A Real-World Analysis of the Patient Cost Burden from COPD and its Treatment Regimens

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INTRODUCTION

- Chronic obstructive pulmonary disease (COPD) is a significant source of ill health and the third most common cause of death globally[1].
- Due to its high prevalence, progressive nature, and association with other comorbidities, COPD exerts a significant economic burden on healthcare systems[2].
- The system-level burden of COPD has been well characterized but limited data are available on the economic impact to patients[3-6].
- While aligning treatments to clinical guidelines may improve outcomes, limited studies have also compared the out of pocket (OOP) burden of long-term COPD treatment regimens.

STUDY OBJECTIVES

To investigate the OOP cost burden of newly diagnosed COPD and compare OOP costs between different long-term therapies for COPD.

METHODS

Data Source and Study Design

- Patients aged ≥ 35 newly diagnosed with COPD between January 1st, 2016 – December 31st, 2022 from a 25% random sample of IQVIA PharMetrics ® Plus for Academics.
- Retrospective cohort study with 12 months of baseline data and 12 months of follow up data following the earliest COPD diagnosis date (diagnosis index date) and for those eligible, 12 months of follow up data following the initiation of a long-term regimen (treatment index date).

Long Term Therapy

- In the 12 months following the COPD diagnosis date, patients were evaluated for established long-term therapy (6 regimens) defined as ≥ 90 days of use of a pre-defined regimen while allowing for a 60-day grace period.
- Pre-defined regimens included single and multiple inhaler forms of: LAMA, LABA, ICS, LAMA+LABA, ICS+LABA, and triple therapy (LAMA+LABA+ICS).

Outcomes

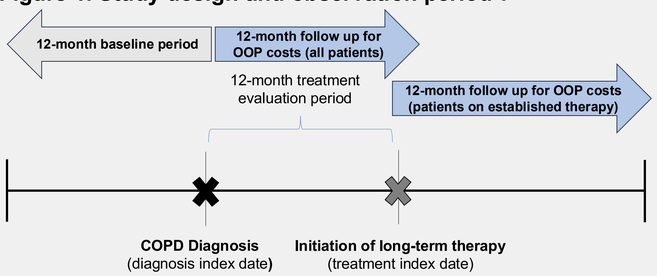
- All-cause and COPD-specific OOP costs were calculated to evaluate the patient burden from COPD.
- For all patients, OOP costs were calculated over the 12-month period following their diagnosis date (time window 1).
- Among patients who initiated established long-term therapy over time window 1, costs were further calculated over the 12-month period following the initiation of long-term therapy (time window 2).

Statistical Analysis

- Demographics summarized using descriptive statistics (mean for continuous variables; proportions for categorical variables).
- Tests for significant differences in costs conducted using Kruskal-Wallis test.

METHODS

Figure 1. Study design and observation period[7].



1. **Index dates-** earliest COPD diagnosis date over 2016 – 2022 study period (diagnosis index date) and initiation of long-term regimen (treatment index date).

2. **Treatment evaluation period**- 12-month window following COPD index date in which established long-term therapy was evaluated.

3. **Outcomes**- all-cause and COPD-specific costs expressed as OOP payments. Costs were calculated across the following settings: inpatient (IP), outpatient (OP), emergency department (ED), prescriptions, home healthcare, and other (any setting other than the ones listed).

4. **Outcome window**- 12-month window following COPD index date (all patients) + 12-month window following treatment index date (those on established long-term therapy). Costs were adjusted to mid-year 2024 dollars using the medical component of the Consumer Price Index.

[7]Figured adapted from Nordon et al. (2024).

RESULTS

- N=11,138 newly diagnosed COPD patients were identified (83% with unspecified COPD, 15% with emphysema, 2% with chronic bronchitis).
- Mean age of diagnosis was 54 (SD=2) with majority female (53%).
- Patients paid on average $620 for COPD-specific OOP expenses, which made up 17% of total annual spendings.
- The ED had the highest proportion of COPD-specific OOP costs, which accounted for 56% of all ED-related costs.

Table 1. All-cause and COPD-specific OOP costs over 12-month period following COPD (diagnosis) index date.

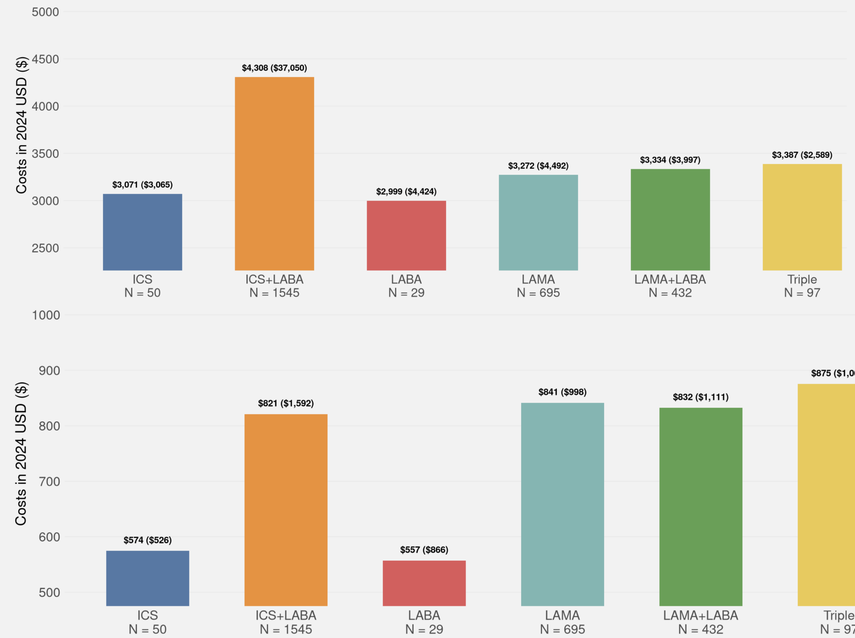
N = 11,138	All-Cause[1,2]	COPD-Specific[1,2]	Percentage of Total OOP Costs from COPD
OP	$1,134 ($11,670)	$220 ($636)	19%
IP	$1,294 ($4,811)	$127 ($1,258)	10%
ED	$62 ($387)	$35 ($278)	56%
Home	$78 ($412)	$26 ($180)	33%
Other[3]	$167 ($879)	$20 ($148)	12%
Rx	$953 ($1,467)	$192 ($434)	20%
Total	$3,688 ($14,644)	$620 ($1,566)	17%

[1]Mean (SD) costs expressed in 2024 USD
[2]Costs calculated over 12 months from diagnosis date
[3]Any healthcare setting other than the ones listed

RESULTS

- N=2,848 initiated long-term therapy with 12 months of follow up following treatment initiation.
- ICS+LABA was the most utilized regimen (54%) while triple therapy made up 3% of long-term regimen initiators.
- There were significant differences in both all-cause and COPD-specific costs across the 6 regimens.

Figure 2. (A) All-cause OOP costs over 12-month period following diagnosis index date. (B) COPD-specific OOP costs over 12-month period following treatment index date.



- ICS+LABA users had the highest all-cause OOP costs at $4,306 ($37,050) and remained among the costliest regimens for COPD-specific costs (p-value = 0.002).
- Triple therapy users had the highest COPD-specific OOP Costs at $875 ($1,066) with LABA users having the lowest at $557 ($866) potentially due to different exacerbation frequencies (see supplemental tables using QR code).
- See supplementary material for full OOP cost breakdown by service setting, utilization, and exacerbations.

CONCLUSION AND RECOMMENDATIONS

- Current guidelines do not recommend ICS+LABA, but it was the most utilized and one of the costliest regimens in the patient's perspective.
- Aligning practices with treatment guidelines may not only improve outcomes but also result in better cost offsets.
- Future research should compare OOP costs across treatment regimens while stratifying for COPD severity as it may be a driver in these regimen-specific costs differences.

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