

Supplementary material

Short-acting β_2 -agonist prescriptions are associated with poor clinical outcomes of asthma: the multi-country, cross-sectional SABINA III study

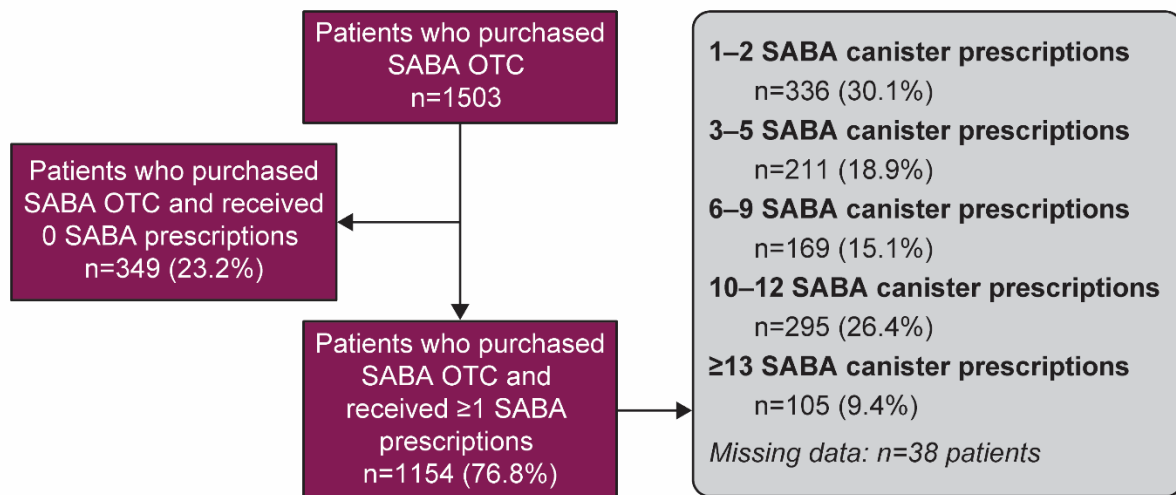
SUPPLEMENTARY RESULTS

Patients without a SABA prescription

Among patients not prescribed a SABA (n=3076), 89.2% had been prescribed ICS/LABA, and 11.4% reported having purchased SABA OTC during the past 12 months (supplementary table E3). A minority (2.3%) had received other treatments that might have been used for symptom relief (supplementary table E3). One or more bursts of oral corticosteroids (OCS) were prescribed for 25.4% of these patients, and 4.2% were prescribed long-term OCS treatment. Patients with no SABA prescriptions (vs those with ≥ 1 SABA prescriptions) were more likely to be classified at GINA step 3 or higher (82.7% vs 70.3%) (supplementary table E4) and less likely to have experienced ≥ 1 severe asthma exacerbation in the past year (35.0% vs 50.6%) (supplementary table E5).

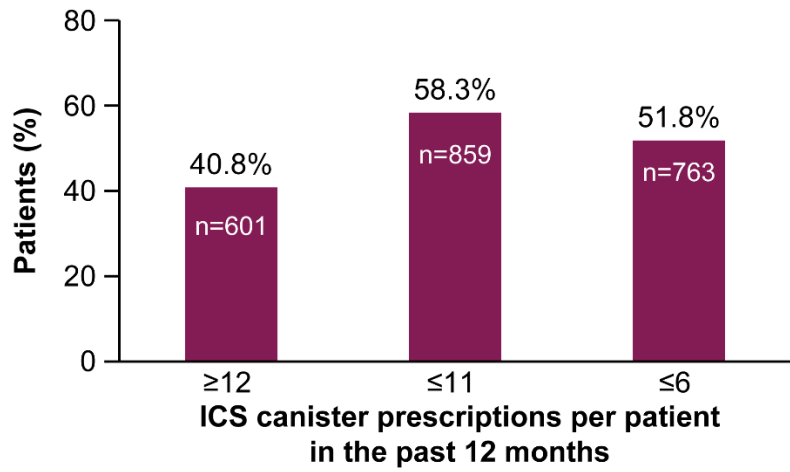
SUPPLEMENTARY FIGURES

SUPPLEMENTARY FIGURE E1 Over-the-counter SABA purchases and prescriptions in patients with asthma



OTC: over the counter; SABA: short-acting β_2 -agonist.

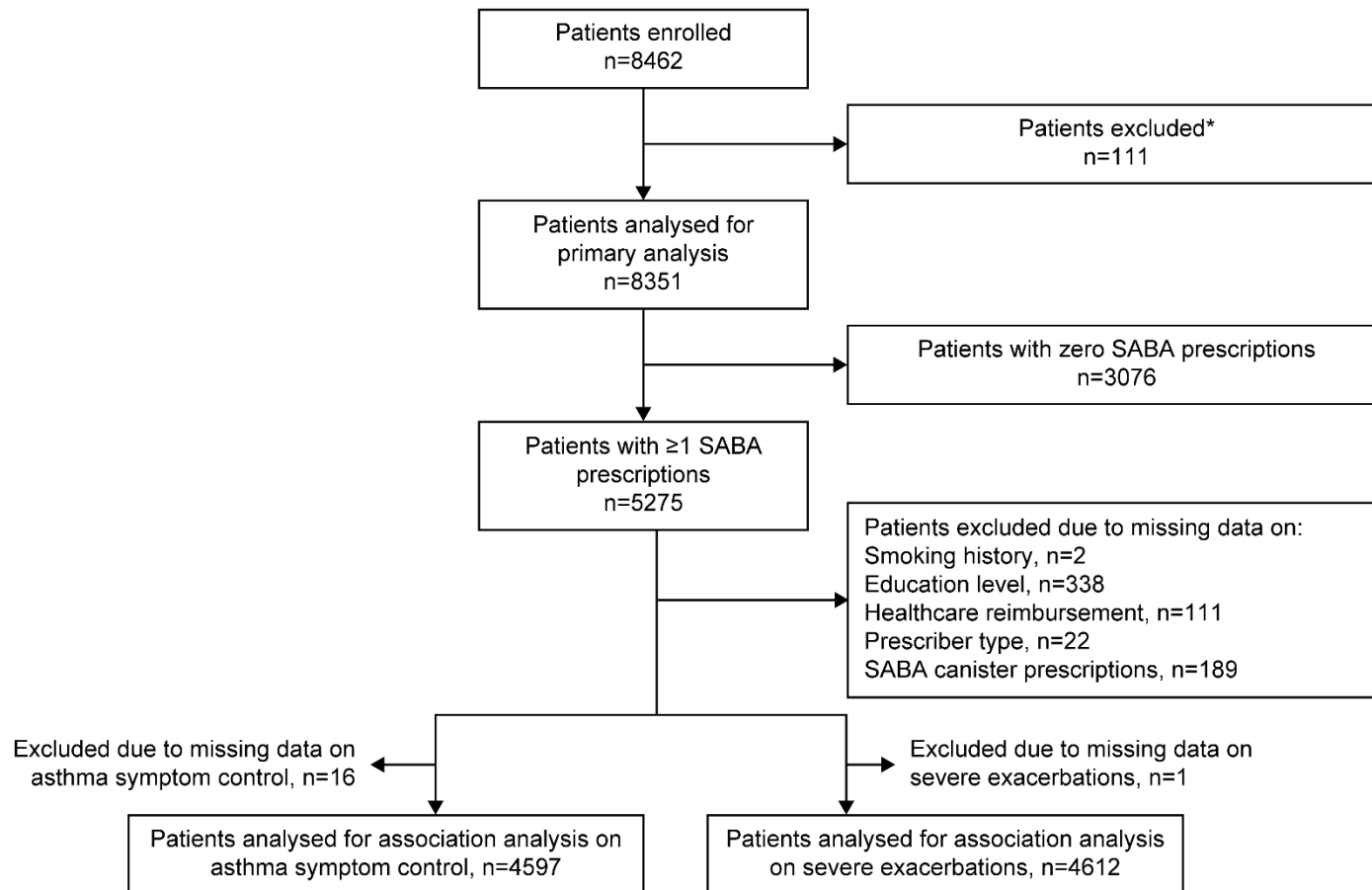
SUPPLEMENTARY FIGURE E2 ICS canisters prescribed in the past year in patients on ICS monotherapy as controller*



*Of the 1473 patients prescribed ICS monotherapy, data on number of canisters prescribed were not available for 13 patients.

ICS: inhaled corticosteroid.

SUPPLEMENTARY FIGURE E3 Patients included in the analyses for secondary objectives



*Excluded because the duration of asthma was <12 months.

SABA: short-acting β_2 -agonist.

SUPPLEMENTARY TABLE E1 List of SABINA III sites and investigators

Country	Site #	Investigator	Affiliation
Australia	AUS01	Florian Heraud	Optimum Patient Care Australia
		Lenore Irvine	Optimum Patient Care Australia
		Victoria Carter	Optimum Patient Care Australia
		David Price	Optimum Patient Care Australia
Costa Rica	CRI01	Ted Mitchell Brumley	Laboratorio Función Pulmonar, Centro Médico Momentum Pinares
	CRI02	María Felicia Montero Arias	Hospital Clínica Bíblica, Sede Santa Ana, San José
	CRI03	Carlos Estrada Garzona	Hospital CIMA San José
Egypt	EGY01	Adel Khattab	Ain Shams University
	EGY02	Ahmed Fathy	Chest Consultant Private Clinic
	EGY03	Ahmed Hussien	Chest Consultant Private Clinic
	EGY04	Samah Selim	IM Consultant Private Clinic
	EGY05	Assem el Essawy	Fayoum University
	EGY06	Reem el Korashy	Cairo University
	EGY07	Heba Helmy	Chest Consultant Private Clinic
	EGY08	Ahmed Abd el Hafeez	Cairo University
	EGY09	Ibrahim Khalil	Chest Consultant
	EGY10	Mohamed Hanteera	Tanta University
	EGY11	Yasmine Hamdy	Cairo University
	EGY12	Ashraf Madkour	Ain Shams University
	EGY13	Ashraf Okba	Ain Shams University
	EGY15	Gehan El Assal	Ain Shams University
	EGY16	Abdallah Shafik	IM Consultant Private Clinic
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Country	Site #	Investigator	Affiliation
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	EGY32	Ashraf Ishak Barsom	Chest Consultant
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	EGY34	Tarek Hamdy Hassan Abdel Hameed	Zagazig University
	EGY35	Ibrahim Aly Mohamed Dewedar	Ain Shams University
	EGY36	Ahmed Mohamed Abd el Hady Eldeeb	Chest Consultant
	EGY37	Hesham Salah Eldin Hamdy Mortada	Chest Consultant
	EGY38	Emad Edward Seif	Chest Consultant
	EGY39	Abo Elmatey Elsherif	IM Consultant Private Clinic
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	KEN02	Samuel Gathua	Menelik Chest Clinic
	KEN03	Millicent Kamau	Reuben Medical Centre
	KEN04	Jeremiah Chakaya	Fortis Clinic
	KEN05	Musa Mohammed Josephine Nguri	Mama Lucy Kibaki Hospital
	KEN06	Gituma	Mbagathi District Hospital
	KEN07	Lucina Koyio	Kibera South Health Centre
	KEN08		Kibera DO Health Centre
	KEN09		APTC Dispensary
	KEN10		Riruta Health Centre
	KEN11		Algadhir Medical Centre
	KEN12		Eastleigh Health Centre
	KEN13		Kasarani Health Centre
	KEN14	Mogoi	Kayole II Health Centre
	KEN15	Jared Mogaka	Mukuru Kwa Njenga Health Centre
	KEN16	Morris Maina	Embakasi Health Centre
	KEN17	David Ndegwa (CDoH, Kiambu County)	Kiambu L5 Hospital

Country	Site #	Investigator	Affiliation
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	KOR04	Heung-Woo Park	Seoul National University Hospital
	KOR05	Kwang-Ha Yoo	Konkuk University Medical Center
	KOR06	Sang-Ha Kim	Wonju Severance Christian Hospital
	KOR07	Ji-Yong Moon	Hanyang University Guri Hospital
	KOR08	Hye-Kyoung Park	Pusan National University Hospital
	KOR09	Sang-Pyo Lee	Gachon University Gil Medical Center
	KOR10	An-Soo Jang	Soon Chun Hyang University Hospital Bucheon
	KOR11	Young-Mok Lee	GF Internal Medicine
	KOR12	Jeong-Eun Kim	Soo Internal Medicine Clinic
	KOR13	Yang-Deok Lee	Leeyangdeok Clinic
	KOR14	Hui-Jung Kim	Goodbreath Medical Center
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PHL05		Ronnie Z. Samoro	Healthlink Medical, Surgical, Dental Clinic & Diagnostic Center
PHL06		Bryna Kimberly Bayate-Jabines	Western Visayas Medical Center
PHL07		Jessie F. Orcasitas	Metro Davao Medical and Research Center
PHL08		Miranila Hernandez- Matibag	The Medical City
PHL09		Ronnel S. Matibag	M&R Santos Clinic
PHL10		Janet C. Bernardo	Davao Doctors Hospital
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Country	Site #	Investigator	Affiliation
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	RUS06	Irina Costrova	Amur State Medical Academy, Blagoveschensk
	RUS07	Irina Zaykova-Khelimskaya	Railway Clinical Hospital at Khabarovsk-1 Station
	RUS08	Ekaterina Kochegarova	Far East Scientific Center of Breath Physiology and Pathology, Blagoveschensk
	RUS09	Igor Leshchenko	Ural State Medical University, Medical Union "Novaya bolnitsa", Ekaterinburg
	RUS10	Galina Ignatova	South Ural State Medical University Chelyabinsk
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Country	Site #	Investigator	Affiliation
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		Walaa Abuzahra	Study Coordinator, King Abdulaziz University Hospital
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		Hajar Alhayyan	Sub Investigator, King Abdulaziz Medical City - Riyadh
		Abdelkarim Saad	Sub Investigator, King Abdulaziz Medical City - Riyadh
		Huda Elatrash	Study Coordinator, King Abdulaziz Medical City - Riyadh
		Ala'a Khalifah	Study Coordinator, King Abdulaziz Medical City - Riyadh
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	ZAF05	Ismail Abdullah	Melomed Gatesville Hospital, Gatesville, Cape Town
	ZAF06	Ismail Aboobaker Abdullah	St. Augustine's Hospital Berea, Durban
	ZAF07	Jeevren Reddy	26 Daffodil Street, Stanger, 4450 Kwa-Zulu Natal
	ZAF08	Julien Trokis	Langeberg Medical Centre, Kraaifontein, Cape Town
	ZAF09	Muhammed Fulat	Clinical Trial Systems, East Lynne, Pretoria
	ZAF10	Padaruth Ramlachan	Newkwa Medical Centre, Durban, KZN
	ZAF11	Uttam Govind	Randles Road Medical Centre Sydenham, Durban, KZN
	ZAF12	Michael van der Linden	Ethekwini Hospital & Heart Centre, Newlands East, KZN
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	ARG02	Altieri, Hector Hugo	Centro Integral de Medicina Respiratoria (CIMER), Tucumán
	ARG03	Goffredo, Hernán Diego	Htal Regional Dr Victor Sanguinetti, Comodoro Rivadavia, Chubut
	ARG04	Grilli, Monica	Hospital Español de Mendoza, Mendoza
	ARG05	Zunino, Sergio Daniel	Hospital Italiano de Bs As, CABA
	ARG06	Silva, Damian	Centro de Estudios Neumonológicos Tandil, Buenos Aires
	ARG07	Solis, Marco Antonio	Sanatorio Güemes, CABA
	ARG08	Emery, Nicholas	Hospital Británico, CABA
Chile	CHI01	Martinez Hagen, Victor	Centro de Investigación Curicó, Curicó, Región del Maule

Country	Site #	Investigator	Affiliation
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	CHI03	Juana Pavie	Centro Respiratorio Integral Limitada, Quillota, Región de Valparaíso
Colombia	COL01	Caballero Pinilla, Andrea Carolina	Caja de Compensación Familiar CAFAM, Sede Centro de Atención en Salud CAFAM Floresta
	COL02	Jaller Raad, Rodolfo Antonio	Centro de Investigación Médico Asistencial S.A.S.
	COL03	Reynales, Humberto	Centro de Atención e Investigación Médica - CAIMED
	COL054	Pedrozo-Pupo, John Carlos	Previcare Ltda. Instituto para Cuidado Respiratorio (Respire)
	COL06	Baños Álvarez, Iván de Jesús	Centro de Rehabilitación Pulmonar Integral S.A.S.
	COL07	Eastmond Mahecha, James Junior	Healthy Medical Center S.A.S.
	COL08	Pacheco Gallego, Manuel Conrado	Universidad Tecnológica de Pereira Universidad Visión de las Américas Respiremos Centro de Neumología y Endoscopia Respiratoria
	Thailand	THA01	Theerakorn Theerakittikul
THA04		Anuchit Niyompattama	Maharaj Nakhon Ratchasima Hospital, Nakhon Ratchasima
THA05		Narongwit Nakwan	Hatyai Hospital, Songkla
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	TUR11	Ferda Öner Erkeköl	Yildirim Beyazit University Faculty of Medicine, Ankara	
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	TUR20	Aykut Çilli	Akdeniz University Faculty of Medicine, Antalya	
	TUR21	Fuat Erel	Balikesir University Faculty of Medicine, Balıkesir	
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Country	Site #	Investigator	Affiliation
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	IND09	Aruna Kumari Badam	Apollo Hospitals Jubilee Hills, Hyderabad
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	IND11	Manav Manchanda	Asian Institute of Medical Sciences Faridabad, Haryana
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	TWN04	Chou-Chin Lan	Division of Pulmonary Medicine, Taipei Tzu Chi Hospital, New Taipei City
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Country	Site #	Investigator	Affiliation
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Indonesia	IDN01	Djajalaksana, Susanthy	Saiful Anwar Hospital - Malang
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	IDN01.2	Djajalaksana, Susanthy	Saiful Anwar Hospital – Puskesmas Kendal Kerep - Malang
	IDN01.3	Djajalaksana, Susanthy	Saiful Anwar Hospital - Lavalette Hospital - Malang
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	BRA08	Marcelo Gervilla Gregório	Respsono Clinic NETSPIRO Serviços Médicos S/A
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SABINA: SABA use IN Asthma.

TABLE E2 SABA and ICS medication prescriptions in the past 12 months

	All (n=8351)	Primary care (n=1440)			Specialists (n=6872)		
		Investigator- classified mild asthma (n=743)	Investigator- classified moderate-to- severe asthma (n=695)	All (n=1440)	Investigator- classified mild asthma (n=1210)	Investigator- classified moderate-to- severe asthma (n=5660)	All (n=6872)
Patients prescribed SABA monotherapy, n (%)							
Yes	428 (5.1)	183 (24.6)	0 (0)	183 (12.7)	224 (18.5)	18 (0.3)	242 (3.5)
No	7923 (94.9)	560 (75.4)	695 (100.0)	1257 (87.3)	986 (81.5)	5642 (99.7)	6630 (96.5)
Number of canisters or inhalers per patient prescribed in the past year							
Number of patients	422	180	0	180	222	17	239
Mean (SD)	5.8 (5.6)	7.2 (6.1)	-	7.2 (6.1)	4.6 (5.0)	5.5 (3.6)	4.7 (4.9)
SABA canisters or inhalers per patient prescribed in the past year, n (%)							
1–2	196 (46.4)	71 (39.4)	0 (0)	71 (39.4)	117 (52.7)	6 (35.3)	123 (51.5)
3–5	56 (13.3)	15 (8.3)	0 (0)	15 (8.3)	40 (18.0)	1 (5.9)	41 (17.2)
6–9	44 (10.4)	13 (7.2)	0 (0)	13 (7.2)	23 (10.4)	7 (41.2)	30 (12.6)
10–12	107 (25.4)	69 (38.3)	0 (0)	69 (38.3)	35 (15.8)	3 (17.6)	38 (15.9)
≥13	19 (4.5)	12 (6.7)	0 (0)	12 (6.7)	7 (3.2)	0 (0)	7 (2.9)
Missing data	6	3	0	3	2	1	3
Total	422 (100.0)	180 (100.0)	0 (0)	180 (100.0)	222 (100.0)	17 (100.0)	239 (100.0)
Patients prescribed SABA in addition to maintenance therapy, n (%)							
Yes	4847 (58.0)	402 (54.1)	386 (55.5)	788 (54.7)	644 (53.2)	3395 (60.0)	4039 (58.8)
No	3504 (42.0)	341 (45.9)	309 (44.5)	652 (45.3)	566 (46.8)	2265 (40.0)	2833 (41.2)

	All (n=8351)	Primary care (n=1440)			Specialists (n=6872)		
		Investigator- classified mild asthma (n=743)	Investigator- classified moderate-to- severe asthma (n=695)	All (n=1440)	Investigator- classified mild asthma (n=1210)	Investigator- classified moderate-to- severe asthma (n=5660)	All (n=6872)
Number of canisters or inhalers per patient prescribed in the past year							
Number of patients	4649	401	355	756	631	3244	3875
Mean (SD)	6.5 (8.6)	6.7 (4.7)	8.1 (14.1)	7.4 (10.3)	6.7 (6.0)	6.2 (8.5)	6.3 (8.1)
Missing data, n (%)	198 (4.1)	1 (0.2)	31 (8.0)	32 (4.1)	13 (2.0)	151 (4.4)	164 (4.1)
SABA canisters or inhalers per patient prescribed in the past year, n (%)							
1–2	1780 (38.3)	113 (28.2)	121 (34.1)	234 (31)	246 (39)	1295 (39.9)	1541 (39.8)
3–5	856 (18.4)	71 (17.7)	45 (12.7)	116 (15.3)	83 (13.2)	653 (20.1)	736 (19.0)
6–9	653 (14.0)	76 (19.0)	41 (11.5)	117 (15.5)	59 (9.4)	473 (14.6)	532 (13.7)
10–12	1041 (22.4)	124 (30.9)	132 (37.2)	256 (33.9)	221 (35.0)	561 (17.3)	782 (20.2)
≥13	319 (6.9)	17 (4.2)	16 (4.5)	33 (4.4)	22 (3.5)	262 (8.1)	284 (7.3)
Missing data	198	1	31	32	13	151	164
Total	4649 (100.0)	401 (100.0)	355 (100.0)	756 (100.0)	631 (100.0)	3244 (100.0)	3875 (100.0)
Patients prescribed ICS monotherapy,* n (%)							
Yes	1473 (17.6)	403 (54.2)	44 (6.3)	447 (31.0)	627 (51.8)	395 (7.0)	1022 (14.9)
No	6878 (82.4)	340 (45.8)	651 (93.7)	993 (69.0)	583 (48.2)	5265 (93.0)	5850 (85.1)
Daily ICS dose prescribed (patients [%])							
Low dose	556 (38.3)	132 (32.9)	10 (25.6)	142 (32.3)	309 (49.8)	104 (26.7)	413 (40.9)
Medium dose	689 (47.4)	231 (57.6)	27 (69.2)	258 (58.6)	263 (42.4)	167 (42.9)	430 (42.6)
High dose	208 (14.3)	38 (9.5)	2 (5.1)	40 (9.1)	48 (7.7)	118 (30.3)	166 (16.5)
Missing values	20	2	5	7	7	6	13

	All (n=8351)	Primary care (n=1440)			Specialists (n=6872)		
		Investigator- classified mild asthma (n=743)	Investigator- classified moderate-to- severe asthma (n=695)	All (n=1440)	Investigator- classified mild asthma (n=1210)	Investigator- classified moderate-to- severe asthma (n=5660)	All (n=6872)
Total	1453 (100.0)	401 (100.0)	39 (100.0)	440 (100.0)	620 (100.0)	389 (100.0)	1009 (100.0)
ICS canisters or inhalers per patient prescribed in the past 12 months							
Number of patients	1460	402	39	441	625	390	1015
Mean (SD)	8.1 (8.7)	7.5 (7.2)	4.8 (4.1)	7.2 (7.0)	8.3 (10.1)	8.6 (8.0)	8.4 (9.3)
Missing values, n (%)	13 (0.9)	1 (0.2)	5 (12.8)	6 (1.4)	2 (0.3)	5 (1.3)	7 (0.7)

*ICS monotherapy – ICS alone as controller treatment.

ICS: inhaled corticosteroid; SABA: short-acting β_2 -agonist; SD: standard deviation.

SUPPLEMENTARY TABLE E3 Asthma treatments in patients with 0 SABA prescriptions (n=3076)

Asthma treatments	Patients with 0 SABA canister prescriptions, n=3076	
	Number of patients, n (%)	Missing values
SABA OTC	349 (11.4)	3
ICS monotherapy prescriptions	219 (7.1)	0
ICS/LABA combination prescriptions	2743 (89.2)	1
OCS short-course prescriptions	780 (25.4)	5
OCS long-term prescriptions	129 (4.2)	4
Other treatments	70 (2.3)	-
Nebulised SABA	16	-
Oral SABA	2	-
LTRAs	10	-
Nebulised SAMA/SABA	2	-
Theophylline	1	-
Others*	39	-
No other medication/other medication not specified	44 (1.4)	-

*Others included various combinations of LTRA, LAMAs, biologics, antibiotics, anti-allergic medication, nebulised SABA/SAMA and OCS.

ICS: inhaled corticosteroid; LABA: long-acting β_2 -agonist; LAMA: long-acting muscarinic antagonist; LTRA: leukotriene receptor antagonist; OCS: oral corticosteroid; OTC: over the counter; SABA: short-acting β_2 -agonist; SAMA: short-acting muscarinic antagonist.

SUPPLEMENTARY TABLE E4 Demographics and disease characteristics of patients with 0 vs ≥ 1 SABA prescription (secondary analysis dataset)

	All patients (n=8351)	Patients with 0 SABA prescriptions (n=2642)*	Patients with ≥ 1 SABA prescription (n=4597)
Age (years)			
n	8351	2642	4597
Mean (range)	49.4 (12.0–95.0)	48.9 (12.0–95.0)	49.1 (12.0–93.0)
Sex, n (%)			
Female	5691 (68.1)	1714 (64.9)	3199 (69.6)
BMI (kg/m²)			
Mean (SD)	27.8 (6.19)	27.3 (6.0)	28.1 (6.3)
Education level, n (%)			
Primary or secondary school	2877 (34.5)	887 (33.6)	1806 (39.3)
High school	2013 (24.1)	686 (26.0)	1208 (26.3)
University and/or post-university	2792 (33.4)	1069 (40.5)	1583 (34.4)
Not established	668 (8.0)	0 (0.0)	0 (0.0)
Missing data	1	0	0
Healthcare insurance/medication funding, n (%)			
Not reimbursed	2281 (27.3)	864 (32.7)	1258 (27.4)
Partially reimbursed	1851 (22.2)	637 (24.1)	985 (21.4)
Fully reimbursed	3940 (47.2)	1141 (43.2)	2354 (51.2)
Missing data	3	0	0
Smoking status history, n (%)			
Active smoker	497 (6.0)	154 (5.8)	255 (5.5)
Former smoker	1105 (13.2)	348 (13.2)	608 (13.2)
Never smoker	6747 (80.8)	2140 (81)	3734 (81.2)
Missing data	2	0	0
Comorbidities, n (%)			
None	2962 (35.5)	1027 (38.9)	1587 (34.5)
1–2	3900 (46.7)	1216 (46)	2170 (47.2)
3–4	1228 (14.7)	329 (12.5)	700 (15.2)
≥ 5	261 (3.1)	70 (2.6)	140 (3.0)
Asthma duration (years)			
Mean (SD)	14.9 (14.3)	12.2 (13.5)	17.1 (14.9)
Median (min, max)	10.0 (1.0, 85.0)	7.0 (1.0, 83.0)	12.0 (1.0, 85.0)
GINA classification, n (%)			
Step 1	714 (8.5)	226 (8.6)	438 (9.5)
Step 2	1244 (14.9)	230 (8.7)	929 (20.2)
Step 3	2279 (27.3)	917 (34.7)	1038 (22.6)
Step 4	2872 (34.4)	970 (36.7)	1518 (33)

	All patients (n=8351)	Patients with 0 SABA prescriptions (n=2642)*	Patients with ≥1 SABA prescription (n=4597)
Step 5	1237 (14.8)	299 (11.3)	674 (14.7)
Missing data	5	0	0

*Among the 7239 patients in the secondary analysis population (excluding patients with various modelling parameters missing), 2646 patients had 0 SABA prescriptions.

BMI: body mass index; GINA: Global Initiative for Asthma; max: maximum; min: minimum; SABA: short-acting β_2 -agonist; SD: standard deviation.

SUPPLEMENTARY TABLE E5 Severe asthma exacerbations in patients with 0 vs ≥ 1 SABA prescription (secondary analysis dataset)

	All patients (n=8351)	Patients with 0 SABA prescriptions (n=2642)*	Patients with ≥ 1 SABA prescription (n=4597)
Number of severe asthma exacerbations in the last year			
Mean (SD)	1.1 (2.09)	0.8 (1.8)	1.2 (2.3)
Severe asthma exacerbations in the last year by groups, n (%)			
0 exacerbations	4555 (54.5)	1716 (65.0)	2271 (49.4)
1 exacerbation	1810 (21.7)	486 (18.4)	1088 (23.7)
2 exacerbations	892 (10.7)	200 (7.6)	555 (12.1)
3 exacerbations	493 (5.9)	117 (4.4)	297 (6.5)
>3 exacerbations	600 (7.2)	123 (4.7)	385 (8.4)
Missing data	1	0	1

*Among the 7239 patients in the secondary analysis population (excluding patients with various modelling parameters missing), 2646 patients had 0 SABA prescriptions.

SABA: short-acting β_2 -agonist; SD: standard deviation.

SUPPLEMENTARY TABLE E6 Other asthma treatments prescribed in the past 12 months

	All (n=8351)	Primary care (n=1440)			Specialists (n=6872)		
		Investigator- classified mild asthma (n=743)	Investigator- classified moderate-to- severe asthma (n=695)	All (n=1440)	Investigator- classified mild asthma (n=1210)	Investigator- classified moderate-to- severe asthma (n=5660)	All (n=6872)
Patients prescribed ICS/LABA combination, n (%)							
Yes	6610 (79.2)	34 (4.6)	675 (97.3)	711 (49.4)	297 (24.5)	5566 (98.4)	5865 (85.4)
No	1735 (20.8)	709 (95.4)	19 (2.7)	728 (50.6)	913 (75.5)	89 (1.6)	1002 (14.6)
Missing values	6	0	1	1	0	5	5
Total	8345 (100.0)	743 (100.0)	694 (100.0)	1439 (100.0)	1210 (100.0)	5655 (100.0)	6867 (100.0)
<i>Prescribed daily ICS dose in combination (patients [%])</i>							
Low dose	2066 (31.4)	26 (78.8)	324 (48.2)	350 (49.5)	170 (58.4)	1538 (27.8)	1710 (29.3)
Medium dose	3214 (48.9)	5 (15.2)	279 (41.5)	286 (40.5)	106 (36.4)	2804 (50.6)	2910 (49.9)
High dose	1292 (19.7)	2 (6.1)	69 (10.3)	71 (10.0)	15 (5.2)	1197 (21.6)	1212 (20.8)
Missing values	38	1	3	4	6	27	33
Total	6572 (100.0)	33 (100.0)	672 (100.0)	707 (100.0)	291 (100.0)	5539 (100.0)	5832 (100.0)
Patients prescribed OCS burst/short course, n (%)							
Yes	2654 (31.8)	152 (20.5)	157 (22.6)	309 (21.5)	257 (21.3)	2071 (36.7)	2329 (34.0)
No	5683 (68.2)	590 (79.5)	537 (77.4)	1129 (78.5)	951 (78.7)	3579 (63.3)	4531 (66.0)
Missing values	14	1	1	2	2	10	12
Total	8337 (100.0)	742 (100.0)	694 (100.0)	1438 (100.0)	1208 (100.0)	5650 (100.0)	6860 (100.0)

	All (n=8351)	Primary care (n=1440)			Specialists (n=6872)		
		Investigator- classified mild asthma (n=743)	Investigator- classified moderate-to- severe asthma (n=695)	All (n=1440)	Investigator- classified mild asthma (n=1210)	Investigator- classified moderate-to- severe asthma (n=5660)	All (n=6872)
Patients prescribed OCS maintenance treatment, n (%)							
Yes	482 (5.8)	28 (3.8)	13 (1.9)	41 (2.8)	51 (4.2)	387 (6.8)	438 (6.4)
No	7858 (94.2)	715 (96.2)	681 (98.1)	1398 (97.2)	1157 (95.8)	5266 (93.2)	6424 (93.6)
Missing values	11	0	1	1	2	7	10
Total	8340 (100.0)	743 (100.0)	694 (100.0)	1439 (100.0)	1208 (100.0)	5653 (100.0)	6862 (100.0)
Patients prescribed antibiotics (for asthma), n (%)							
Yes	1656 (20.0)	64 (8.7)	92 (13.3)	157 (11.0)	149 (12.4)	1346 (24.1)	1495 (22.0)
No	6606 (80.0)	672 (91.3)	600 (86.7)	1273 (89.0)	1050 (87.6)	4246 (75.9)	5298 (78.0)
Missing values	89	7	3	10	11	68	79
Total	8262 (100.0)	736 (100.0)	692 (100.0)	1430 (100.0)	1199 (100.0)	5592 (100.0)	6793 (100.0)

ICS: inhaled corticosteroid; LABA: long-acting β_2 -agonist; OCS: oral corticosteroid.

SUPPLEMENTARY TABLE E7 Severe exacerbations and level of asthma symptom control across SABA canister prescription categories

	SABA canister prescriptions in the past 12 months					Total
	1–2 canisters	3–5 canisters	6–9 canisters	10–12 canisters	≥13 canisters	
Patients with severe exacerbations in the past 12 months, n (%)						
0 severe exacerbations	1071 (59.1)	342 (40.6)	269 (42.9)	501 (47.2)	88 (32.6)	2271 (49.2)
1 severe exacerbation	378 (20.9)	249 (29.5)	165 (26.3)	255 (24.0)	41 (15.2)	1088 (23.6)
2 severe exacerbations	163 (9.0)	127 (15.1)	91 (14.5)	134 (12.6)	44 (16.3)	559 (12.1)
≥3 severe exacerbations	199 (11.0)	125 (14.8)	102 (16.3)	171 (16.1)	97 (35.9)	694 (15.0)
Total	1811	843	627	1061	270	4612
Level of asthma symptom control, n (%)						
Patients with uncontrolled asthma	382 (21.3)	252 (29.9)	208 (33.2)	396 (37.3)	131 (48.5)	1369 (29.8)
Patients with at least partly controlled asthma	1414 (78.7)	590 (70.1)	419 (66.8)	666 (62.7)	139 (51.5)	3228 (70.2)
Total	1796	842	627	1062	270	4597

SABA: short-acting β_2 -agonist.

SUPPLEMENTARY TABLE E8 Unadjusted analysis: association of SABA prescriptions with severe exacerbations in the past 12 months and level of asthma symptom control

SABA canister prescriptions in the past 12 months	Rate of severe exacerbations			Odds of at least partly controlled asthma		
	IRR	95% CI	p-value	OR	95% CI	p-value
1–2 canisters	<i>Reference</i>			<i>Reference</i>		
3–5 canisters	1.40	1.23–1.58	<0.0001	0.63	0.53–0.76	<0.0001
6–9 canisters	1.45	1.27–1.67	<0.0001	0.54	0.45–0.67	<0.0001
10–12 canisters	1.56	1.39–1.75	<0.0001	0.45	0.38–0.54	<0.0001
≥13 canisters	2.71	2.27–3.25	<0.0001	0.29	0.22–0.37	<0.0001

CI: confidence interval; IRR: incidence rate ratio; OR: odds ratio; SABA: short-acting β_2 -agonist.