RWD53

Burden of Illness and Healthcare Resource Utilization (HCRU) for Chronic Obstructive Pulmonary Disease (COPD) in Ontario, Canada

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INTRODUCTION

- Chronic obstructive pulmonary disease (COPD) is a disease characterized by persistent and progressive respiratory symptoms.
- COPD exacerbations are acute events of increased respiratory symptoms that are associated with an increased risk of future more severe exacerbations (SE) and mortality.[1]
- Despite optimized treatment, patients continue to experience exacerbations and there remains an unmet medical need.[2]
- SE are a common cause of hospitalizations and readmissions for patients with COPD, which are associated with substantial direct medical costs.
- There are no recent estimates of the burden of illness (BOI) and healthcare resource utilization (HCRU) for patients with COPD exacerbations in Canada.

OBJECTIVES

- Characterize the demographic and clinical characteristics of patients with COPD in Ontario during their first exacerbation
- Describe the HCRU and direct healthcare costs incurred during the 12-month period following an exacerbation

METHODS

- A retrospective observational cohort study was conducted using Ontario health administrative data housed at ICES.
- The study period was from April 2002 to December 2023, with COPD cases[3] identified from January 2017 to December 2022 and indexed at two time points:
  - **Initial patient index date**: Date of first eligible COPD exacerbation, used to describe baseline patient demographic and clinical characteristics.
  - **Exacerbation index date**: Date of second (and subsequent) eligible COPD exacerbations.
- There was a 12-month follow-up period after each index exacerbation to describe the frequency and cost of HCRU.
- All eligible exacerbations that occur ≥12 months after the initial index date and after other exacerbation index dates were indexed and categorized as a moderate exacerbation (ME, ≥1 oral corticosteroid [OCS] claim) or a SE (≥1 hospitalization or ER visit).
- Patients may have been indexed more than once in this study.

Data Analysis:

- Descriptive statistics were reported for cohort characteristics, all-cause HCRU, and direct healthcare costs.
- Costs were calculated using the ICES costing methodology and standardized to 2023 Canadian dollars (CAD).[4]
- The results from patients without asthma (using the ICES validated cohort definition prior their initial index date) are presented on this poster.[5]

Table 1: Demographics and clinical characteristics of patients included in the COPD without asthma cohort

	Overall (N=14,555)	ME (N=3,678)	SE (N=10,877)
Mean Age at Index ± SD	75.68 ± 9.27	74.18 ± 8.75	76.19 ± 9.39
Sex – Female, n (%)	6,226 (42.78%)	1,607 (43.69%)	4,619 (42.47%)
Result of most recent eosinophil measurement (cells/uL)			
Mean ± SD	342.78 ± 7,462.31	323.37 ± 256.84	349.35 ± 8,631.06
Number of medication claims			
OCS			
Any, n (%)	8,105 (55.69%)	3,528 (95.92%)	4,577 (42.08%)
Mean ± SD	1.91 ± 5.28	3.62 ± 7.10	1.33 ± 4.36
Antibiotic			
Any, n (%)	3,336 (22.92%)	1,372 (37.30%)	1,964 (18.06%)
Mean ± SD	0.58 ± 2.73	0.94 ± 3.15	0.46 ± 2.57
OCS and Antibiotic			
Any, n (%)	2,663 (18.30%)	1,342 (36.49%)	1,321 (12.14%)
Mean ± SD	1.11 ± 4.43	2.28 ± 6.08	0.72 ± 3.62

RESULTS

Figure 1: COPD without asthma cohort selection criteria

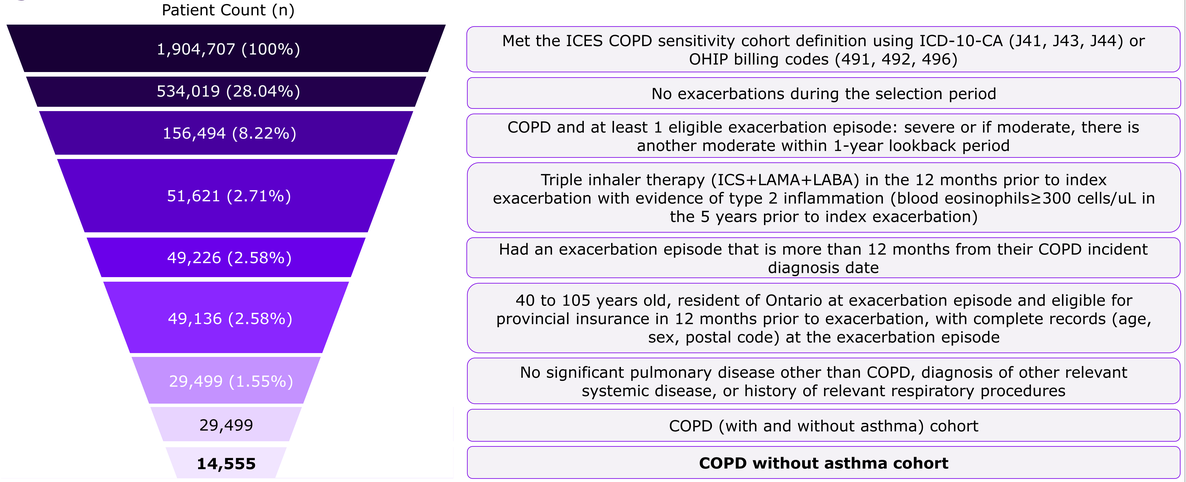


Figure 2: Number of Exacerbations in the COPD without asthma cohort

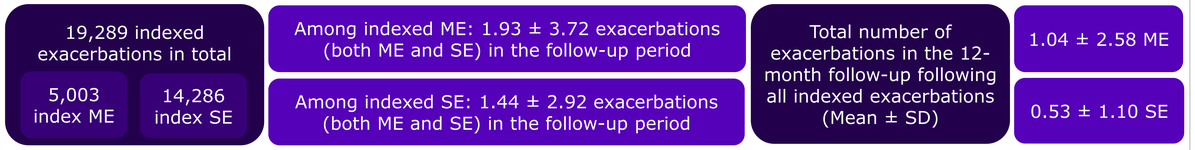
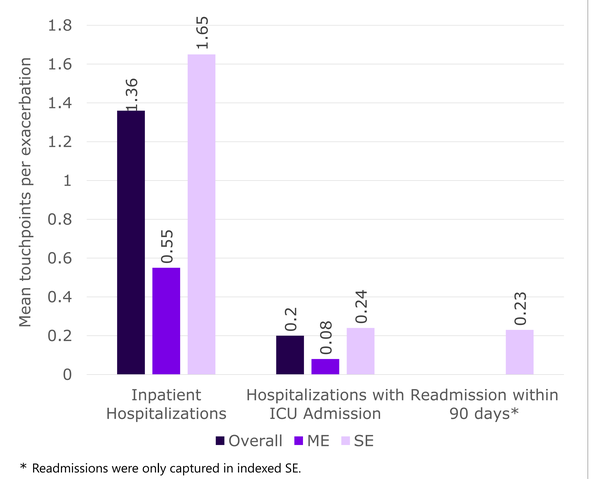


Figure 3: Mean number of hospitalizations during the follow-up period in the COPD without asthma cohort



* Readmissions were only captured in indexed SE.

Figure 4: Mean length of stay (LOS) in days per exacerbation in the follow-up period in the COPD without asthma cohort

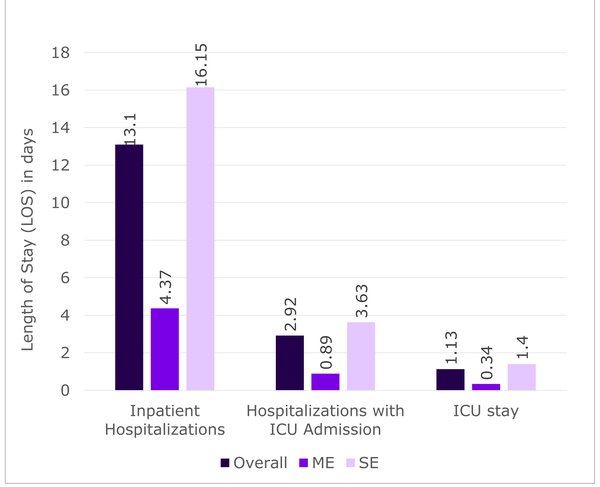
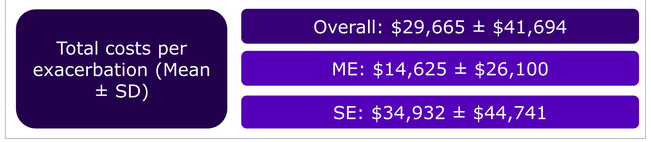


Figure 5: Costs during the follow-up period in the COPD without asthma cohort



DISCUSSION

Demographics

- The median age of patients with COPD (without asthma) is 76 years old with an interquartile range of 40-102 years old (Table 1).
- Approximately 48% of cases had at least 1 exacerbation in the 12 months post-index: ME 32%, SE 30% (Figure 2).

HCRU

- During the year after an exacerbation, a mean of 88.74 ± 94.66 healthcare touchpoints were recorded, driven by SE.
  - Across overall exacerbations of both cohorts, home care and specialist visits were the HCRU categories most used, followed by general practitioner visits.
- 70.54% of overall exacerbations had at least 1 inpatient hospitalization.
  - SE had a higher hospitalizations and longer LOS (Figure 3 and 4) resulting in higher costs.
- **Medication and Procedure Claims**
  - Chest X-rays were used the most (relative to spirometry, CT scans, and pulmonary function tests), driven by SE.
  - Among medication claims, OCS were used more than antibiotics, driven by ME.

Costs

- In the year after an exacerbation, patients incurred a mean cost of $29,665 (Figure 5).
  - The cost of SE was higher than ME due to inpatient hospitalizations, followed by home care and specialist visits, representing the cost categories with higher mean costs per exacerbation.

Limitations

- Literature has reported that ME events tend to be more frequent; however, less ME events were observed in our study likely due to underreporting of OCS/antibiotic use during a ME.
- The analyses includes the costs and HCRU for the 12 months after the index date and may not be exclusive to COPD.

CONCLUSIONS

- This study demonstrates that patients with COPD without asthma continue to experience exacerbations despite optimized treatment with triple inhalers, highlighting the continued unmet need in these patients.
- Both ME and SE are associated with significant HCRU; SE had higher HCRU and costs compared to ME, driven by hospitalization costs.
- Prevention of ME and SE may greatly alleviate the economic burden of COPD.

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