

## Online Supplement

**Table E1: Pre-biologic 1 demographics and clinical characteristic variables collected.**

<b>Variable</b>	<b>Categories</b>
<b>Age (years)</b>	18-34 35-54 55-79 ≥80
<b>Sex</b>	Female Male
<b>Ethnicity</b>	African Asian Caucasian Mixed/Other/Unknown
<b>Age of asthma onset (years)</b>	<12 12-29 ≥30
<b>Smoking status</b>	Never smoker Ex-smoker Current smoker
<b>Body-mass-index(kg/m<sup>2</sup>)</b>	Underweight Normal weight Overweight Obese
<b>Long-term oral corticosteroids (OCS)</b>	Prevalent use
<b>Invasive Ventilation</b>	≥1
<b>Emergency visits</b>	≥1
<b>Hospitalisations</b>	≥1
<b>Exacerbations</b>	Median exacerbation rate among those on long-term oral corticosteroids (OCS) Median exacerbation rate among those not on long-term OCS
<b>Immunoglobulin E (IgE) (IU/mL)</b>	<150 ≥150 - <400 ≥400
<b>Blood Eosinophil Counts (BEC) (cells/μL)</b>	<300 ≥300
<b>Fractionally exhaled nitric oxide (FeNO) (ppb)</b>	<25 ≥25 - <50 ≥50
<b>Add-on therapy</b>	Long-acting muscarinic antagonist (LAMA) Leukotriene receptor antagonist (LTRA) Theophylline
<b>Allergic rhinitis</b>	Ever
<b>Eczema</b>	Ever
<b>Chronic rhinosinusitis (CRS) and nasal polyps (NP)</b>	CRSwNP (with NP) eCRS (eosinophilic) CRSsNP (without out NP)

**Table E2: Biologics available in each country (n=11) as of May 2019.**

<b>Number of Biologics</b>	<b>Biologic</b>	<b>Country</b>
<b>5</b>	Omalizumab, Mepolizumab, Reslizumab, Benralizumab, Dupilumab	USA, DK, IT, CAN
<b>4</b>	Omalizumab, Mepolizumab, Benralizumab, Dupilumab	JP, KW
<b>4</b>	Omalizumab, Mepolizumab, Reslizumab, Benralizumab	UK, ES
<b>3</b>	Omalizumab, Mepolizumab, Benralizumab,	BG
<b>3</b>	Omalizumab, Mepolizumab, Reslizumab	SK
<b>2</b>	Omalizumab, Mepolizumab	GR

Figure E1: Subject disposition and pattern of biologic use (eCRF population – n=2656).

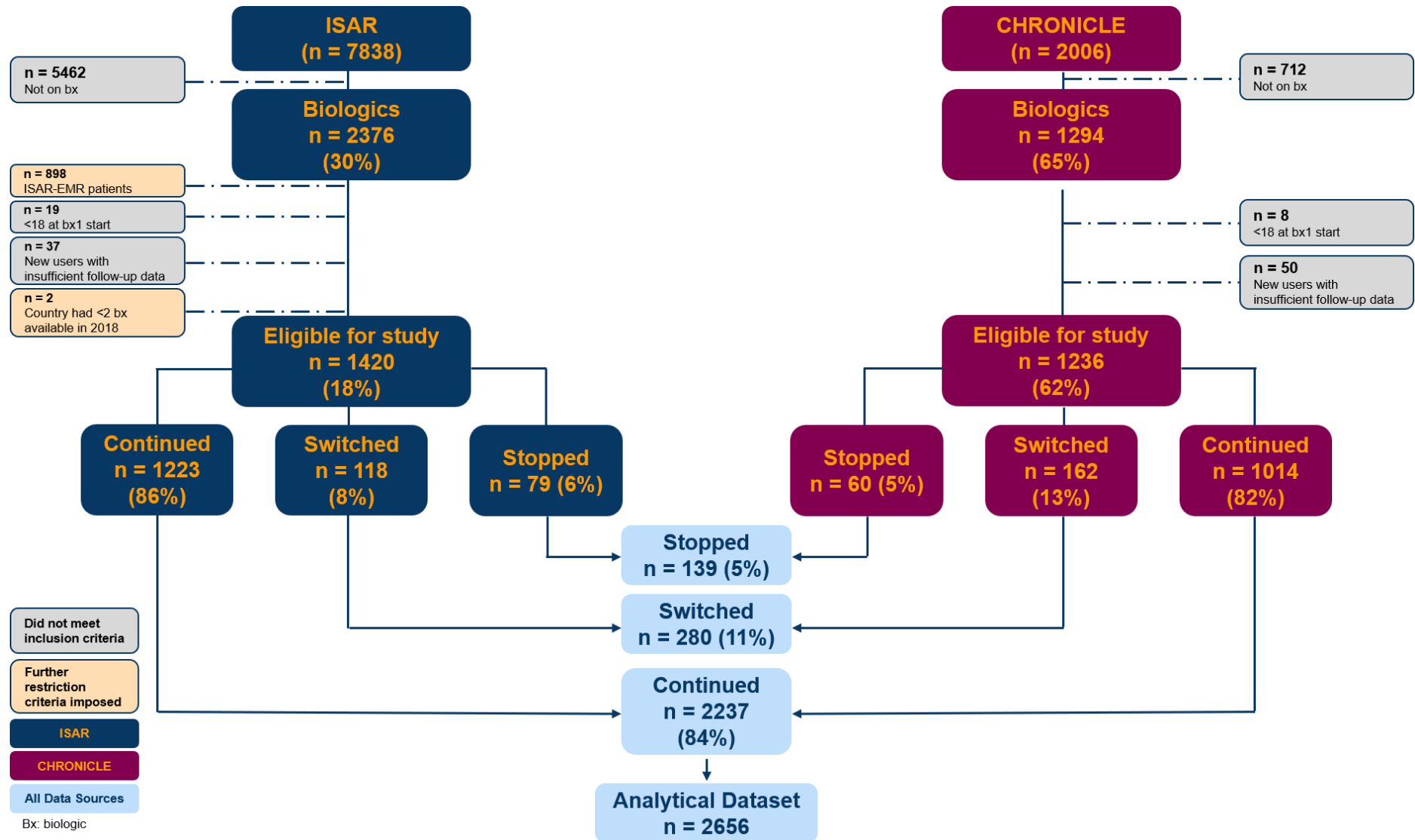


Figure E2: Subject disposition and pattern of biologic use in non-USA (n=1404) and USA (n=2127) populations.

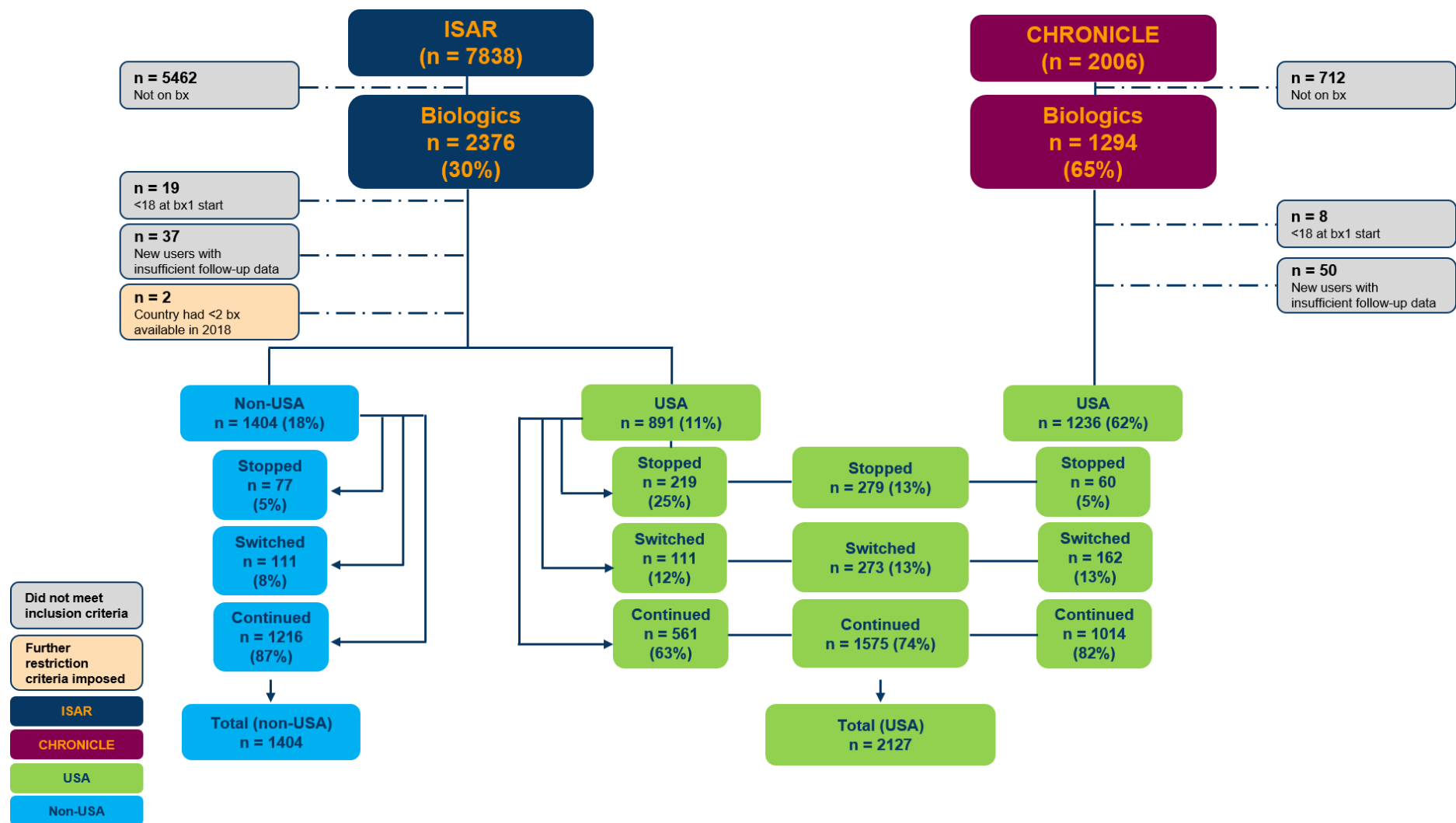


Figure E3: Biologic availability from 2015 to 2019 in 11 countries included in the analysis.

### Increases in biologic availability across countries (n=11) over time

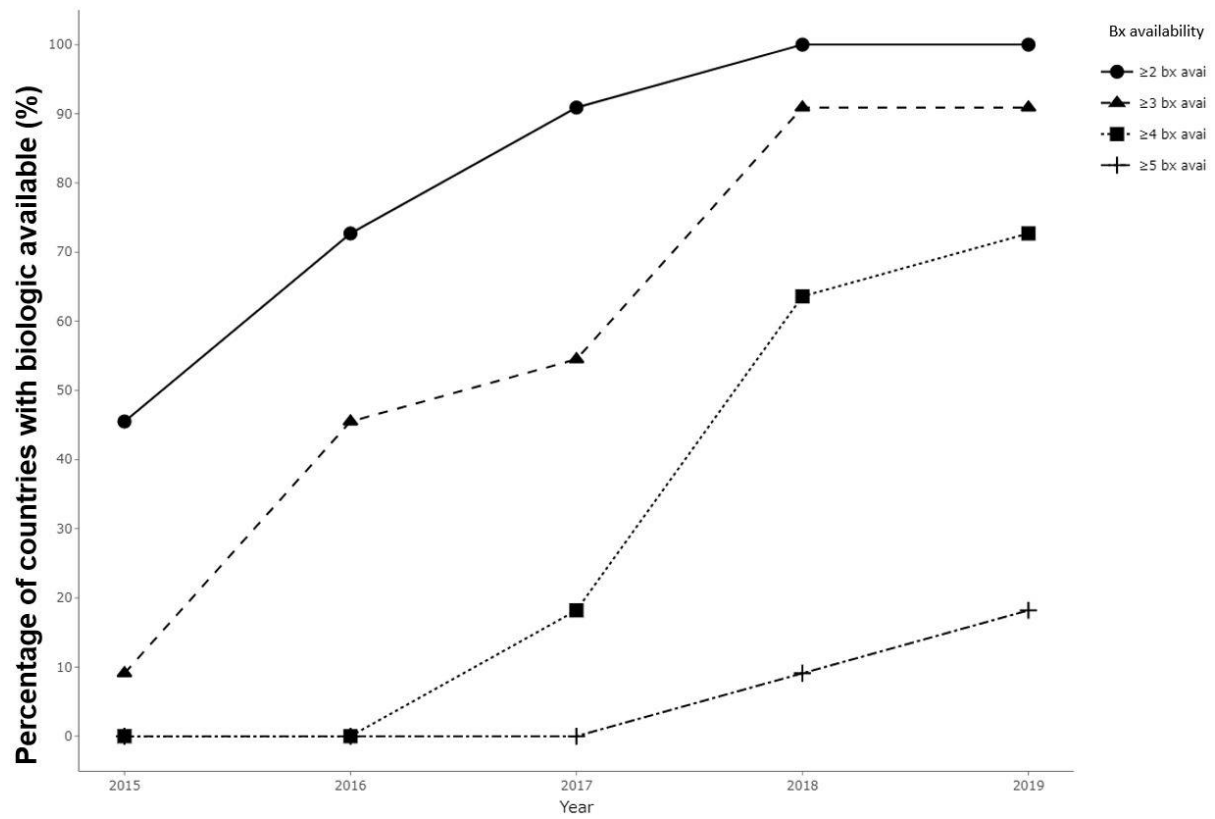
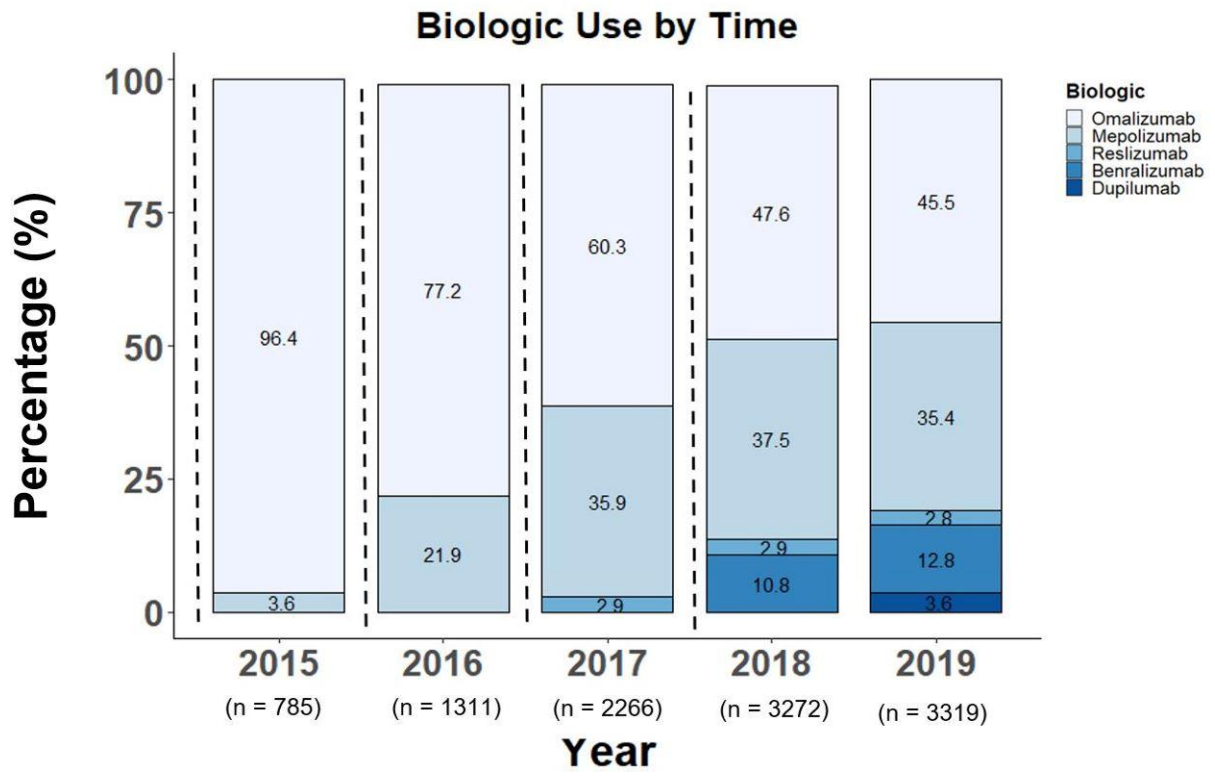
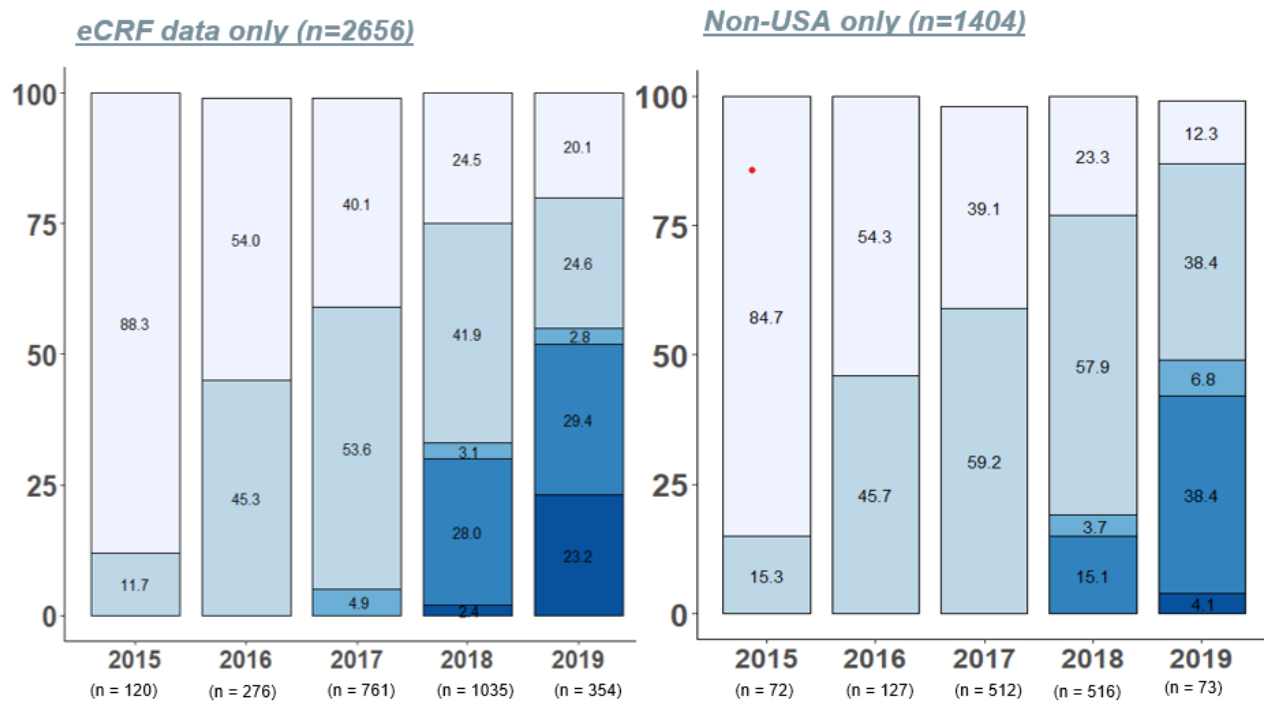


Figure E4: Proportion of patients who used each biologic class during 2015-2019.



**Figure E5: Proportion of patients who started on each class of biologic from 2015 to 2019.**

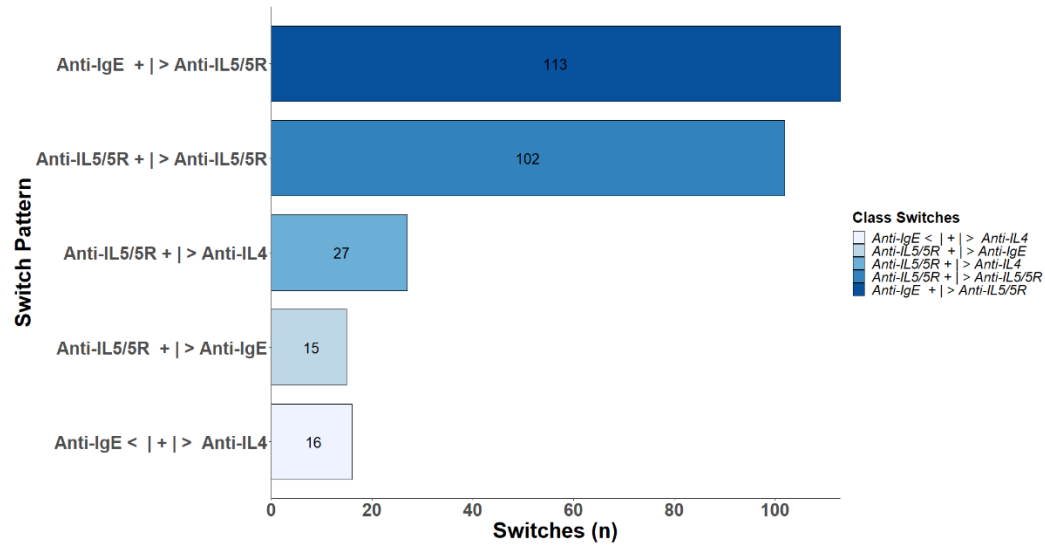


**Biologic**

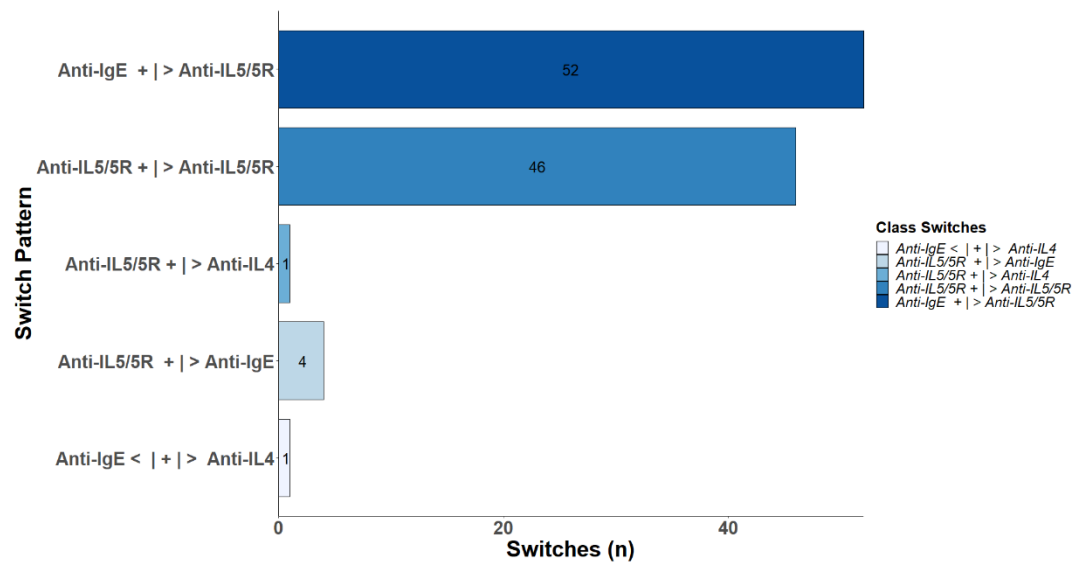
- Omalizumab
- Mepolizumab
- Reslizumab
- Benralizumab
- Dupilumab

**Figure E6: Pattern of biologic switch for first switch.**

**eCRF data only (n=273)**

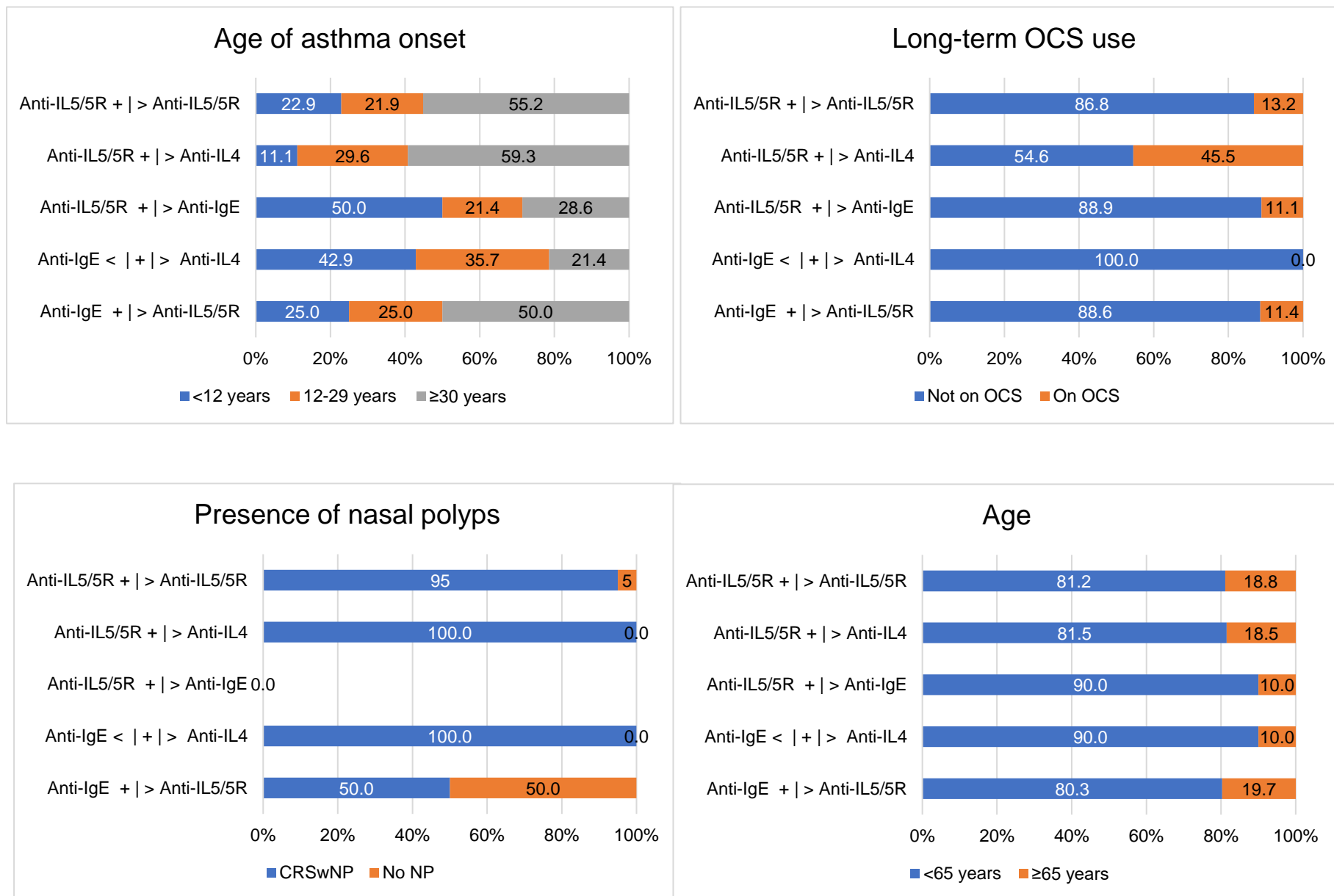


**Non-USA data only (n=104)**





**Figure E7: Pattern of biologic switch for first switch stratified by age, long-term OCS use, age of asthma onset and presence of nasal polyps.**



## Legend

<i>Subgroup</i>	<b>Anti-IgE +   &gt; Anti-IL5/5R</b>	<b>Anti-IgE &lt;   +   &gt; Anti-IL4R</b>	<b>Anti-IL5/5R +   &gt; Anti-IgE</b>	<b>Anti-IL5/5R +   &gt; Anti-IL4R</b>	<b>Anti-IL5/5R +   &gt; Anti-IL5/5R</b>
<i>Long-term OCS</i>	(n=140)	(n=8)	(n=18)	(n=11)	(n=76)
<i>Age (USA)</i>	(n=132)	(n=20)	(n=20)	(n=27)	(n=69)
<i>Nasal polyps</i>	(n=70)	(n=3)	(n=0)	(n=5)	(n=20)
<i>Age of asthma onset</i>	(n=104)	(n=14)	(n=14)	(n=27)	(n=96)

**Figure E8: Pattern of biologic switch for patients with severe asthma enrolled into ISAR or CHRONICLE those who switched more than once (n=45).** IgE: immunoglobulin E; ISAR: International Severe Asthma Registry; IL: interleukin. Patterns are mutually exclusive; | : or , < , > : sequence of switch; +: add-on use

