

**Table S1:** Regional criteria for prescription of biologic treatment

REGIONAL PRESCRIPTIVE CRITERIA	
<b>Omalizumab</b>	<p>≥ 6 years of age</p> <p><i>All the following criteria must be present:</i></p> <ul style="list-style-type: none"> <li>• Severe persistent allergic asthma for more than 12 months not controlled by maximally tolerated doses of inhaled glucocorticoids and long-acting beta two agonists</li> <li>• Evidence of positivity for a perennial disease allergen (Prick test or specific IgE)</li> <li>• Total serum IgE [IgE ≥ 76 IU/ml (adolescents and adults) or IgE ≥ 200 IU/ml (children) at treatment initiation] and specific IgE or positive skin test for a perennial allergen</li> <li>• Respiratory function: (FEV<sub>1</sub> &lt; 80%) at the start of treatment</li> <li>• Poor asthma control</li> <li>• Anti-asthmatic therapy at the time of prescription</li> </ul>
<b>Mepolizumab</b>	<p>≥ 6 years of age</p> <ul style="list-style-type: none"> <li>• &gt;150 current eosinophils/mm<sup>3</sup> value in the absence of systemic steroid treatment and at least one value &gt;300 eosinophils/mm<sup>3</sup> in the previous year</li> </ul> <p>AND</p> <ul style="list-style-type: none"> <li>• at least 2 exacerbations of asthma despite maximal inhaled therapy (treated with systemic steroids or requiring hospitalization) in the previous 12 months (Step 4-5 of GINA, from age 12) or despite maximally tolerated inhaled therapy (age 6 to 11)</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• Received continuous oral steroid therapy in addition to maximal inhaled therapy for at least 6 months in the past year (condition only applies to adults 18 years of age and older)</li> </ul>
<b>Benralizumab</b>	<p>≥ 18 years of age</p> <ul style="list-style-type: none"> <li>• &gt;300 eosinophils/mm<sup>3</sup> value in the absence of systemic steroid treatment</li> </ul> <p>AND</p> <ul style="list-style-type: none"> <li>• at least 2 exacerbations of asthma despite maximal inhaled therapy (treated with systemic steroids or requiring hospitalization) in the previous 12 months</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• Received continuous oral steroid therapy in addition to maximal inhaled therapy in the past year</li> </ul>
<b>Dupilumab</b>	<p>≥ 12 years of age</p> <ul style="list-style-type: none"> <li>• &gt;150 eosinophils/mm<sup>3</sup> value</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• &gt; 25 ppb FeNO value</li> </ul> <p>AND</p>

	<ul style="list-style-type: none"> <li>at least 2 exacerbations of asthma despite maximal inhaled therapy, treated with systemic steroids or requiring hospitalization, in the previous 12 months (Step 4-5 of GINA)</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>Received continuous oral steroid therapy in addition to maximal inhaled therapy for at least 6 months in the past year</li> </ul>
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**Table S2:** Number of evaluated patients at T1, T2, T3, T4 for each biologics and the total number of patients at each Time point.

Biologic	N patients Baseline (T0)	T1	T2	T3	T4
Omalizumab	41	40	33	30	25
Mepolizumab	26	26	20	19	9
Benralizumab	18	18	8	1	-
Dupilumab	19	18	-	-	-
N total biologic treated patients at each time point	104	102	61	50	34

**Table S3:** Number of evaluated patients at T1, T2, T3, T4 for each biologics and the total number of patients at each Time point.

Biologic	OCS	1 <sup>st</sup> year	2 <sup>nd</sup> year	3 <sup>rd</sup> year	4 <sup>th</sup> year
Omalizumab	withdrawal	6 (66.6%)	6 (85.71%)	4 (66.6%)	3 (60%)
	continued	3 (33.3%)	1 (14.28%)	2 (33.3%)	2 (40%)
n patients (%)		9 (29.03%)	7 (38%)	6 (46.1%)	5 (62.5%)
Mepolizumab	withdrawal	7 (63.63%)	5 (71.42%)	6 (100%)	3 (100%)
	continued	3 (27.27%)	1 (14.28%)	-	-
	50% reduction	1 (9.09%)	1 (14.28%)	-	-
n patients (%)		11 (35.48%)	7 (38%)	6 (46.1%)	3(37.5%)
Benralizumab	withdrawal	1 (25%)	4 (100%)	1 (100%)	-

	<b>continued</b>	1 (25%)	-	-	-
	<b>50% reduction</b>	2 (50%)	-	-	-
<b>n patients (%)</b>		4 (12.90%)	4 (22%)	1 (100%)	-
<b>Dupilumab</b>	<b>withdrawal</b>	2 (28.57%)	-	-	-
	<b>continued</b>	3 (42.85%)	-	-	-
	<b>50% reduction</b>	2 (28.57%)	-	-	-
<b>n patients (%)</b>		7 (22.58%)			

**Figure S1:** Number and sequence of treatments for all biologic switchers (N=16)

