0, I13.2, I25.5, I42.0, I42.5, I42.6, I42.7, I42.8, I42.9, I43, I50, P29.0	1
Peripheral vascular disease	440, 441, 443, 447, 557	I70, I71, I73.1, I73.8, I73.9, I77.1, I79.0, I79.2, K55.1, K55.8, K55.9, Z95.8, Z95.9	1
Cerebrovascular disease	430, 431, 432, 433, 434, 435, 436, 437, 438	G45, G46, I60, I61, I62, I63, I64, I65, I66, I67, I68, I69, H34.0	1
Dementia	290, 294, 331	F00, F01, F02, F03, G30, F05.1, G31.1	1
Chronic pulmonary disease	416, 490, 491, 492, 493, 494, 495, 496, 500, 501, 502, 503, 504, 505	J40, J41, J42, J43, J44, J45, J46, J47, J60, J61, J62, J63, J64, J65, J66, J67, I27.8, I27.9, J68.4, J70.1, J70.3	1
Connective tissue disease	446, 710, 714, 725	M05, M32, M33, M34, M06, M31.5, M35.1, M35.3, M36.0	1
Peptic ulcer disease	531, 532, 533, 534	K25, K26, K27, K28	1
Mild liver disease	070, 570, 571, 573	B18, K73, K74, K70.0, K70.1, K70.2, K70.3, K70.9, K71.7, K71.3, K71.4, K71.5, K76.0, K76.2, K76.3, K76.4, K76.8, K76.9, Z94.4	1
Moderate/severe liver disease	456, 572	K70.4, K71.1, K72.1, K72.9, K76.5, K76.6, K76.7, I85.0, I85.9, I86.4, I98.2	3
Diabetes (without complication)	250	E10.0, E10.1, E10.6, E10.8, E10.9, E11.0, E11.1, E11.6, E11.8, E11.9, E12.0, E12.1, E12.6, E12.8, E12.9, E13.0, E13.1, E13.6, E13.8, E13.9, E14.0, E14.1, E14.6, E14.8, E14.9	1
Diabetes (with complication)	250	E10.2, E10.3, E10.4, E10.5, E10.7, E11.2, E11.3, E11.4, E11.5, E11.7, E12.2, E12.3, E12.4, E12.5, E12.7, E13.2, E13.3, E13.4, E13.5, E13.7, E14.2, E14.3, E14.4, E14.5, E14.7	2

Disease	ICD-9-CM codes	ICD-10-CA codes	Weight
Hemiplegia and paraplegia	334, 342, 343, 344	G81, G82, G04.1, G11.4, G80.1, G80.2, G83.0, G83.1, G83.2, G83.3, G83.4, G83.9	2
Moderate or severe renal disease	403, 582, 583, 585, 586, 588, V56	N18, N19, N05.2, N05.3, N05.4, N05.5, N05.6, N05.7, N25.0, I12.0, I13.1, N03.2, N03.3, N03.4, N03.5, N03.6, N03.7, Z49.0, Z49.1, Z49.2, Z94.0, Z99.2	2
Cancer	140-165, 170-172, 174-176, 179-195, 200-208, 238	C00-C26, C30-C34, C37-C41, C43, C45-C58, C60-C76, C81-C85, C88, C90- C97	2
Metastatic Carcinoma	196, 197, 198, 199	C77, C78, C79, C80	6
HIV/AIDS	042, 043, 044	B20, B21, B22, B24	6

To be considered as having one of the listed diseases, an individual must have had ≥ 1 hospitalization (associated ICD-10-CA code listed in any diagnostic field) or ≥ 2 physician claims (associated ICD-9-CM codes listed in any diagnostic field) of the corresponding ICD within ≤ 2 -years. Abbreviations: HIV/AIDS = Human immunodeficiency virus / acquired immunodeficiency syndrome; ICD-9-CM = International classification of diseases, ninth revision, clinical modification; ICD-10-CA = International classification of diseases, tenth revision, Canadian enhancement.

Supplementary Table 2. Drugs included in the COPD medication classes and those used to define acute exacerbations of COPD (AECOPD).

COPD medications	Active ingredient(s)	ATC classification
<i>COPD treatment medications</i>		
SABA	Salbutamol	R03AC02
	Terbutaline sulfate	R03AC03
	Fenoterol hydrobromide	R03AC04
SAMA	Ipratropium bromide	R03BB01
SABA / SAMA	Fenoterol hydrobromide / Ipratropium bromide	R03AL01
	Salbutamol / Ipratropium bromide	R03AL02
LABA	Salmeterol	R03AC12
	Formoterol	R03AC13
	Indacaterol	R03AC18
LAMA	Tiotropium	R03BB04
	Acclidinium bromide	R03BB05
	Glycopyrronium bromide	R03BB06
	Umeclidinium bromide	R03BB07
LABA / LAMA	Vilanterol / Umeclidinium	R03AL03
	Indacaterol / Glycopyrronium	R03AL04
	Formoterol / Acclidinium	R03AL05
	Olodaterol / Tiotropium	R03AL06
ICS	Fluticasone furoate	R01AD12
	Beclomethasone dipropionate	R03BA01
	Budesonide	R03BA02
	Fluticasone propionate	R03BA05
	Mometasone furoate	R03BA07
	Ciclesonide	R03BA08
ICS / LABA	Fluticasone / Salmeterol	R03AK06
	Budesonide / Formoterol	R03AK07
	Mometasone / Formoterol	R03AK09
	Fluticasone / Vilanterol	R03AK10
ICS / LABA / LAMA	Fluticasone / Vilanterol / Umeclidinium	R03AL08
Methylxanthines	Theophylline	R03DA04
	Aminophylline	R03DA05
	Oxtriphylline / Guaifenesin	R03DA54
PDE-4 inhibitors	Roflumilast	R03DX07
Antibiotics	Azithromycin (long-term use: >21 consecutive days of supply)	J01FA10
<i>AECOPD medications (short-term use; ≤21 consecutive days of supply)</i>		
Oral corticosteroids	Prednisone	H02AB07
Antibiotics	All antibiotics for systemic use	J01

Abbreviations: ATC - anatomical therapeutic chemical; COPD - chronic obstructive pulmonary disease; ICS - inhaled corticosteroid; LABA - long-acting beta₂ agonist; LAMA - long-acting muscarinic antagonists; PDE-4 - phosphodiesterase-4; SABA - short-acting beta₂ agonist; SAMA - short-acting muscarinic antagonists; AECOPD – acute exacerbations of COPD.

Supplementary Table 3. Characteristics of those who received ancillary medication classes at baseline.

	Baseline COPD medication class					
	ICS				Other	
	ICS only		ICS + Other and/or SABD		(+/- SABD)	
	N	(%)	N	(%)	N	(%)
Cohort size	1,608	0.8	4,001	2.1	231	0.1
<i>Demographics</i>						
Age, years						
Age, median (IQR)	66 (57 - 75)		64 (56 - 75)		65 (59 - 71)	
Category						
35-44	47	2.9	152	3.8	<10	N/A
45-54	248	15.4	702	17.6	27	11.7
55-64	448	27.9	1,187	29.7	82	35.5
65-74	442	27.5	943	23.6	77	33.3
75-84	283	17.6	697	17.4	35	15.2
85+	140	8.7	320	8.0	<10	N/A
Sex						
Male	839	52.2	2,366	59.1	118	51.1
Female	769	47.8	1,635	40.9	113	48.9
Residence						
Urban	1,315	81.8	2,792	69.8	174	75.3
Rural	293	18.2	1,209	30.2	57	24.7
<i>Clinical</i>						
Years living with COPD						
Years, median (IQR)	6.8 (3.4 - 10.2)		6.9 (3.6 - 11.0)		9.7 (5.4 - 14.1)	
Category						
1 - 5	608	37.8	1,437	35.9	47	20.3
>5 - 10	575	35.8	1,359	34.0	73	31.6
>10 - 15	353	22.0	977	24.4	73	31.6
>15	72	4.5	228	5.7	38	16.5
Charlson Comorbidity Index						
Score, median (IQR)	1 (0 - 1)		1 (1 - 2)		2 (1 - 3)	
Category						
0	668	41.5	882	22.0	35	15.2
1-2	749	46.6	2,366	59.1	128	55.4
3-4	129	8.0	471	11.8	47	20.4
≥5	62	3.9	282	7.1	21	9.1

Abbreviations: COPD - chronic obstructive pulmonary disease; ICS - inhaled corticosteroid; IQR - interquartile range; LABA - long-acting beta₂ agonist; LAMA - long-acting muscarinic antagonists; N/A - not applicable; SABD - short-acting bronchodilator.

Supplementary Table 4. Medication use, treatment patterns, and adherence during the 1-year post-index period among those who received ancillary medication classes.

	Baseline COPD medication class					
	ICS				Other	
	ICS only		ICS + Other and/or SABD		(+/- SABD)	
	N	(%)	N	(%)	N	(%)
Cohort size	1,608	0.8	4,001	2.1	231	0.1
<i>COPD-related Medication use</i>						
Received ≥ 1 dispensation during the observation period:						
Overall	1,293	80.4	3,745	93.6	219	94.8
≥ 1 additional medication class	504	31.3	1,050	26.2	75	32.5
<i>Adherence to baseline medication class</i>						
All drug component(s)	333	27.3	1,015	29.2	121	56.8
≥ 1 drug component	333	27.3	1,276	36.8	121	56.8
<i>Treatment patterns</i>						
Discontinuation of baseline medication	1,171	72.82	2,567	64.16	107	46.32
Switch from baseline medication	70	4.35	789	19.72	18	7.79
Among those who received ≥ 1 dispensation for an additional medication class						
Guideline-concordant step-up	N/A	N/A	N/A	N/A	N/A	N/A

Abbreviations: COPD - chronic obstructive pulmonary disease; ICS - inhaled corticosteroid; LABA - long-acting beta₂ agonist; LAMA - long-acting muscarinic antagonists; N/A - not applicable; SABD - short-acting bronchodilator.

Supplementary Table 5. AECOPD during the 1-year post-index period among those who received ancillary medication classes.

	Baseline COPD medication class					
	ICS				Other	
	ICS only		ICS + Other and/or SABD		(+/- SABD)	
	N	(%)	N	(%)	N	(%)
Cohort size	1,608	0.8	4,001	2.1	231	0.1
<i>Had ≥1 AECOPD</i>						
Overall	76	4.7	743	18.6	33	14.3
Severe	31	40.8	404	54.4	23	69.7
Moderate	54	71.1	489	65.8	19	57.6

Abbreviations: AECOPD – acute exacerbations of COPD; COPD - chronic obstructive pulmonary disease; SABD - short-acting bronchodilator.