Patient characteristics and treatment comparison among patients with chronic obstructive pulmonary disease: real-world evidence from Sweden

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Swedish National Airway Register RESEARCH

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INTRODUCTION

- Chronic obstructive pulmonary disease (COPD) is a major cause of global morbidity and mortality.[1]
- Long-acting inhaled bronchodilator therapies are the standard of care for COPD treatment, given alone or with corticosteroids as double or triple combination therapy.[1]
- However, there is a paucity of real-world evidence on extrafine formulation regimes for COPD treatment, especially the impact on healthcare resource utilisation (HCRU).

OBJECTIVES

- To investigate patient characteristics, treatment patterns, and HCRU among patients with COPD in Sweden.
- To explore differences in these parameters between patients treated with extrafine formulations and those treated with non-extrafine formulations of inhaled corticosteroids (ICS), for double (ICS /long-acting beta-agonist [LABA]) and triple (ICS/LABA/long-acting muscarinic antagonist [LAMA]) therapies, respectively.
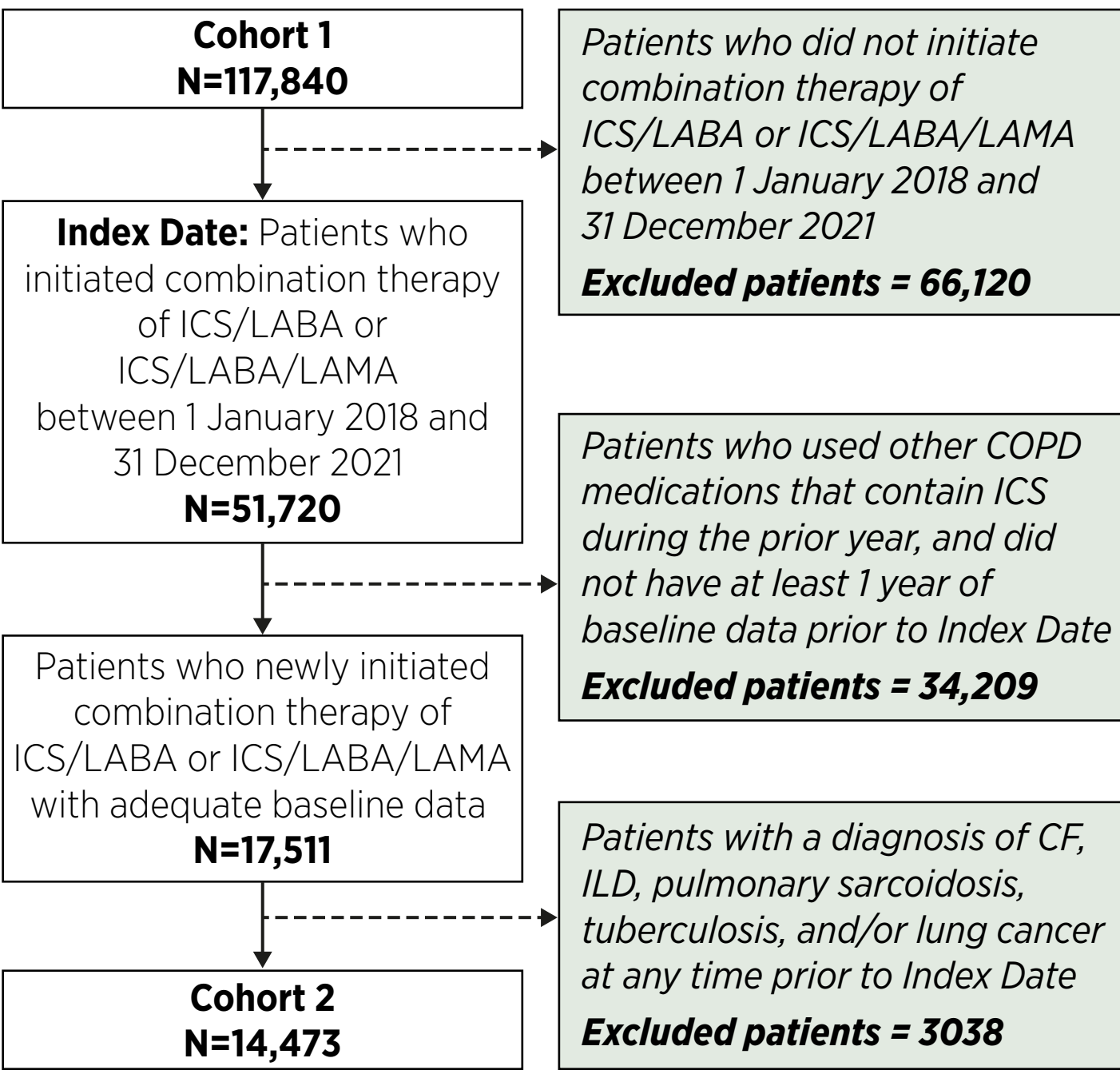
METHOD

- Several national registers were linked: Swedish National Airway Register (SNAR), Patient Register, Cancer Register, Prescribed Drug Register, Cause of Death Register, and Total Population Register.
- To compare extrafine and non-extrafine formulations of inhaled ICS/LABA or ICS/LABA/LAMA therapies, an active comparator, new user design was used.
- Patient characteristics included socio-demographic and clinical characteristics.
- HCRU included hospitalisations, secondary care, drug dispensations, and COPD maintenance treatment.
- Outcome variables were reported descriptively and statistical tests performed to compare differences from baseline. HCRU and cost were reported per patient per year.

RESULTS

- Cohort 1 included all prevalent patients with COPD (>40 years old) registered in SNAR since 2017.
- Cohort 2, a subset of Cohort 1, included patients who newly initiated combination therapy of ICS/LABA or ICS/LABA/LAMA with adequate baseline data (**Figure 1**).

Figure 1. Patient selection.

CF, cystic fibrosis; COPD, chronic obstructive pulmonary disease; ICS, inhaled corticosteroids; ILD, interstitial lung disease; LABA, long-acting beta-agonist; LAMA, long-acting muscarinic antagonist; N, number of patients remaining for analysis.

- Across both cohorts, patients were generally balanced in terms of gender (**Table 1**). However, compared with Cohort 1 and patients on non-extrafine treatment from Cohort 2, patients on extrafine treatment from Cohort 2 were older, more were retired and on lower incomes, and they reported more years since first COPD diagnosis.
- The data indicated that patients on extrafine treatment had more severe clinical characteristics compared with those in Cohort 1 or receiving non-extrafine treatment (**Table 2**).
- Before treatment initiation, COPD-related and all-cause HCRU and costs were higher across all parameters in patients receiving extrafine treatment compared with those on non-extrafine treatment (**Figure 2**).

Table 1. Patient demographics.

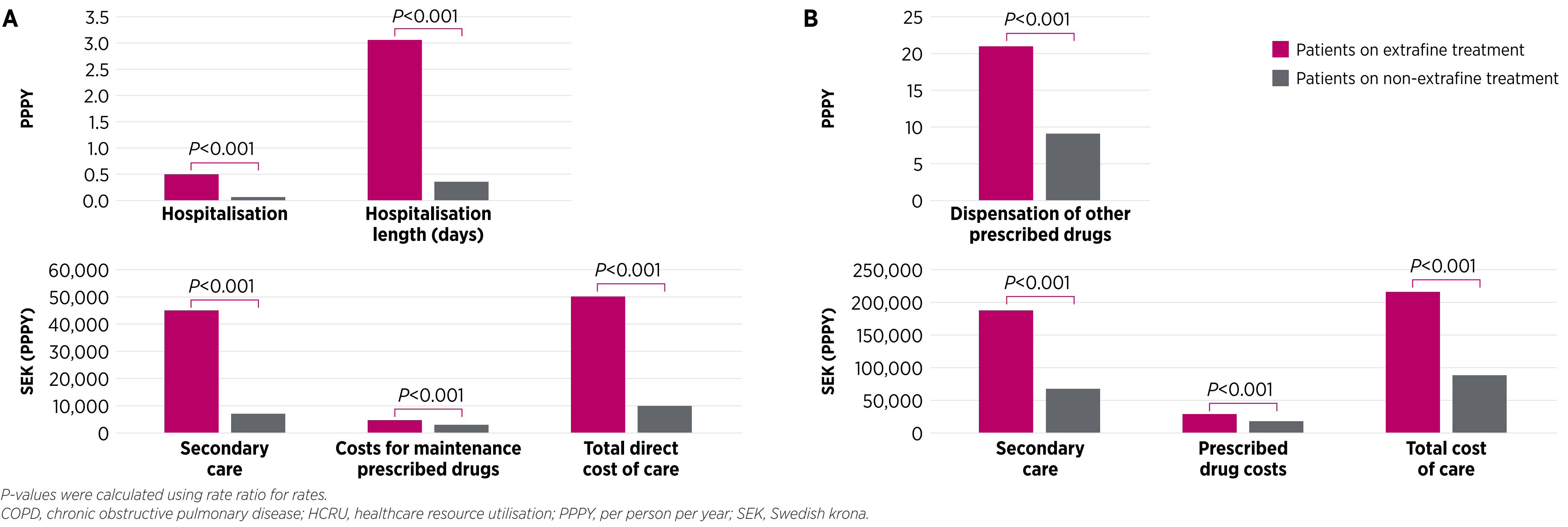| Demographics	Cohort 1 N=117,840	Cohort 2 Patients on extrafine treatment[a] N=2662	Cohort 2 Patients on non-extrafine treatment[a] N=11,811
Age (years), mean (SD)	71.2 (9.7)	73.9 (9.3)	71.4 (9.8)
Gender, n (%)			
Female	51,707 (43.9)	1155 (43.4)	5315 (45.0)
Male	66,132 (56.1)	1507 (56.6)	6496 (55.0)
Education level, n (%)			
Primary	31,211 (26.5)	768 (28.9)	2784 (23.6)
High school	32,903 (27.9)	766 (28.8)	3204 (27.1)
University and above	42,742 (36.3)	955 (35.9)	5465 (46.3)
Income, n (%)			
1st quartile	27,555 (23.4)	671 (25.2)	2967 (25.1)
2nd quartile	28,069 (23.8)	728 (27.4)	2969 (25.1)
3rd quartile	26,951 (22.9)	600 (22.5)	2860 (24.2)
4th quartile	25,487 (21.6)	517 (19.4)	2761 (23.4)
Employment status, n (%)			
Employed	20,579 (17.5)	333 (12.5)	2209 (18.7)
Retired	86,241 (73.2)	2165 (81.3)	9220 (78.1)
Unemployed	1242 (1.1)	18 (0.7)	128 (1.1)
Length of follow-up (months), mean (SD)	28.6 (28.5)	12.1 (0.4)	12.1 (0.3)
Years since first COPD diagnosis until Index Date, mean (SD)	14.0 (3.3)	15.3 (3.0)	14.7 (2.8)

[a]Prematched data measured during the 12 months prior to the cohort entry date. Percentages rounded up to the highest decimal place.
COPD, chronic obstructive pulmonary disease; n, number of patients; SD, standard deviation.

Table 2. Clinical characteristics.

Characteristics	Cohort 1 N=117,840	Cohort 2 Patients on extrafine treatment[a] N=2662	Cohort 2 Patients on non-extrafine treatment[a] N=11,811
Treatment group, n (%)			
Double combination therapy	–	496 (18.6)	5573 (47.2)
Triple combination therapy	–	2166 (81.4)	6238 (52.8)
Moderate exacerbations, n (%)			
0	93,589 (79.4)	1511 (56.8)	7746 (65.6)
1	14,069 (11.9)	594 (22.3)	2242 (19.0)
≥2	10,182 (8.6)	557 (20.9)	1823 (15.4)
Severe exacerbations, n (%)			
0	110,152 (93.5)	2105 (79.1)	10,585 (89.6)
1	4676 (4.0)	308 (11.6)	751 (6.4)
≥2	3012 (2.6)	249 (9.4)	475 (4.0)
Comorbidities, n (%)			
Hypertensive diseases	18,736 (15.9)	781 (29.3)	2423 (20.5)
Ischaemic heart diseases	7853 (6.7)	308 (11.6)	1012 (8.6)
Pulmonary heart disease and diseases of pulmonary circulation	1265 (1.1)	96 (3.6)	185 (1.6)
Cerebrovascular diseases	2502 (2.1)	115 (4.3)	301 (2.6)
Type 2 diabetes	7451 (6.3)	279 (10.5)	955 (8.1)
Osteoporosis	2343 (2.0)	85 (3.2)	281 (2.4)
Anxiety or depression	4411 (3.7)	158 (5.9)	625 (5.3)
Rhinitis	1719 (1.5)	56 (2.1)	222 (1.9)

[a]Prematched data measured during the 12 months prior to the cohort entry date. Percentages rounded up to the highest decimal place.
n, number of patients.

Figure 2. COPD-related (A) and all-cause (B) HCRU and costs before treatment initiation.

P-values were calculated using rate ratio for rates.
COPD, chronic obstructive pulmonary disease; HCRU, healthcare resource utilisation; PPPY, per person per year; SEK, Swedish krona.

CONCLUSIONS

- Patients with COPD incur a high clinical and economic burden to the Swedish healthcare system.
- Physicians are more likely to prescribe extrafine inhaled treatment in patients with COPD with more severe disease and in older, more complex patients who may already have higher HCRU and costs, compared to non-extrafine treatment.

REFERENCE

1. Global Initiative for Chronic Obstructive Lung Disease [GOLD] Report, 2025. https://goldcopd.org/2025-gold-report/

CONTACT INFORMATION AND ACKNOWLEDGEMENTS

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