
Biologic Utilization Patterns: Data from the International Severe Asthma Registry (ISAR)

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INTRODUCTION: Use of biologics in severe asthma has grown dramatically in the last decade. However, little is known about the patterns of biologic use in real-life. Our aim was to describe frequency and patterns of biologic use in an international severe asthma cohort.

METHODS: The International Severe Asthma Registry (ISAR; <http://isaregistries.org>) launched in 2017 includes patients aged ≥ 18 years on Global Initiative for Asthma (GINA) Step 5 or GINA Step 4 treatment with uncontrolled symptoms. Severe asthma patients recruited between January 2015 to August 2019 from Bulgaria, Canada, Greece, Italy, Japan, Kuwait, South Korea, Spain, and the United States (US) were included in the analysis (n=6,477). All countries had licences for ≥ 2 biologics. The following biologic utilization patterns were captured: 1) persistence on biologic for ≥ 6 months, 2) stopping (no record of biologic use for ≥ 3 months after the end of the last prescription), or 3) single switch/multiple switches (received a biologic, followed by a switch to another biologic). Both retrospective and prospective medication records were considered.

RESULTS: Of the 6,477 patients with severe asthma, 1,727 were treated with biologics during 2017 to 2019. Of these patients, 73% (n=1,255) persisted with their biologic, 16% (n=280) stopped, and 9% (n=151) switched once or twice to a second or third biologic. Biologic persistence was most prevalent in Italy and least prevalent

in Japan. More patients in the US (27%) stopped their biologic compared to other countries. South Korea had the most patients (33%) who switched biologics, although absolute numbers were low. Of those who switched once to a second biologic (n=122), 84% (n=103) continued on the second biologic. Only 11% (n=16) of 151 patients who switched once switched again to a third biologic, and of those 75% (n=12) persisted on the third biologic.

CONCLUSION: At the time of this data cut, three-quarters of patients with a biologic prescription were maintained on the first biologic therapy, with only a small percentage stopping or switching to another biologic. The majority of those who switched persisted with their second biologic, with only a very small percentage progressing to a third biologic. Patterns of use may be driven by multiple factors such as 1) biologic availability, 2) biologic prescription requirements, 3) country-specific health system issues, 4) patient preference and expectations, and 5) national stopping guidelines. These factors should be considered in future work analysing usage patterns.

Table. Proportion of patients treated with biologic (Bx) and treatment pattern by country					
Country	All patients, n	Patients treated with a Bx, n (% ^a)	Persisted with Bx, n (% ^b)*	Stopped Bx, n (% ^b)*	Switched Bx, n (% ^b)*
Bulgaria	143	30 (21%)	27 (90%)	1 (3%)	2 (7%)
Canada	100	60 (60%)	48 (80%)	3 (5%)	8 (13%)
Greece	38	11 (29%)	10 (91%)	0 (0%)	1 (9%)
Italy	563	363 (64%)	351 (97%)	6 (2%)	6 (2%)
Japan	69	19 (28%)	5 (26%)	2 (11%)	2 (11%)
Kuwait	131	130 (99%)	108 (83%)	3 (2%)	18 (14%)
S. Korea	39	6 (15%)	4 (67%)	0 (0%)	2 (33%)
Spain	249	215 (86%)	170 (79%)	23 (11%)	5 (2%)
USA	5,145	893 (17%)	541 (61%)	242 (27%)	107 (12%)
Total	6,477	1,727 (27%)	1,255 (73%)	280 (16%)	151 (9%)
^a Percentage of all patients; ^b Percentage of patients treated with a biologic; *Utilization pattern for 14 patients to be confirmed					

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