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A Pre-Post Evaluation of Health Care Utilization and Costs Among Patients with Asthma Initiating Dupilumab in a Medicaid Population

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INTRODUCTION

- In the United States, asthma affects approximately 25 million people with an estimated societal cost of $82 billion (2013).[1,2]
- Approximately 50% of all asthma-related healthcare costs are associated with severe asthma.[3]
- Guideline recommendations state biologics should be considered for asthma patients with persistent symptoms or exacerbations despite adherence to medium or high dose inhaled corticosteroid and long-acting beta agonist therapy, who have eosinophilic or allergic biomarkers, or need maintenance oral corticosteroids (OCS).[4]
- Dupilumab, an interleukin-4 receptor antagonist, is a biologic approved by the Food and Drug Administration as an add-on treatment for moderate to severe eosinophilic and/or OCS-dependent asthma.[5]
- There is limited real-world utilization data and impact of dupilumab on the total cost of care for asthma in a Medicaid population.

OBJECTIVE

To compare the incidence of asthma-related emergency department (ED) visits and hospitalizations pre- and post-dupilumab initiation.

METHODS

- This retrospective analysis included pharmacy and medical claims and prior authorization (PA) data from July 1, 2018 to December 31, 2020 for Massachusetts Medicaid (MassHealth) Fee-For-Service/Primary Care Clinician (FFS/PCC) and Primary Care Accountable Care Organization (ACO-B) members with continuous coverage for six months pre- and post-initiation of dupilumab (i.e., index date).
- Descriptive statistics are presented for continuous variables and percentages for dichotomous variables. ED visits/hospitalizations and number of pharmacy claims pre- and post-initiation were compared with paired t-tests. Costs were compared using the Wilcoxon Signed-Rank-Test.

Inclusion Criteria:

- Members ≥12 years of age with a diagnosis of moderate to severe eosinophilic or OCS-dependent asthma with an approved PA between January 1, 2019 and June 30, 2020 and ≥2 paid pharmacy claims for dupilumab during the post-index period

Exclusion Criteria:

- Members with third party liability (TPL) or 340B claims

Primary Outcome:

- The incidence of asthma-related ED visits and hospitalizations in the pre- and post-periods

Secondary Analyses:

- The change in the number of claims for OCS and rescue medications in the pre- and post-periods
- The total amount paid for medical and pharmacy claims related to asthma exacerbations pre- and post-dupilumab therapy
- Adherence to dupilumab calculated as the proportion of days covered [PDC] ≥ 0.8

REFERENCES

1 Asthma and Allergy Foundation of America. Asthma Research, Asthma Facts and Figures, 2021. [cited 2022 Feb 23]. Available from: https://www.aafa.org/asthma-facts/.

2 Centers for Disease Control and Prevention. Asthma Facts—CDC's National Asthma Control Program Grantees. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2013.

3 Nunes C., Pereira A.M., Morais-Almeida M. Asthma costs and social impact. Asthma Res and Pract. 2017;1(3).

4 Global Initiative for Asthma. GINA Report, Global Strategy for Asthma Management and Prevention, 2021. Global Initiative for Asthma. 2021. [cited 2022 Feb 23]. Available from: https://ginasthma.org/gina-reports/.

5 Dupixent® [package insert]. Tarrytown (NY): Regeneron Pharmaceuticals, Inc.; 2021 Oct.

RESULTS

FIGURE 1. Study Population (N=28)

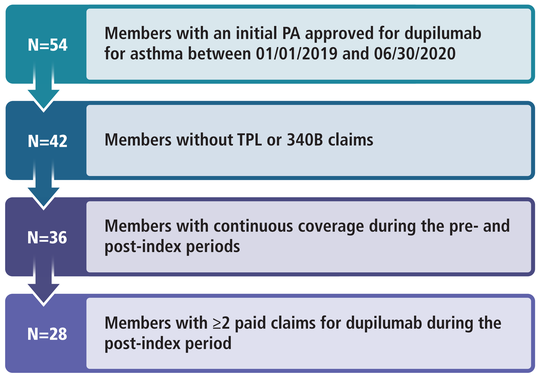


TABLE 1. Member Characteristics

Characteristics	N
Study Population	28
Sex – n (%)	
Female	17 (61%)
Male	11 (39%)
Mean age, in years (±standard deviation)	39.6 (±16)
Members adherent to dupilumab* (%)	19 (68%)

* Adherence defined as PDC ≥0.8 during post-index period

FIGURE 2. Number of Asthma-Related ED Visits and Hospitalizations for All Members (N=28)

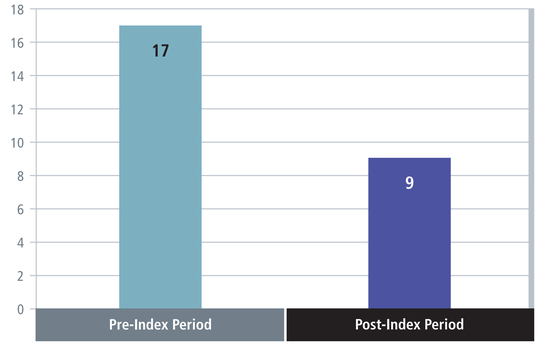


FIGURE 3. Number of Claims for OCS and Asthma Rescue Medications for All Members (N=28)

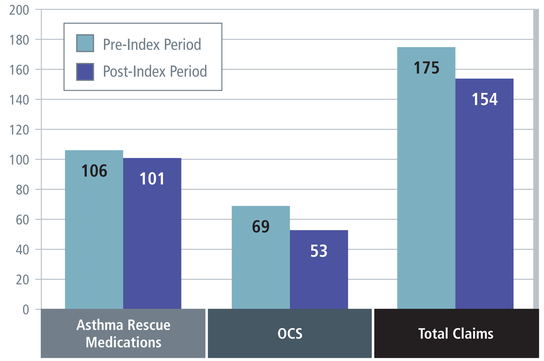


FIGURE 4. Members Adherent to Dupilumab in Post-Index Period

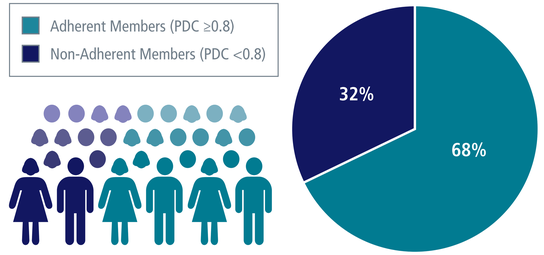
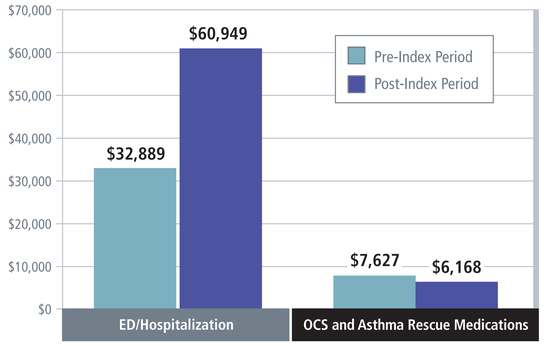


FIGURE 5. Total Paid Costs for Asthma-Related Exacerbations for All Members (N=28)



DISCUSSION

Overall, 36% of members had an ED visit/hospitalization in either the pre- or post-index period. Fewer ED visits/hospitalizations were observed after initiating dupilumab therapy (Figure 2). In the pre-index period, 29% of members had an ED/hospitalization compared to 11% in the post-index period; although these results were not statistically significant.

- Mean ED visits/hospitalizations related to asthma exacerbations were 0.6 visits per member during the pre-index period versus 0.3 visits per member during the post-index period (P=0.174).

The number of claims for OCS and asthma rescue medications decreased by 12% from a mean of 6 claims per member prior to dupilumab initiation to 5 claims per member in the six-month period after dupilumab initiation (Figure 3; P=0.343). There were six members in the post-period with no claims for these medications.

- Among the adherent cohort, 36% of members had an increase in pharmacy claims, 53% had a decrease, and 11% had no difference. The number of pharmacy claims in the non-adherent cohort increased in 33% of members, decreased in 56% of members, and 11% had no difference.

The total costs of ED visits/hospitalizations and OCS and asthma rescue medications increased by 65.6% in the post-index period (P=0.13). However, one member (PDC=0.7) had a single hospital visit accounting for approximately 75% of the total costs in the post-index period.

There were 10 members with a post-index period that extended into the COVID-19 pandemic; thus, the number of ED visits/hospitalizations and claims for OCS and asthma rescue medications could be confounded by the pandemic.

LIMITATIONS

- The COVID-19 pandemic began to impact the U.S. in March 2020. As a respiratory disease, the ED visits and hospitalizations reported could be reflective of COVID-19 instead of asthma exacerbations. Likewise, patients may also have avoided emergency care due to fear of COVID-19 exposure.
- Doses of rescue and maintenance medications used for asthma were not identified. Doses of medications could have fluctuated after initiation of dupilumab; however, only number of paid claims were analyzed and reported in this study.
- Pharmacy claims are not a true measure of patient adherence to a medication in the outpatient setting.
- In addition to an overall small population size, this study did not include pharmacy costs of dupilumab, which may impact the overall healthcare utilization costs for patients with asthma.

CONCLUSIONS

- The mean number of asthma exacerbation-related ED visits/hospitalizations decreased in the six months following dupilumab initiation compared to the six months prior to treatment; however, results were not statistically significant.
- While there was a decrease in the number of ED visits/hospitalizations and claims for OCS and asthma rescue medications after dupilumab was initiated, the total costs for asthma-related exacerbations increased after initiating dupilumab, although these findings were not statistically significant.

DISCLOSURES/ACKNOWLEDGMENTS

The authors have no financial disclosures.
Special thanks to Pelin Fitzpatrick, MBA, MPSA, for her assistance in data collection.