Comparative Efficacy of Dupilumab Versus Biologics in Chinese Patients With Uncontrolled Severe Asthma: A Matched-Adjusted Indirect Comparison

Anne-Laure Tardy[1], Chandroday Biswas[2], Olivier Ledanois[3], Cong Zheng[4], Joe Yang[5], Yingxin Xu[5], Yingrui Xu[4], Patricia Guyot[1]

[1]Sanofi, Gentilly, France; [2]Sanofi, Hyderabad, India; [3]Sanofi, Paris, France; [4]Sanofi, Shanghai, China; [5]Regeneron Pharmaceuticals, Inc., Sleepy Hollow, NY, USA

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Asthma

Conclusions

- **Based on MAIC, dupilumab demonstrated statistically significant improvements in lung function versus mepolizumab and benralizumab, and a numerical improvement versus tezepelumab in Chinese patients with uncontrolled severe asthma**
- **Despite limited statistical power, dupilumab showed a consistent numerical advantage in exacerbation reduction versus all comparators. This study, focusing on Chinese patients, showed trends similar to global ITCs, with estimates favoring dupilumab even more strongly but with broader confidence intervals, likely reflecting the smaller sample size in this analysis**

Objective

To assess the comparative efficacy of dupilumab versus mepolizumab, benralizumab, and tezepelumab in Chinese patients with uncontrolled severe asthma using a matching-adjusted indirect comparison (MAIC) approach

Background

- Uncontrolled severe asthma is a type 2-inflammatory disease, which is associated with frequent exacerbations and impaired lung function[1]
- In China, five biologics are approved for asthma: omalizumab (anti-immunoglobulin E)[2], dupilumab (anti-interleukin [IL]-4/IL-13)[3], mepolizumab (anti-IL-5)[4], benralizumab (anti-IL-5 receptor α)[5], and tezepelumab (anti- Thymic Stromal Lymphopoietin)[6]
- However, no head-to-head clinical trials have been conducted to compare these biologics. Although an ITC of dupilumab versus omalizumab was reported in Chinese patients,[7] there is no such data addressing these three biologics, creating an evidence gap for decision-making in health technology assessments

Methods

- We conducted a systematic literature review that identified four Asia-Pacific Phase 3, randomized, placebo-controlled trials suitable for inclusion
- One trial per biologic was included, each conducted in Chinese patients with uncontrolled severe asthma: NCT03782532 for dupilumab (24 weeks; individual patient data [IPD]), NCT03562195 for mepolizumab (52 weeks; aggregate data), NCT03186209 for benralizumab (48 weeks; aggregate data), and NCT03927157 for tezepelumab (52 weeks; aggregate data)

Population alignment

- Dupilumab ITC cohort was aligned with each comparator population by first restricting IPD to Chinese patients with ≥2 exacerbations in the prior year, and then using the matched variables described in **Table 1**

Table 1. Matching variables

Comparison	Variables matched
Dupilumab vs Mepolizumab	Pre-BD FEV_1; mean number of exacerbations in prior year; % EOS ≥300 cells/μL
Dupilumab vs Benralizumab	Mean number of exacerbations in prior year; mean EOS count
Dupilumab vs Tezepelumab	Pre-BD FEV_1; mean EOS count

Note: All potential treatment-effect modifiers could not be simultaneously adjusted while preserving adequate ESS, resulting in residual heterogeneity across trials.

BD, bronchodilator; EOS, eosinophil; FEV_1, forced expiratory volume in 1 second; μL, microliter.

Endpoints

- Change from baseline in pre-bronchodilator forced expiratory volume in 1 second (BD FEV_1) (mL) at Week 24
- Annualized exacerbation rate (AER)

Statistical analysis

- Endpoints were compared using mean differences (MDs) and rate ratios (RRs), respectively, with 95% confidence intervals (CI)
- Anchored MAIC used placebo as the common comparator. Dupilumab IPD were reweighted via MAIC to align with each comparator trial's baseline characteristics for the matched treatment-effect modifiers.
- After MAIC, weighted dupilumab outcomes were compared against each comparator using the Bucher ITC method

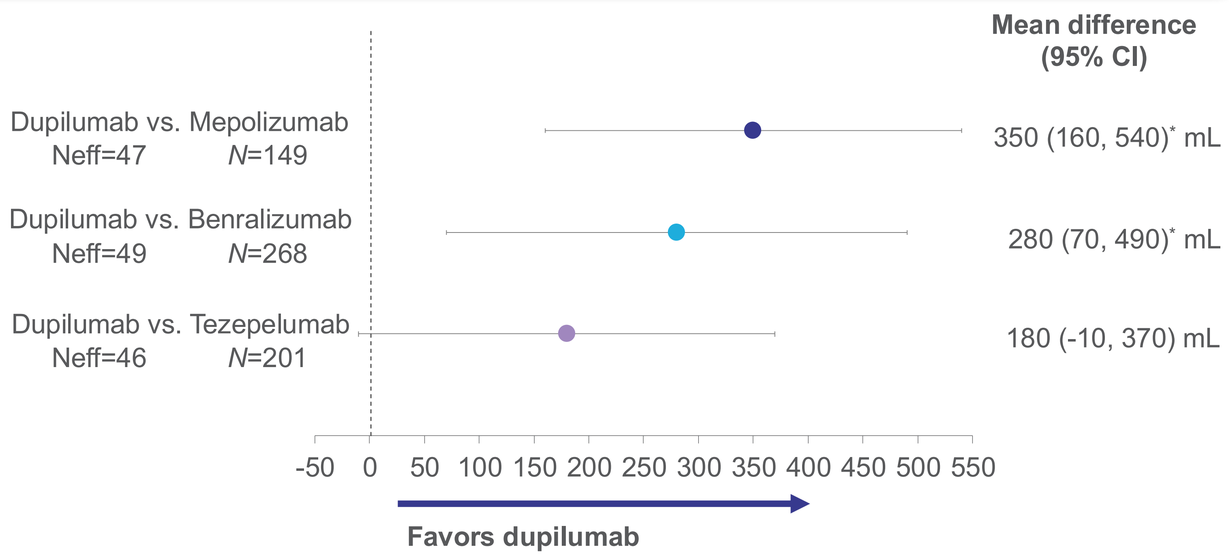
Results

- After restricting to Chinese patients with ≥2 exacerbations in the prior year, 107 patients from the dupilumab trial were retained (dupilumab arm *n*=58; placebo arm *n*=49)
- Post-matching, effective sample size (ESS) retention was >60% across comparisons
- Post-matching ESS (dupilumab/placebo) was ≈46.6/30.6 vs mepolizumab, ≈48.6/41.2 vs benralizumab, and ≈46.2/29.5 vs tezepelumab

Pre-bronchodilator FEV_1 at Week 24

- Dupilumab was associated with statistically significant improvements in pre-bronchodilator FEV_1 at Week 24 versus mepolizumab (350 mL) and benralizumab (280 mL), and a numerical improvement versus tezepelumab (180 mL) (**Figure 1**). Additionally, improvements were numerically higher than in the global population ITC

Figure 1. Pre-Bronchodilator FEV_1 mean differences at Week 24: Dupilumab versus comparator biologics



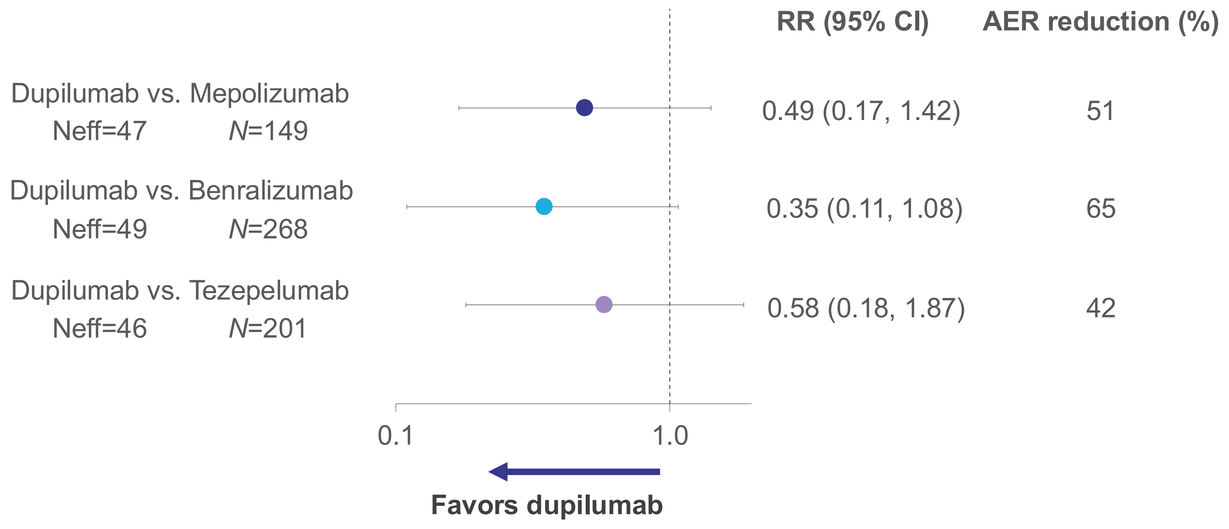
*p<0.05 was considered as statistically significant

CI, confidence interval; FEV_1, forced expiratory volume in 1 second; mL, milliliters; *N*, total number of patients in the comparator trial (comparator plus placebo arms); Neff, effective sample size of the weighted dupilumab arm after matching-adjusted indirect comparison. .

Annualized AER

- Dupilumab was associated with numerically lower AER (RR [95% CI]) versus mepolizumab (0.49 [0.17, 1.42]), benralizumab (0.35 [0.11, 1.08]), and tezepelumab (0.58 [0.18, 1.87]) (**Figure 2**), consistent with the global ITC but are non-significant given the small sample size

Figure 2. Annualized exacerbation rate: Dupilumab versus comparator biologics



Note: Values <1.0 indicate lower exacerbation rates with dupilumab. Non-significance in AER comparisons is likely attributable to small ESS post-MAIC restriction (ESS 30–49). These findings should be interpreted as exploratory.

CI, confidence interval; AER, annualized exacerbation rate; ESS, effective sample size; RR, rate ratio; *N*, total number of patients in the comparator trial (comparator plus placebo arms); Neff, effective sample size of the weighted dupilumab arm after matching-adjusted indirect comparison.

Limitations

- The sample size from dupilumab trial was small after considering the inclusion criterion of ≥2 exacerbations in the prior year. Not all baseline variables could be adjusted while preserving ESS, resulting in residual heterogeneity despite MAIC
- Dupilumab trial had a relatively short trial duration (i.e. 24 weeks) limiting the feasibility of long-term comparisons

References:

1. Global Initiative for Asthma. Global Strategy for Asthma Management and Prevention: GINA 2026 Strategy Report. Global Initiative for Asthma; 2026. Accessed September, 2026. Available at: https://ginasthma.org/wp-content/uploads/2026/05/GINA-2026-Strategy-Report-WMS.pdf
2. Zhuole® (omalizumab). Press release. Novartis China. August 31, 2022. Accessed September 2026. Available at: https://www.novartis.com.cn/news/newly-approved-novartis-zhuole-omalizumab-prefilled-injection-home-use-preparation-approved-in-china
3. DUPIXENT® (dupilumab). Prescribing Information. Sanofi (China) Pharmaceutical Co., Ltd. China National Medical Products Administration. Accessed September 2026. Available at: https://www.sanofi.cn/assets/dot-cn/pages/docs/products/prescription-products/Dupilumab-20250711-300mg-PFP-PI.pdf.
4. SYNCOLAI® (mepolizumab). Press Release. GlaxoSmithKline China. Accessed September 2026. Available at: https://www.gsk-china.com/zh-cn/media/press-releases/nucala-crswnp.
5. FASENRA® (benralizumab). Press Release. AstraZeneca China. August 20, 2024. Accessed September 2026. Available at: https://www.astrazeneca.com/media-centre/press-releases/2024/fasenra-approved-in-china-for-the-treatment-of-severe-eosinophilic-asthma.html#.
6. TEZSPIRE® (tezepelumab). Press Release. AstraZeneca China. August 27, 2026. Accessed September 2026. Available at: https://www.astrazeneca-us.com/media/press-releases/2026/TEZSPIRE-CROSSING-TRIAL-MET-PRIMARY-ENDPOINTS.html.
7. Ou C, Lu C, Li N, et al. Indirect treatment comparison of dupilumab and omalizumab in Chinese patients with asthma [Poster]. CTS 2024; September 19–22, 2024; Hangzhou, China.

Conflicts of interest:

Tardy AL, Biswas C, Ledanois O, Zheng C, Xu Y, and **Guyot P:** Sanofi – employees and may hold stocks and/or stock options in the company.
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