

## Supplementary material

Supplementary table S1. Demographic and clinical characteristics for 2-18 year olds. Values are n (%).

	Total (n= 6,632)	Treatment at Index Prescription Date		p-value
		OCS (n=4,538)	OCS + Antibiotic (n=2,094)	
<b>Age, yrs</b>				
2-5	909 (13.7%)	624 (13.8%)	285 (13.6%)	< 0.001
6-12	3,502 (52.8%)	2,468 (54.4%)	1,034 (49.4%)	
13-18	2,221 (33.5%)	1,446 (31.9%)	775 (37.0%)	
<b>Sex</b>				
Female	2,593 (39.1%)	1,780 (39.2%)	813 (38.8%)	0.780
Male	4,039 (60.9%)	2,758 (60.8%)	1,281 (61.2%)	
<b>z-score Body Mass Index</b>				
Underweight	233 (4.6%)	158 (4.6%)	75 (4.5%)	0.011
Normal	2,935 (57.7%)	1,985 (57.9%)	950 (57.2%)	
Overweight	1,011 (19.9%)	664 (19.4%)	347 (20.9%)	
Obese	909 (17.9%)	621 (18.1%)	288 (17.3%)	
Missing	1,544 (23.3%)	1,110 (24.5%)	434 (20.7%)	
<b>Smoking status</b>				
Current Smoker	276 (4.6%)	141 (3.4%)	135 (7.2%)	< 0.001
Ex-Smoker	241 (4.0%)	175 (4.3%)	66 (3.5%)	
Non-Smoker	5,456 (91.3%)	3,778 (92.3%)	1,678 (89.3%)	
Missing	659 (9.9%)	444 (9.8%)	215 (10.3%)	
<b>Global initiative for Asthma (GINA) category</b>				
Step 2	2,461 (37.1%)	1,660 (36.6%)	801 (38.3%)	0.110
Step 3	2,634 (39.7%)	1,794 (39.5%)	840 (40.1%)	
Step 4	1,537 (23.2%)	1,084 (23.9%)	453 (21.6%)	
<b>Eosinophil Count (x10<sup>9</sup>/L)</b>				
>0 to 0.2	201 (27.4%)	129 (26.6%)	72 (28.9%)	0.33
>0.2 to 0.4	191 (26.0%)	127 (26.2%)	64 (25.7%)	
>0.4 to 0.6	129 (17.6%)	90 (18.6%)	39 (15.7%)	
>0.6 to 0.8	88 (12.0%)	55 (11.3%)	33 (13.3%)	
>0.8 to 1	46 (6.3%)	36 (7.4%)	10 (4.0%)	
>1	79 (10.8%)	48 (9.9%)	31 (12.4%)	
Missing	5,898 (88.9%)	4,053 (89.3%)	1,845 (88.1%)	
<b>Season of Index Prescription Date</b>				
Autumn	1,958 (29.5%)	1,298 (28.6%)	660 (31.5%)	< 0.001
Winter	1,932 (29.1%)	1,257 (27.7%)	675 (32.2%)	
Spring	1,438 (21.7%)	1,017 (22.4%)	421 (20.1%)	
Summer	1,304 (19.7%)	966 (21.3%)	338 (16.1%)	
<b>Year of Index Prescription Date</b>				
2004-2006	2,328 (35.1%)	1,668 (36.8%)	660 (31.5%)	< 0.001
2007-2009	2,178 (32.8%)	1,486 (32.8%)	692 (33.1%)	
2010-2012	1,556 (23.5%)	1,004 (22.1%)	552 (26.4%)	
2013-2014	570 (8.6%)	380 (8.4%)	190 (9.1%)	
<b>Number of asthma/wheeze consults in baseline 6 months</b>				
<b>total</b>				
0	2,437 (36.8%)	1,647 (36.3%)	790 (37.7%)	0.460
1-5	4,079 (61.5%)	2,813 (62.0%)	1,266 (60.5%)	
6-10	107 (1.6%)	73 (1.6%)	34 (1.6%)	
11-15	8 (0.1%)	5 (0.1%)	3 (0.1%)	
16-20	1 (0.0%)	0 (0.0%)	1 (0.1%)	
<b>with Short-Acting Beta Agonist (SABA) prescription</b>				
0	2,437 (36.8%)	1,647 (36.3%)	790 (37.7%)	0.110
1	3,229 (48.7%)	2,203 (48.6%)	1,026 (49.0%)	
2	966 (14.6%)	688 (15.2%)	278 (13.3%)	
<b>with antibiotic prescription</b>				
0	6,024 (90.8%)	4,144 (91.3%)	1,880 (89.8%)	0.074
1	562 (8.5%)	368 (8.1%)	194 (9.3%)	
2	44 (0.7%)	24 (0.5%)	20 (1.0%)	
3	1 (0.0%)	1 (0.0%)	0 (0.0%)	
4	1 (0.0%)	1 (0.0%)	0 (0.0%)	

OCS: Oral Corticosteroids. Percentages are given as non-missing.

Supplementary table S2. Demographic and clinical characteristics for 19-65 year olds. Values are n (%).

	Total (n= 22,005)	Treatment at Index Prescription Date		p-value
		OCS (n=11,993)	OCS + Antibiotic (n=10,012)	
<b>Age, yrs</b>				
19-25	1,956 (8.9%)	1,176 (9.8%)	780 (7.8%)	< 0.001
26-35	3,904 (17.7%)	2,288 (19.1%)	1,616 (16.1%)	
36-45	5,723 (26.0%)	3,224 (26.9%)	2,499 (25.0%)	
46-55	5,417 (24.6%)	2,830 (23.6%)	2,587 (25.8%)	
56-65	5,005 (22.7%)	2,475 (20.6%)	2,530 (25.3%)	
<b>Sex</b>				
Female	14,407 (65.5%)	7,958 (66.4%)	6,449 (64.4%)	0.003
Male	7,598 (34.5%)	4,035 (33.6%)	3,563 (35.6%)	
<b>Body Mass Index</b>				
Underweight	381 (1.8%)	216 (1.8%)	165 (1.7%)	0.004
Normal	5,810 (27.0%)	3,274 (27.9%)	2,536 (25.9%)	
Overweight	6,910 (32.1%)	3,757 (32.1%)	3,153 (32.2%)	
Obese	8,417 (39.1%)	4,474 (38.2%)	3,943 (40.2%)	
Missing	487 (2.2%)	272 (2.3%)	215 (2.1%)	
<b>Smoking status</b>				
Current Smoker	4,854 (22.4%)	2,335 (19.9%)	2,519 (25.6%)	< 0.001
Ex-Smoker	5,782 (26.8%)	3,132 (26.6%)	2,650 (26.9%)	
Non-Smoker	10,978 (50.8%)	6,291 (53.5%)	4,687 (47.6%)	
Missing	391 (1.8%)	235 (2.0%)	156 (1.6%)	
<b>Global initiative for Asthma (GINA) category</b>				
Step 2	6,471 (29.4%)	3,517 (29.3%)	2,954 (29.5%)	0.960
Step 3	6,104 (27.7%)	3,329 (27.8%)	2,775 (27.7%)	
Step 4	9,430 (42.9%)	5,147 (42.9%)	4,283 (42.8%)	
<b>Eosinophil Count (x10<sup>9</sup>/L)</b>				
>0 to 0.2	5,658 (48.2%)	3,066 (48.5%)	2,592 (47.9%)	0.090
>0.2 to 0.4	3,940 (33.6%)	2,099 (33.2%)	1,841 (34.0%)	
>0.4 to 0.6	1,390 (11.8%)	725 (11.5%)	665 (12.3%)	
>0.6 to 0.8	450 (3.8%)	270 (4.3%)	180 (3.3%)	
>0.8 to 1	164 (1.4%)	91 (1.4%)	73 (1.3%)	
>1	134 (1.1%)	74 (1.2%)	60 (1.1%)	
Missing	10,269 (46.7%)	5,668 (47.3%)	4,601 (46.0%)	
<b>Season of Index Prescription Date</b>				
Autumn	5,823 (26.5%)	3,178 (26.5%)	2,645 (26.4%)	< 0.001
Winter	6,981 (31.7%)	3,474 (29.0%)	3,507 (35.0%)	
Spring	4,806 (21.8%)	2,661 (22.2%)	2,145 (21.4%)	
Summer	4,395 (20.0%)	2,680 (22.4%)	1,715 (17.1%)	
<b>Year of Index Prescription Date</b>				
2004-2006	6,780 (30.8%)	4,050 (33.8%)	2,730 (27.3%)	< 0.001
2007-2009	7,169 (32.6%)	3,970 (33.1%)	3,199 (32.0%)	
2010-2012	5,586 (25.4%)	2,812 (23.5%)	2,774 (27.7%)	
2013-2014	2,470 (11.2%)	1,161 (9.7%)	1,309 (13.1%)	
<b>Number of asthma/wheeze consults in baseline 6 months</b>				
<b>total</b>				
0	10,304 (46.8%)	5,483 (45.7%)	4,821 (48.2%)	0.003
1-5	11,351 (51.6%)	6,324 (52.7%)	5,027 (50.2%)	
6-10	306 (1.4%)	162 (1.4%)	144 (1.4%)	
11-15	38 (0.2%)	19 (0.2%)	19 (0.2%)	
16-20	5 (0.0%)	4 (0.0%)	1 (0.0%)	
26-30	1 (0.0%)	1 (0.0%)	0 (0.0%)	
<b>with Short-Acting Beta Agonist (SABA) prescription</b>				
0	10,304 (46.8%)	5,483 (45.7%)	4,821 (48.2%)	< 0.001
1	9,654 (43.9%)	5,332 (44.5%)	4,322 (43.2%)	
2	2,047 (9.3%)	1,178 (9.8%)	869 (8.7%)	
<b>with antibiotic prescription</b>				
0	20,114 (91.4%)	10,909 (91.0%)	9,205 (91.9%)	0.098
1	1,713 (7.8%)	983 (8.2%)	730 (7.3%)	
2	150 (0.7%)	84 (0.7%)	66 (0.7%)	
3	23 (0.1%)	13 (0.1%)	10 (0.1%)	
4	5 (0.0%)	4 (0.0%)	1 (0.0%)	

OCS: Oral Corticosteroids. Percentages are given as non-missing.

Supplementary table S3. Comorbidities for 2-18 year olds and 19-65 year olds

<b>19-65 year olds</b>				
	<b>Total</b>	<b>OCS</b>	<b>OCS + Antibiotic</b>	<b>p-value</b>
	(n=22,005)	(n=11,993)	(n=10,012)	
COPD	0 (0.0%)	0 (0.0%)	0 (0.0%)	1.000
Active rhinitis	3,218 (14.6%)	1,885 (15.7%)	1,333 (13.3%)	< 0.001
Active GERD	1,071 (4.9%)	544 (4.5%)	527 (5.3%)	0.013
Active eczema	927 (4.2%)	536 (4.5%)	391 (3.9%)	0.040
Osteoporosis	246 (1.1%)	127 (1.1%)	119 (1.2%)	0.370
Chronic Kidney Disease	226 (1.0%)	114 (1.0%)	112 (1.1%)	0.230
Diabetes	940 (4.3%)	478 (4.0%)	462 (4.6%)	0.023
Hypertension	1124 (5.1%)	584 (4.9%)	540 (5.4%)	0.080
Ischaemic Heart Disease	625 (2.8%)	311 (2.6%)	314 (3.1%)	0.016
Cardiovascular Disease	1,437 (6.5%)	728 (6.1%)	709 (7.1%)	0.003
Heart Failure	50 (0.2%)	23 (0.2%)	27 (0.3%)	0.260
Myocardial Infarction	184 (0.8%)	92 (0.8%)	92 (0.9%)	0.230
Cerebrovascular Disease	271 (1.2%)	126 (1.1%)	145 (1.4%)	0.008
Anxiety and/or Depression	1,887 (8.6%)	1,038 (8.7%)	849 (8.5%)	0.650
<b>2-18 year olds</b>				
	<b>Total</b>	<b>OCS</b>	<b>OCS + Antibiotic</b>	<b>p-value</b>
	(n =6,632)	(n=4,538)	(n=2,094)	
Active rhinitis	909 (13.7%)	624 (13.8%)	285 (13.6%)	0.910
Active eczema	599 (9.0%)	406 (8.9%)	193 (9.2%)	0.710

OCS: Oral Corticosteroids; COPD: Chronic Obstructive Pulmonary Disease; GERD: Gastroesophageal Reflux Disease.

Supplementary table S4. Comorbidities for 2-18 year olds and 19-65 year olds, following propensity score matching

<b>19-65 year olds</b>				
	<b>Total</b>	<b>OCS</b>	<b>OCS + Antibiotic</b>	<b>p-value</b>
	(n=20,024)	(n=10,012)	(n=10,012)	
COPD	0 (0.0%)	0 (0.0%)	0 (0.0%)	1.0
Active rhinitis	2,879 (14.4%)	1,546 (15.4%)	1,333 (13.3%)	< 0.001
Active GERD	1,015 (5.1%)	488 (4.9%)	527 (5.3%)	0.22
Active eczema	829 (4.1%)	438 (4.4%)	391 (3.9%)	0.10
Osteoporosis	231 (1.2%)	112 (1.1%)	119 (1.2%)	0.69
Chronic Kidney Disease	213 (1.1%)	101 (1.0%)	112 (1.1%)	0.49
Diabetes	904 (4.5%)	442 (4.4%)	462 (4.6%)	0.52
Hypertension	1,077 (5.4%)	537 (5.4%)	540 (5.4%)	0.95
Ischaemic Heart Disease	597 (3.0%)	283 (2.8%)	314 (3.1%)	0.21
Cardiovascular Disease	1,365 (6.8%)	656 (6.6%)	709 (7.1%)	0.14
Heart Failure	49 (0.2%)	22 (0.2%)	27 (0.3%)	0.57
Myocardial Infarction	179 (0.9%)	87 (0.9%)	92 (0.9%)	0.76
Cerebrovascular Disease	259 (1.3%)	114 (1.1%)	145 (1.4%)	0.06
Anxiety and/or Depression	1,717 (8.6%)	868 (8.7%)	849 (8.5%)	0.65
<b>2-18 year olds</b>				
	<b>Total</b>	<b>OCS</b>	<b>OCS + Antibiotic</b>	<b>p-value</b>
	(n =4,184)	(n=2,092)	(n=2,092)	
Active rhinitis	561 (13.4%)	277 (13.2%)	284 (13.6%)	0.79
Active eczema	367 (8.8%)	175 (8.4%)	192 (9.2%)	0.38

OCS: Oral Corticosteroids; COPD: Chronic Obstructive Pulmonary Disease; GERD: Gastroesophageal Reflux Disease.