Real-World Utilization, Persistence, and Effectiveness of Biologic Therapies in Patients with Severe Asthma: A Multicenter Retrospective Cohort Study in Taiwan

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Background

- A range of biologic therapies, including omalizumab, mepolizumab, benralizumab, dupilumab and tezepelumab, are available for the treatment of severe asthma.
- However, not all patients achieve adequate disease control with their initial biologic therapy.
- This study aimed to evaluate the real-world treatment persistence and effectiveness of biologic therapies in patients with severe asthma.

Methods

Study Design	Retrospective cohort study
Study Source	Electronic medical records from multiple centers in Taiwan
Study Period	January 2015 – March 2024
Study Population	Patients with severe asthma initiating first biologic therapy
Primary Outcome	Treatment duration and Switching within 1 year
Secondary Outcome	Surrogate effectiveness: emergency visits or hospital admissions for acute exacerbations
Additional Analyses	• Asthma prescription patterns in the 180 days prior to biologic initiation as indicators of disease severity • Baseline characteristics (age, sex, IgE, eosinophils) analyzed for associations with prescription patterns and biologic selection

Results

- A total of 2,136 severe asthma patients newly receiving biologics were included.
- One-year hospitalization rate was 25.2% (median: 4.7 months).

Table 1. Baseline characteristic

Variable	Case (n=2136)
Age (year), mean ± SD	42.0 ± 24.0
Sex, male, n (%)	1207 (56.5%)
Sex, female, n (%)	929 (43.5%)
Total serum IgE	787.0 (149.0 – 4510.0)
Blood eosinophil counts	3.5 (1.2 – 7.2)

Variable	Case (n=2136)
Pre-biologic regimen	
ICS-LABA-LAMA + OCS + other mechanism	639 (29.9%)
Others(Not using ICS)	473 (22.1%)
Others(Not using ICS) + OCS	348 (16.3%)
ICS-LABA + OCS + other mechanism	275 (12.9%)
ICS-LABA-LAMA + OCS	105 (4.9%)
ICS-LABA + other mechanism	98 (4.6%)
ICS-LABA + OCS	66 (3.1%)
ICS-LABA-LAMA + other mechanism	62 (2.9%)
ICS-LABA	33 (1.5%)
ICS-LABA-LAMA	17 (0.8%)
ICS + OCS + other mechanism	8 (0.4%)
ICS or ICS-LAMA or ICS + other mechanism	6 (0.3%)
ICS + OCS	4 (0.2%)
ICS-LAMA + OCS + other mechanism	2 (0.1%)

Figure 1. Sankey diagram of drug sequences

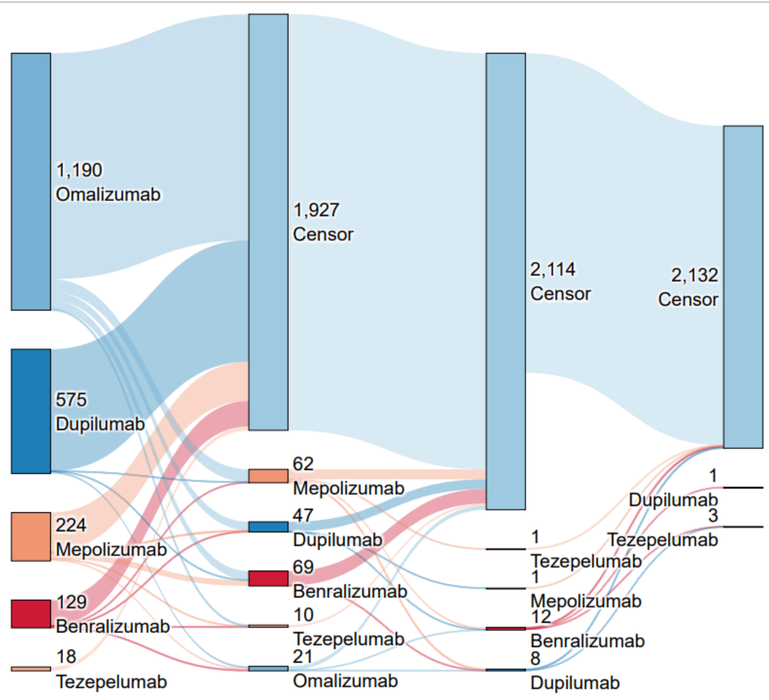
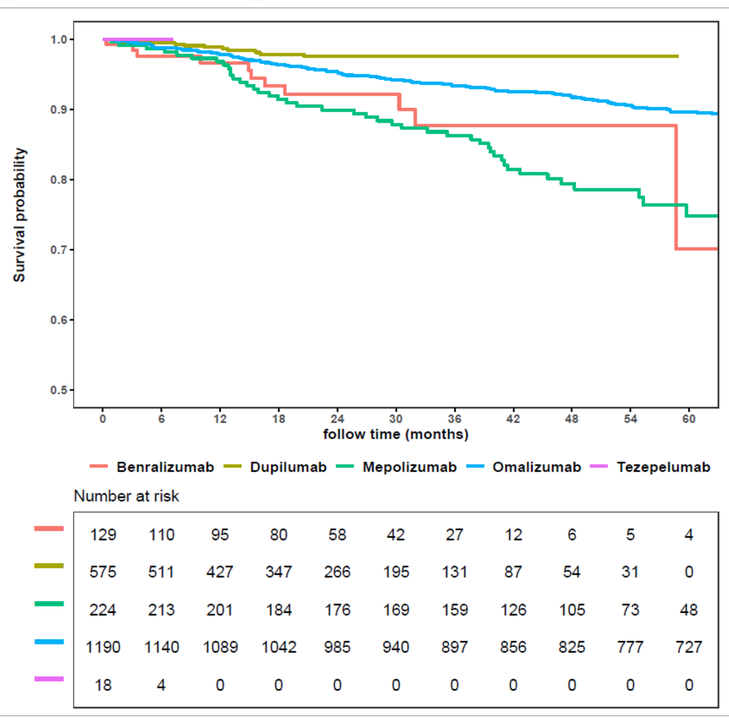


Figure 2. Drug survival of biologics in severe asthma



**Dupilumab use across indications requires cautious definition.*

Conclusion

- Omalizumab was the most commonly initiated biologic among patients with severe asthma. Treatment persistence was generally high, and switching rates were low.
- Future studies are warranted to validate and extend these real-world findings.