



Real World Biologic Use and Switch Patterns in Severe Asthma: Data from the International Severe Asthma Registry and the US CHRONICLE Study

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Inclusion criteria

- ≥ 18 years old at biologic initiation
- Severe asthma (GINA Step 5 or uncontrolled asthma at GINA Step 4)
- Treated with a biologic
- ≥ 6 months of follow-up after biologic initiation

All subjects were treated in countries that had access to ≥ 2 biologics. Therefore continuation, stopping, or switching of biologics was feasible.

CHRONICLE Study (USA)



Historical cohort study

Analyses

Demographic and clinical characteristics pre-biologic initiation

Patterns of biologic use

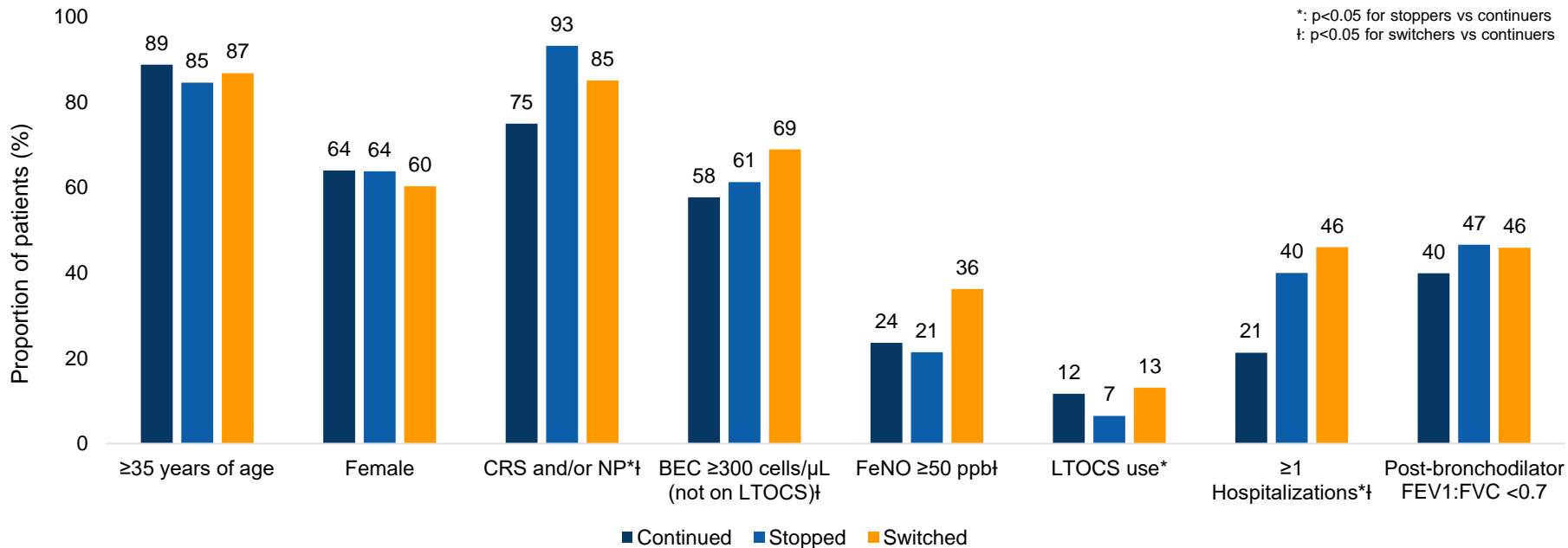
- Patterns of biologic stopping, switching and continuations
- Time to cessation of first biologic
- Switch patterns by biologic class
- Reasons for stopping or switching biologics

Sensitivity analyses

- Prospective patients (n=2656)
- Non-US (n=1404)

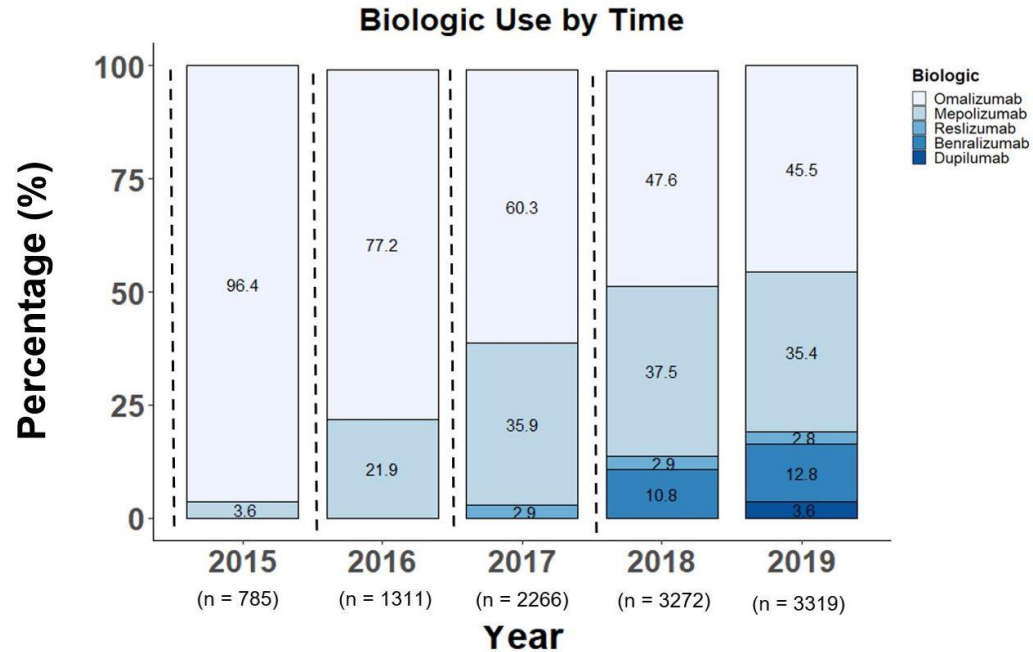
Demographic and clinical characteristics of severe asthma patients before initiation of the first biologic

Pre-biologic initiation, **stoppers and switchers** were more likely to have poorer lung function and greater healthcare resource utilization than **continuers**

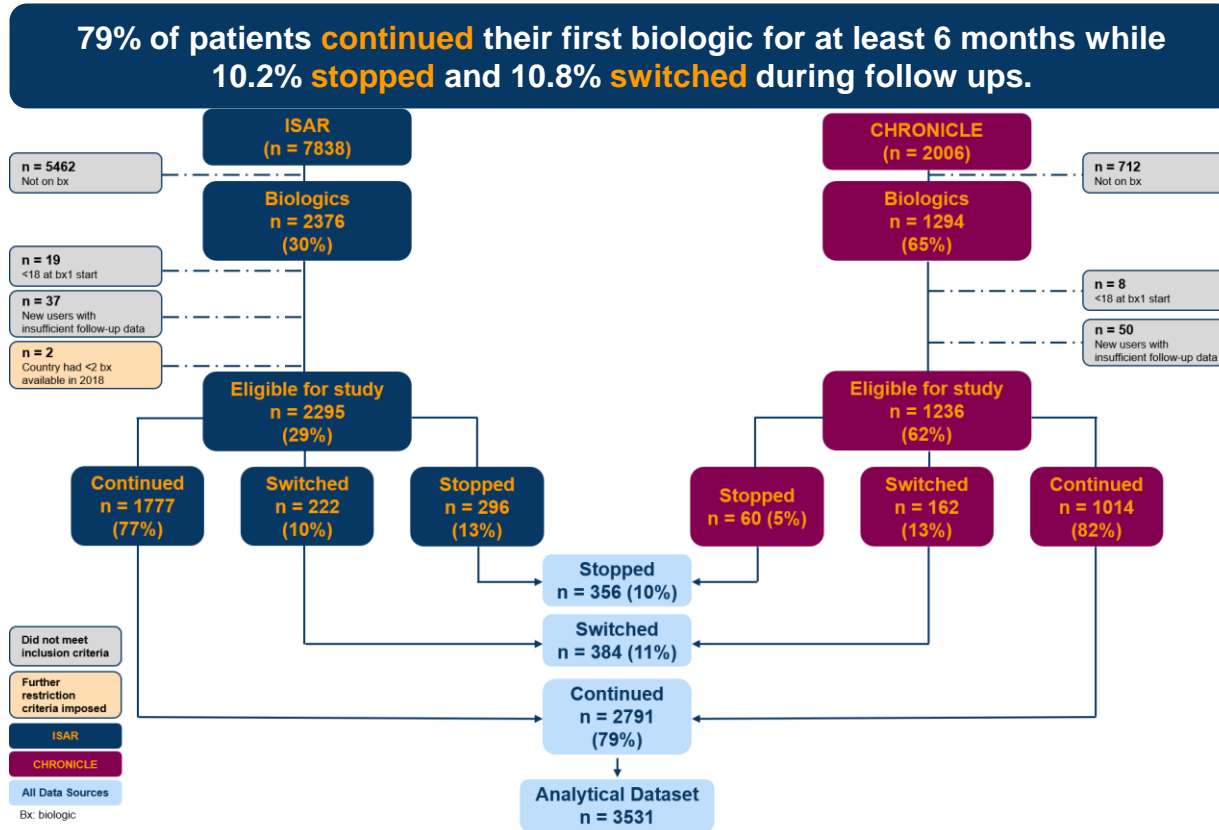


CRS and/or NP refers to CRS with NP, eosinophilic CRS or CRS without nasal polyps.
 BEC = Blood eosinophil count; CRS = Chronic rhinosinusitis; FeNO = Fractional exhaled nitric oxide; FEV1 = Forced expiratory volume in 1 second; FVC = Forced vital capacity; LTOCS = Long-term oral corticosteroids; NP = Nasal polyps
 Menzies-Gow AN, Price D et al. *J Asthma Allergy* 2022;15:63-78.

Over time, the proportional use of **Anti-IgE therapy** ↓ while that of **Anti-IL5/5R therapies** ↑.

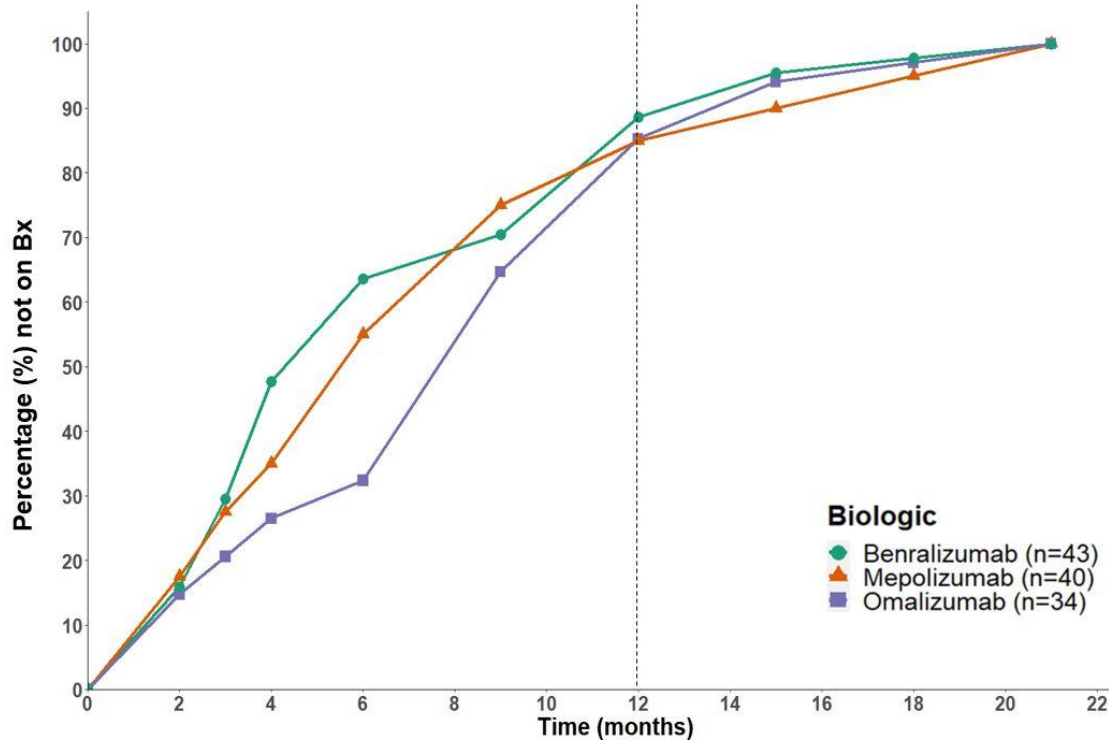


Patterns of biologic use in patients with severe asthma



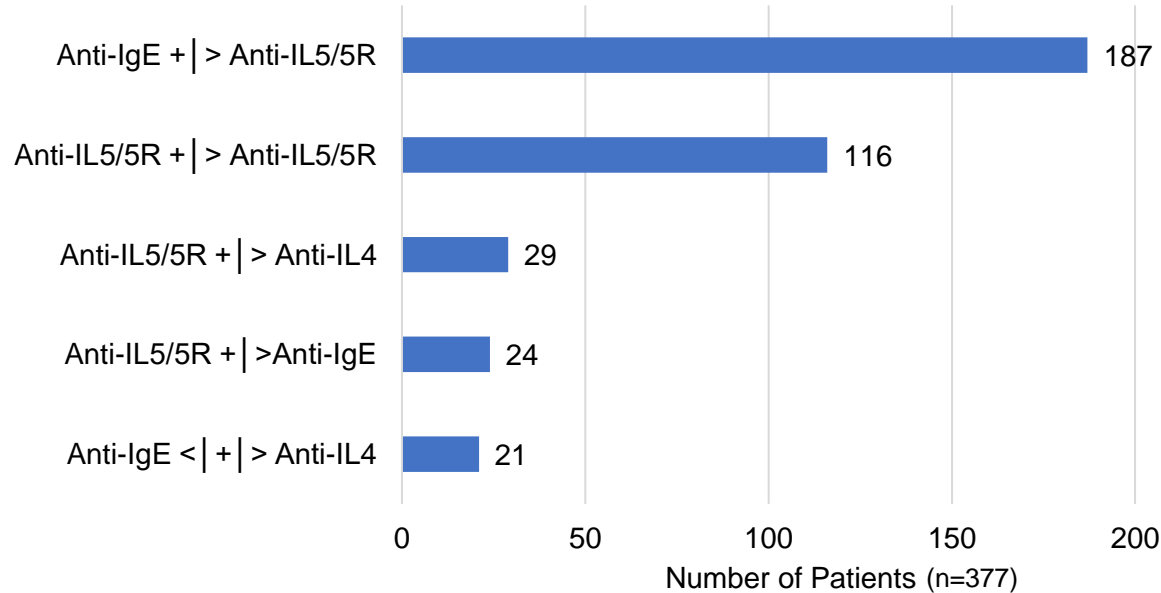
Time to biologic cessation in patients with severe asthma

Most patients stopped their first biologic within 12 months. The time patients received their initial biologic varied for those who switched.



Patterns of biologic switches for patients with severe asthma

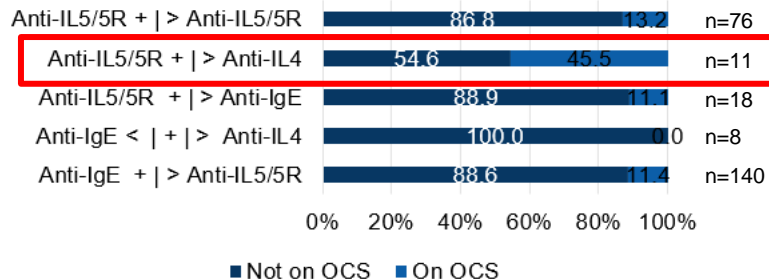
Of patients who stopped or switched their first biologic, the most common **first switch** was from **omalizumab** to (or, rarely, combined with) an **anti-IL-5/5R**.



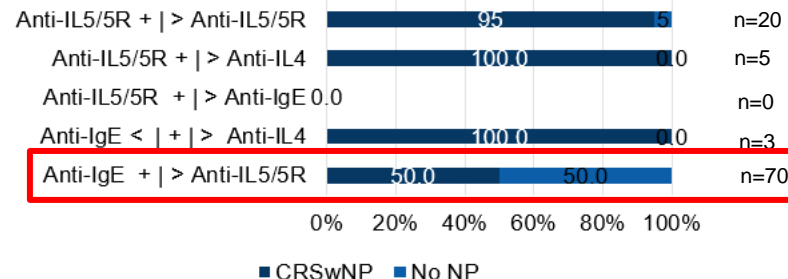
Patterns are mutually exclusive; | : or, < , > : sequence of switch; +: add-on use

Patterns of biologic switches by age, LTOCS use, age of asthma onset and presence of nasal polyps

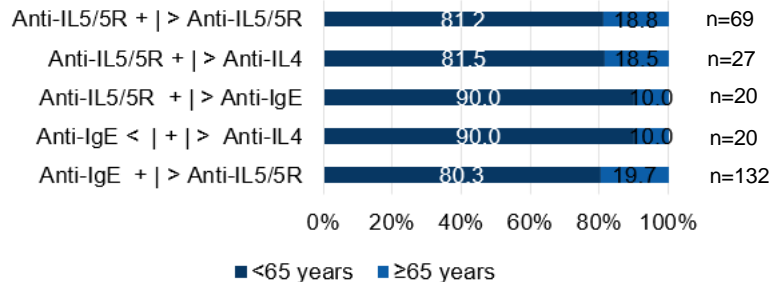
Long-term OCS use



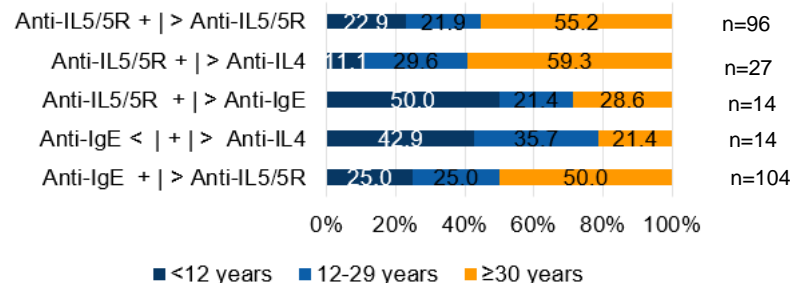
Presence of nasal polyps



Age



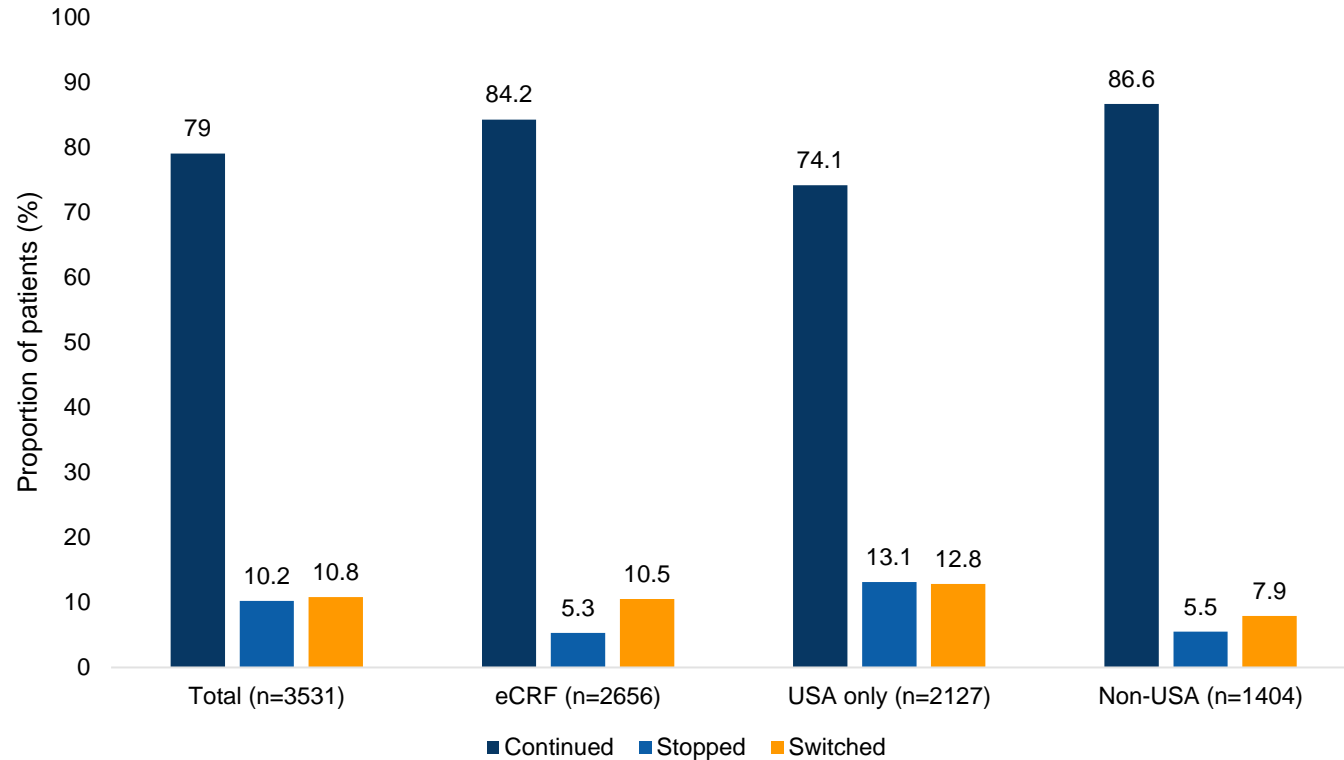
Age of asthma onset



The most commonly cited reasons for stopping or switching a biologic were **insufficient clinical efficacy** and **adverse outcomes**.

Reason	Stopped (n=139)	Switched (n=280)
Reason available n (%)	113	183
Insufficient Clinical Efficacy	72 (63.7%)	158 (86.3%)
Potential Adverse Outcomes	18 (15.9%)	14 (7.7%)
Biologic Access Restriction	8 (7.1%)	5 (2.7%)
Patient Preference	4 (3.5%)	3 (1.6%)
Other	12 (10.6%)	11 (6.0%)

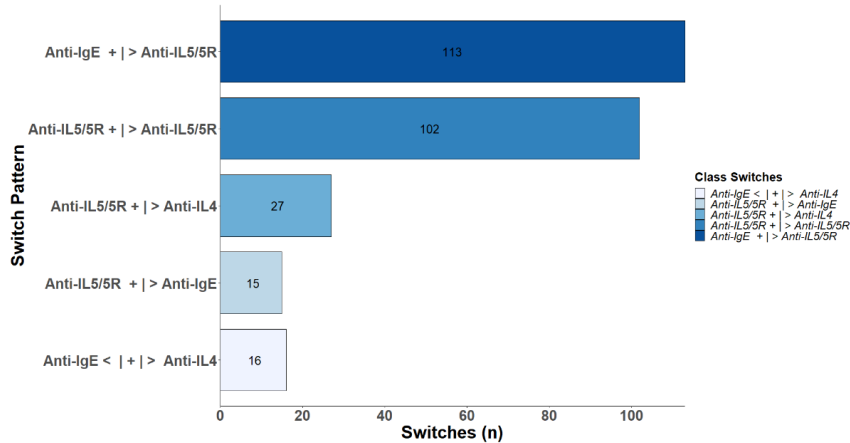
Sensitivity analyses of prospective and non-US patients: Patterns of biologic use



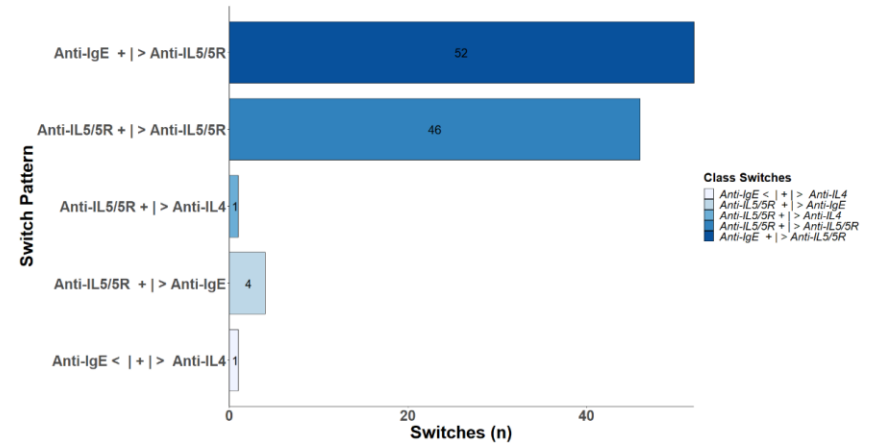
Sensitivity analyses of prospective and non-US patients: Patterns of first biologic switch

Like in the overall population, the most common first switch in prospective and non-US patients was from **omalizumab to an anti-IL5/5R therapy**.

eCRF data only (n=273)



Non-US data only (n=104)



Real World Biologic Use and Switch Patterns in Severe Asthma: Data from the ISAR Asthma Registry and the UK Severe Asthma Network

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Introduction: Intermittent switching between biologics treating severe asthma is common. This study describes patterns of biologic use and switching in the International Severe Asthma Registry (ISAR) and the UK Severe Asthma Network (UK SAN). **Methods:** This was a retrospective analysis of data from the ISAR and UK SAN. Patients who had started a biologic between 2015 and 2020 were included. **Results:** A total of 3531 patients were included. Omalizumab was the most common initial biologic in 2015 (88.2%) and benralizumab in 2019 (29.8%). Most patients (79%, 2791/3531) continued their first biologic, 10.2% (356/3531) stopped, 10.8% (381/3531) switched. The most frequent first switch was from omalizumab to an anti-IL-5/5R (49.6%, 187/377). The most common subsequent switch was from one anti-IL-5/5R to another (44.4%, 20/45). Inefficacy and adverse effects were the most frequent reasons for stopping/switching. Patients who stopped/switched were more likely to have a higher baseline blood eosinophil count and a higher baseline asthma severity score.

Conclusion: The description of real-life patterns of continuing, stopping, or switching biologics enhances our understanding of global biologic use. Prospective studies involving structured switching criteria could ascertain optimal strategies to identify patients who benefit from switching.

Keywords: severe asthma, biologics, respiratory, asthma, asthma management, asthma

Introduction

With the advent of personalized medicine, biologic therapy is becoming a widely used for a number of diseases, including severe asthma.¹ However, it is a paucity of literature on both the frequency and patterns of biologic use in severe asthma, as well as the characterization of pre-biologic patient factors associated with stopping or switching versus continuation of the initial biologic.

Omalizumab was the first available biologic therapy for severe asthma, target immunoglobulin E (IgE) and therefore the allergic asthma phenotype. In recent years, four more monoclonal antibodies have been added to the biologic repertoire. For the eosinophilic phenotype, there are three available biologic agents

Conclusion: The description of real-life patterns of continuing, stopping, or switching biologics enhances our understanding of global biologic use. Prospective studies involving structured switching criteria could ascertain optimal strategies to identify patients who may benefit from switching.



Our findings naturally trigger the question: Is the first biologic prescribed to a patient usually the best one for that individual, or are we under-switching?

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- Registration of the ISAR database with the European Union Electronic Register of Post-Authorization studies was also undertaken (ENCEPP/DSPP/23720). ISAR has ethical approval from the Anonymised Data Ethics Protocols and Transparency (ADEPT) committee (ADEPT0218). All data collection sites in the International Severe Asthma Registry (ISAR) have obtained regulatory agreement in compliance with specific data transfer laws, country-specific legislation, and relevant ethical boards and organizations.