Patient Characteristics and Prior Asthma Treatment Patterns among Tezepelumab Users in the United States: An Early View Claims Data Study

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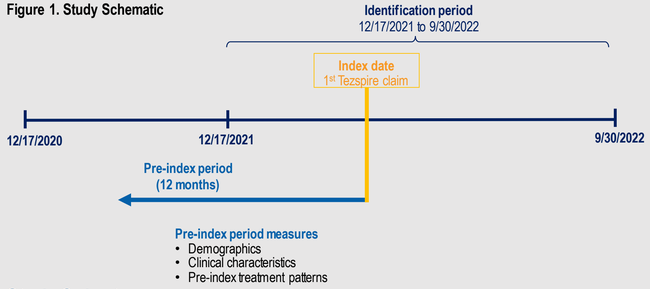
Background

- Asthma is one of the leading chronic respiratory diseases, with an estimated 26 million patients with physician-diagnosed asthma in the US.[1]The prevalence of severe asthma has been estimated to be around 5-10% of the 26 million asthma patients.[2]
- Patients with severe asthma treated with current biologics continue to experience uncontrolled disease, highlighting a remaining unmet need for patients with severe uncontrolled asthma.[3]
- Given that severe uncontrolled asthma is associated with higher economic burden compared to patients with controlled asthma, it is critical to develop novel treatments for this patient population.[4]
- There are limited real-world data describing the patient characteristics of initial recipients of tezepelumab which was approved by the FDA for add-on maintenance treatment of adult and adolescent (12 years or older) patients with severe asthma on December 17, 2021.[5]
- This study aims to assess pre-utilization patient characteristics and asthma treatments among early users of tezepelumab.

Study Design

- This was a US-based retrospective cohort study utilizing the IQVIA open source medical and pharmacy claims databases (Dx) (and subset linked to Prognos and Quest laboratory data).
- Patients with ≥1 medical claim or pharmacy claim for tezepelumab between December 17, 2021, to September 30, 2022, were identified. Patients were indexed to the date of the first claim for tezepelumab (**Figure 1**).

Figure 1. Study Schematic



Study Cohort

- Patients were ≥12 years of age on the index date, must have ≥ 1 claim in Dx during each 6-month period in the 12-month pre-index period, had ≥12 months of pre-index pharmacy stability (defined as ≥1 pharmacy the patient used on the index date or during the 1-month period before or after the index date consistently supplied data during the 12-month pre-index period) and provider data stability (each month of the 12-month pre-index period must have ≥1 provider that consistently supplied data), had ≥1 claim in Dx between index-180 and index-1 and another Dx claim between index-360 and index-180, and had severe asthma as defined by the Global Initiative for Asthma (GINA).[6]
- Those with data quality issues, such as missing age or gender, were excluded from the study.

Statistical Analysis

- This study was descriptive in nature. Categorical variables were described using frequencies and percentages. Continuous variables were reported using mean and standard deviation (SD) as measures of central tendency and variation.

Key Takeaways

- **Early recipients of tezepelumab were predominantly middle aged, female patients and included those with and without prior biologics.**
- **Results reflect a patient population with a high disease burden and unmet need; 49% received biologics in the 12 months prior to initiating tezepelumab, nearly half had comorbid conditions and most had concomitant use of non-biologic asthma medications.**
- **Future studies with larger samples sizes, more recent data, and longer follow-up are warranted to evaluate how patient characteristics change over time. Additional studies assessing outcomes are also planned.**

- Overall, there were 1,926 tezepelumab patients who were eligible for the study.
- The mean (SD) age was 57.7 (15.6) years. Patients in the study sample were most frequently females (70.7%), from the South Census region (46.0%), and utilized commercial insurance or were privately insured (60.6%) (**Table 1**).
- Common respiratory comorbidities with diagnosis codes included allergic rhinitis (49.8%), chronic obstructive pulmonary disease (33.4%), sleep apnea (28.6%), and nasal polyps (3.3%). Hypertension (44.3%), dyslipidemia (29.9%), gastroesophageal reflux disease (29.4%), and diabetes (23.3%) were common non-respiratory comorbidities (**Figure 2a and 2b**).
- The majority (59%) of severe asthma patients had a Charlson Comorbidity Index (CCI) score of 1; 5%, 18%, and 18% of patients had a score of 0, 2, and 3, respectively.

Table 1. Baseline Demographic Characteristics

	LRx/Dx
	Overall (N=1,926)
Age	
Mean (SD)	57.7 (15.6)
Median	60.0
Gender (n,%)	
Male	563 (29.2%)
Female	1,363 (70.8%)
Geographic region (n,%)	
Northeast	322 (16.7%)
Midwest	384 (19.9%)
South	886 (46.0%)
West	328 (17.0%)
Insurance type (n, %)	
Cash	6 (0.3%)
Commercial/privately insured	1,167 (60.6%)
Medicaid	49 (2.5%)
Medicare	702 (36.5%)
Unknown	2 (0.1%)

Figure 2. Comorbidities observed during the 12-month pre-index period (including index date) to initiating tezepelumab

Figure 2a. Respiratory Comorbidities Among Severe Asthma Patients

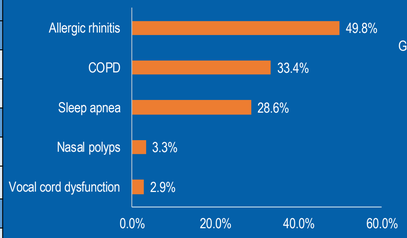


Figure 2b. Non-Respiratory Comorbidities Among Severe Asthma Patients

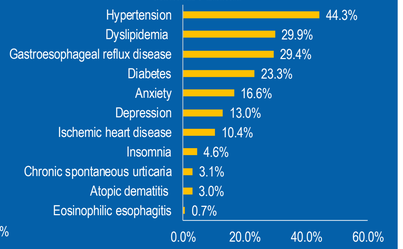


Figure 3. Biologic use observed within 12-month prior to initiating tezepelumab

Figure 3a. Biologic use among severe asthma patients (n=1,926)

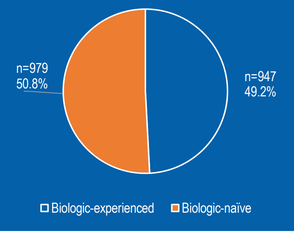
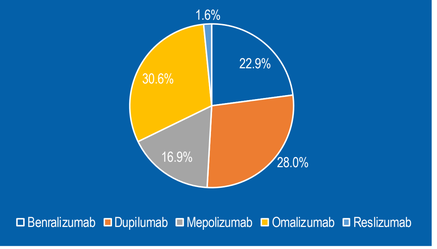


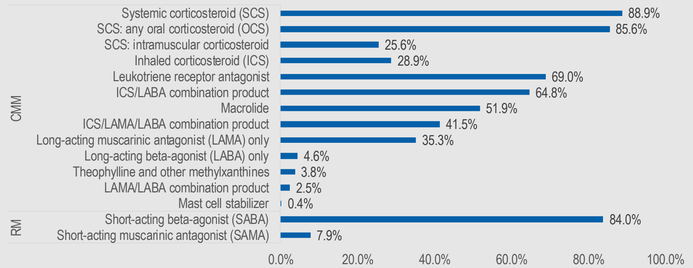
Figure 3b. Last biologic therapy observed within 12 months prior to initiating tezepelumab among those with prior biologics (n=947)



12-months Pre-index Treatment Patterns

- Roughly half of patients (50.8%) had no prior biologic therapy (**Figure 3a**). Among those who had prior biologics (49.2%), 86% received only 1 biologic, 13% had 2 biologics, and 1% had 3 biologics.
- Among severe asthma patients treated with tezepelumab who had prior biologics, omalizumab (30.6%), dupilumab (28.0%), and benralizumab (22.9%) were the three most common biologics used prior to initiating tezepelumab (**Figure 3b**).
- Other asthma medications received included short-acting beta agonists (SABA) (84.0%), leukotriene receptor antagonists (69.0%), combination inhaled corticosteroid (ICS) /long-acting beta-agonist (LABA) (64.8%), combination ICS/long-acting muscarinic antagonist (LAMA)/LABA (41.5%), LAMA only (35.3%), and non-combined ICS (28.9%) (**Figure 4**).

Figure 4. Non-biologic asthma medications observed on or within 12-months prior to initiation of tezepelumab



Abbreviations: CMM, controller/maintenance medications; RM, rescue medications

Limitations

- As an open-source database, Dx lacks a medical enrollment file; thus, continuous enrollment cannot be reliably assessed despite the proxy measure used to determine continuous activity with the medical provider contributing to the database.
- Further, healthcare encounters occurring outside of the network of providers that contribute to the LRx/Dx data or that did not result in reimbursable healthcare utilization (e.g., use of previously prescribed medications or medication samples) were not captured. Specifically, medications filled at specialty pharmacies may be underreported.
- Specialty pharmacies data may be incomplete due to blocking of reporting which can cause some misclassification of whether patients have previous biologic use.
- Assessment of prior biologic use was limited to 12-month pre-index period. Any biologic use before the 12-month pre-index use was not captured.

Acknowledgements

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