Comparative Effectiveness of Anti-IL5/5R Versus Anti-IgE in Patients Eligible for Both (FIRE)

Nasloon Ali[1], Juntao Lyu[1], Anthony Newell[1], Mohsen Sadatsafavi[2], Trung N. Tran[3], and David B. Price[1,4], on behalf of the ISAR FIRE Working Group

[1]Observational and Pragmatic Research Institute, Singapore, Singapore; [2]Faculty of Pharmaceutical Sciences, University of British Columbia, Vancouver, British Columbia, Canada; [3]AstraZeneca, Gaithersburg, MD, USA; [4]Centre of Academic Primary Care, Division of Applied Health Sciences, University of Aberdeen, Aberdeen, UK.

Abstract #3715

Introduction

- The two most administered biologic classes are anti-IgE and anti-IL-5/5R within ISAR
- 1/3 of severe asthma patients might be eligible for both[1-4]
- Unclear if one class works better than the other amongst patients eligible for both

Aim

To assess clinical responses of initiating anti-IL5/5R versus anti-IgE among patients eligible for both.

Methods

This is an observational, matched cohort study using patient (≥18 years old, GINA Steps 5 or uncontrolled GINA 4) data from the International Severe Asthma Registry (ISAR; http://isaregistries.org/).

Patient Inclusion
- Meet eligibility criteria for both anti-IgE and anti-IL5/5R
- Patients receiving biologic assumed to meet eligibility criteria for that biologic
- Started biologics after 2014 when both treatment classes were available

Primary outcome
- Exacerbation rate using a partial Poisson regression model
- Matched by baseline age, gender, LTOCS use, and pre-therapy exacerbation

Abbreviations:
- LTOCS: Long-term oral corticosteroids

Methods (cont.)

Criteria for biologic patients to be eligible

Anti-IL5/5R
- Should have ever had a positive skin prick or serum allergen test or atopic asthma (allergic rhinitis or eczema)
- Should have ever had a serum IgE level of 30 IU/ml or more

Anti-IgE
- Should have ever had a BEC ≥300 cells/μL OR BEC ≥150 cells/μL while receiving LTOCS

Results

ISAR Population:
N=10,666

Eligible for Anti-IgE and Anti-IL5/5R
N=2,215, 86.3%

Anti-IgE
N=1,343, 60.7%

Anti-IL5/5R
N=838, 37.8%

Anti-IL4
N=34, 1.5%

Initiated from 2014
N=842, 62.7%

Initiated from 2014
N=760, 90.7%

390 patients matched
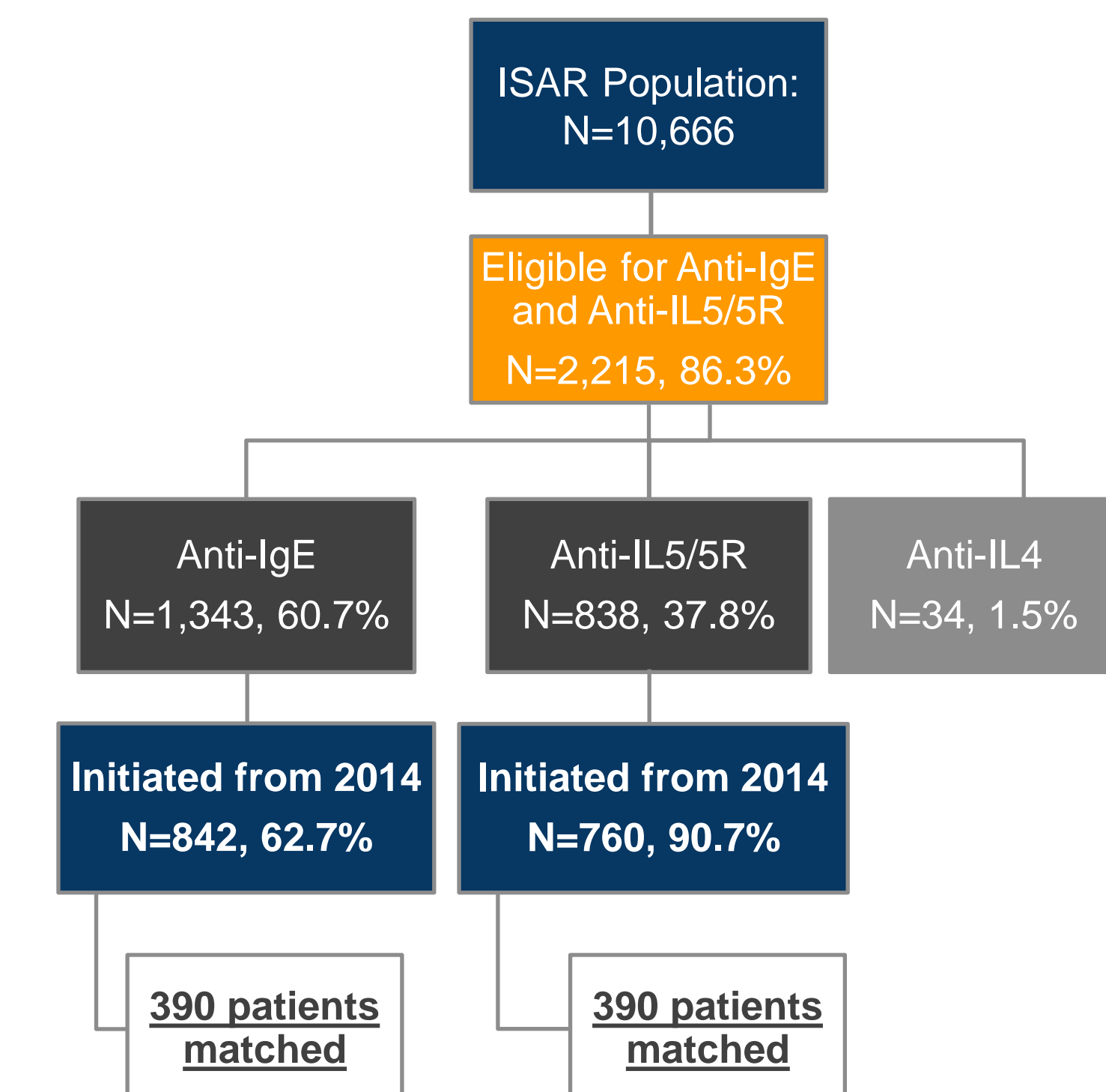
390 patients matched

Figure 1: Study population

Results (cont.)

Table 1: Baseline characteristics of the comparison arms after matching

| Variable of interest	Anti-IgE	Anti-IL5/5R	P-value
	Baseline		
	N=390	N=390	
Age, N (%)	390 (100.0)	390 (100.0)	
18-42	93 (23.9)	93 (23.9)	
42-53	99 (25.4)	99 (25.4)	NA
54-63	96 (24.6)	96 (24.6)	
>64	102 (26.2)	102 (26.2)	
Age of onset of asthma, N (%) Mean ± SD	322 (82.6) 25.7±19.1	372 (95.4) 29.0±17.9	0.01
BMI, N (%) Mean ± SD	199 (51.0) 29.5±7.7	165 (42.3) 28.3±7.0	0.14
Female, N (%)	390 (100.0) 263 (60.6)	390 (100.0) 263 (60.6)	NA
Asthma control, N (%)	153 (39.2)	125 (32.1)	
Not controlled	123 (80.4%)	94 (75.2%)	0.015
Partially controlled	12 (7.8%)	23 (18.4%)	
Well controlled	18 (11.8%)	8 (6.4%)	
Smoking status, N (%)	185 (47.4)	162 (41.5)	
Current	5 (2.7%)	5 (3.0%)	0.42
Ex	47 (25.4%)	51 (31.5%)	
Never	133 (71.9%)	106 (65.4%)	
Exacerbation, N (%)	390 (100.0)	390 (100.0)	
0	122 (31.2)	122 (31.2)	
1	29 (7.5)	29 (7.5)	
2	56 (14.4)	56 (14.4)	NA
3	36 (9.3)	36 (9.3)	
4	37 (9.6)	37 (9.6)	
5±	110 (28.1)	110 (28.1)	
Receiving LTOCS, N (%)	182 (41.9%)	182 (41.9%)	NA
LTOCS dose, N (%) Mean ± SD	13.6±10.1	13.6±10.2	0.943
FEV$_1$/FVC Ratio <0.7, N (%)	219 (56.1) 108 (49.3)	177 (45.3) 92 (52.0)	0.598
Percentage predicted FEV$_1$ ≥80%, N (%)	178 (45.6) 78 (43.8)	176 (45.1) 94 (53.4)	0.07
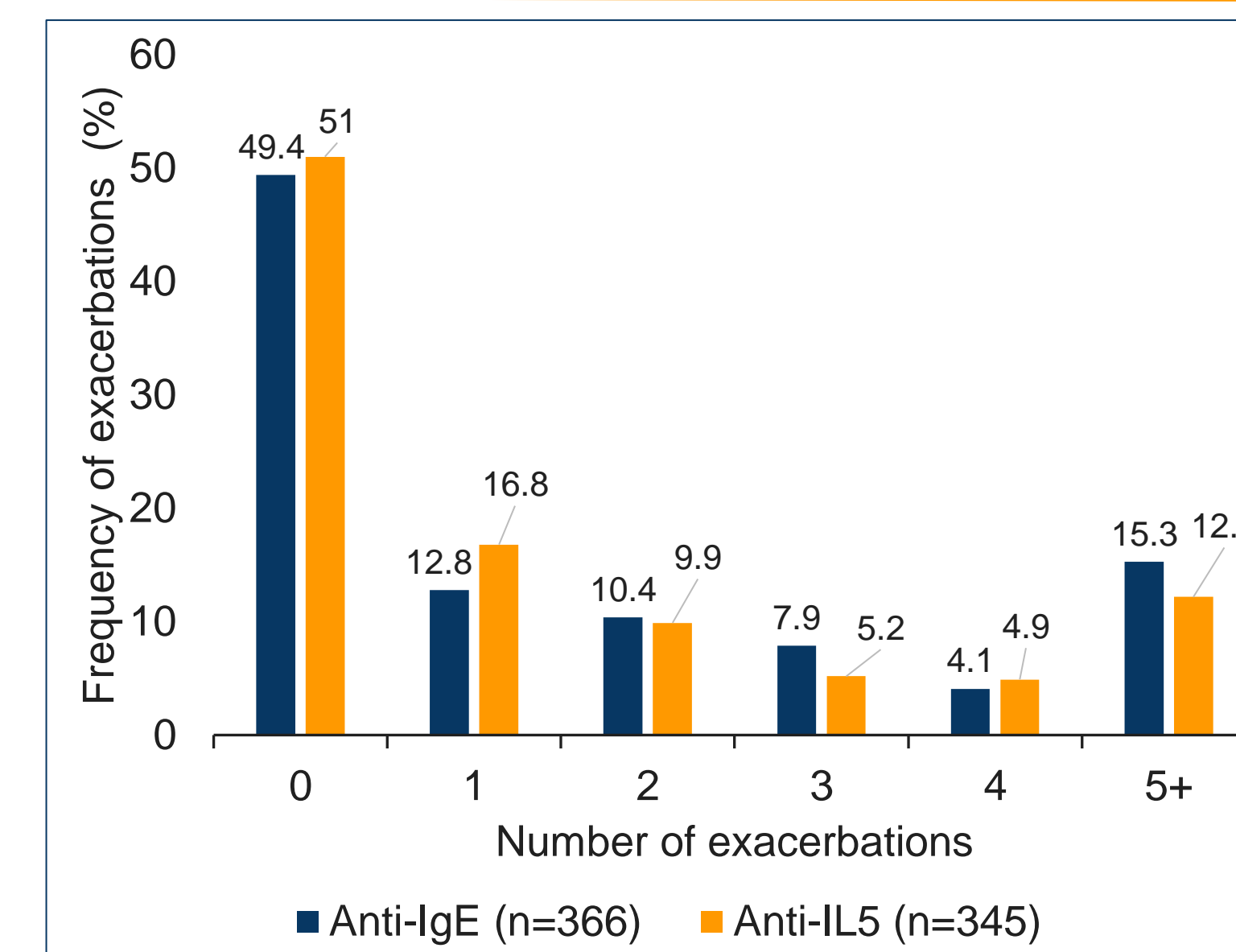
Figure 2: Post-therapy exacerbations among matched biologic groups

Table 2: Secondary outcomes for population with pre- and post-therapy data

Other outcomes	Anti-IgE		Anti-IL5/5R	
	Pre-therapy	Post-therapy	Pre-therapy	Post-therapy
Hospitalization	N=367		N=401	
0, N (%)	324 (88.3)	344 (93.7)	299 (74.5)	357 (89.0)
1, N (%)	17 (4.6)	14 (3.8)	44 (11.0)	31 (7.7)
2, N (%)	10 (2.7)	1 (1.1)	22 (5.5)	4 (1.0)
3+, N (%)	16 (4.4)	5 (1.4)	36 (9.0)	9 (2.2)
LTOCS dose	N=177		N=224	
≤5mg dose, N (%)	28 (15.8)	40 (22.6)	42 (18.8)	79 (35.3)
Lung function	N=261		N=336	
Percentage predicted FEV$_1$ ≥80%, N (%)	136 (52.1)	135 (51.7)	137 (40.7)	154 (45.8)

- Post-matching, a partial Poisson regression model showed anti-IL5/5R patients had a crude post-therapy exacerbation incident rate ratio (IRR) of 0.76 (95% CI: 0.69-0.84) and an adjusted IRR 0.67 (95% CI 0.57-0.80) as compared to Anti-IgE patients.

Other secondary outcomes:
- Hospital admission (IRR: 0.91 (0.45-1.77) did not show significant differences between the two biologic groups
- More patients had ≤5mg LTOCS dose amongst both biologic groups post-therapy
- Lung function improvement (increased percentage predicted FEV$_1$) was more apparent among anti-IL5/5R patients

Conclusions

- **Both biologics result in reduced exacerbations** among severe asthma patients eligible for both treatments.

- **Matched patients receiving anti-IL5/5R** were less likely to report exacerbations compared to patients receiving anti-IgE.

References

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2. Nair P, et al. N Engl J Med 2017; 376: 2448–2458.
3. Jeimy S, et al. Allergy Asthma Clin Immunol 2018; 14: 68.
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Additional COI disclosures

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Audio Summary