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# Increased adherence to biologic therapies leads to lower all-cause and asthma-related HCRU costs in severe asthma

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This poster is being presented by Elise Kuylen (an employee of GSK) on behalf of the authors

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*At the time of the analysis

**Higher adherence to biologic therapies** was associated with **reduced all-cause and asthma-related HCRU costs** in patients with severe asthma, highlighting the importance of **treatment adherence** in **optimising clinical** and **economic outcomes and guiding therapeutic decisions**

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## Background

- Inconsistent control of inflammation in severe asthma can lead to unpredictable exacerbations, significant morbidity and mortality and reduced QoL, placing a substantial burden on patients and HCRU[1]
- Despite optimal use of standard of care therapies (SABA, ICS, LABA, and OCS), some patients with severe asthma do not achieve adequate disease control; for these patients, add-on biologic therapy may be an appropriate option[2]
- Clinical trials have shown that biologics can reduce exacerbations, improve lung function and enhance QoL in patients with severe asthma[3]
- Previous research suggests that adherence to biologic therapy is associated with improved clinical outcomes,[4] but evidence remains limited and further studies are needed

## Aim

To evaluate the relationship between adherence to biologic therapy and HCRU costs

## Methods

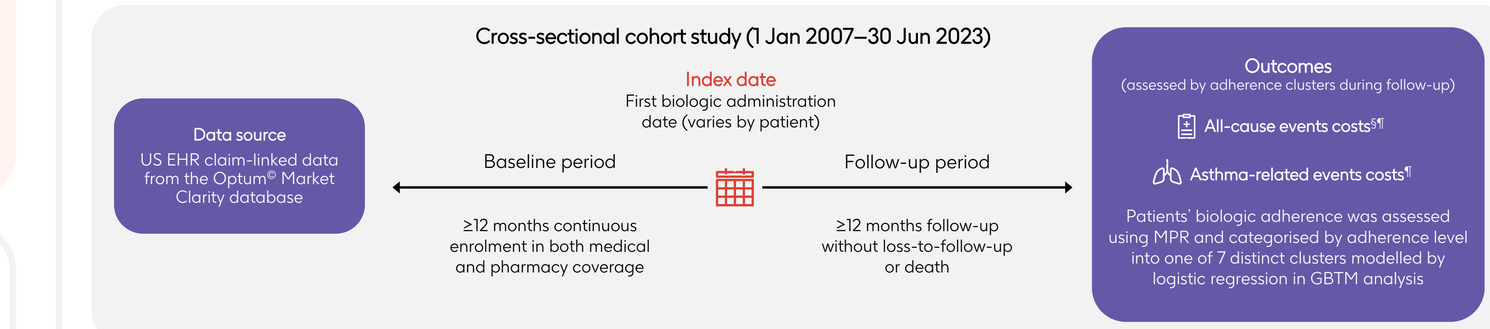
GSK ID: 214570; Study design

**Patient inclusion criteria**

- ≥18 years of age
- Asthma diagnosis* in the 12 months prior to first biologic administration
- Initiated 1 of 6 approved asthma biologics: benralizumab, dupilumab, mepolizumab, omalizumab, reslizumab or tezepelumab†
- No prior asthma biologic use at any time prior to index
- Unique ICS + LABA prescription within 90 days prior to and including asthma diagnosis date

**Patient exclusion criteria**

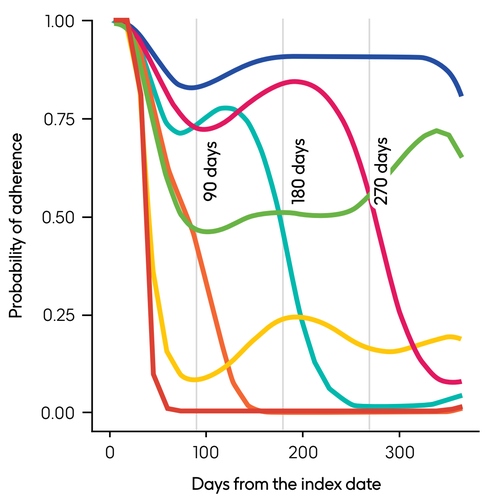
- Previous diagnosis of lung malignancies, TB or CF‡ any time prior to index
- Diagnosis of chronic spontaneous urticaria or atopic dermatitis‡ with ±7 days of index
- Prescriptions of multiple biologics on index date
- No evidence of prescriptions from a dermatologist at any time
- HES and EGPA diagnosis‡ any time before the end of follow-up




*Based on ICD-9-CM 493x and ICD-10-CM J45x codes from either EHR or claims databases; †biologic prescriptions and administrations identified using HCPCS and NDC codes; ‡based on ICD-9-CM/ICD-10-CM codes from either EHR or claims databases; §MPR for each biologic was calculated by dividing the number of days with medication possession by the total number of days in the 12-month follow-up; ¶biologic administration-related costs were excluded from all-cause and asthma-related event costs*

## Results

Figure 1: **Of the 9553 patients who did not switch biologic therapy during the follow-up and were included in GBTM, 21.2% were highly adherent to their biologic therapy (Cluster A)**




- **A** Highest adherence: n=2024 (21.2%); MPR 91.6%
- **B** Late-stage stopper: n=769 (8.1%); MPR 63.0%
- **C** Intermittent adherence: n=1315 (13.8%); MPR 59.4%
- **D** Half-way stopper: n=791 (8.3%); MPR 39.1%
- **E** Fluctuated stopper: n=109 (11.4%); MPR 23.5%
- **F** Delayed stopper: n=1144 (12.0%); MPR 19.1%
- **G** Lowest adherence: n=2420 (25.3%); MPR 7.5%

Table 1: **Baseline patient characteristics were generally comparable across clusters, except for higher proportion of obese patients and higher weighted CCI in the low-adherent clusters (E, F, G)***

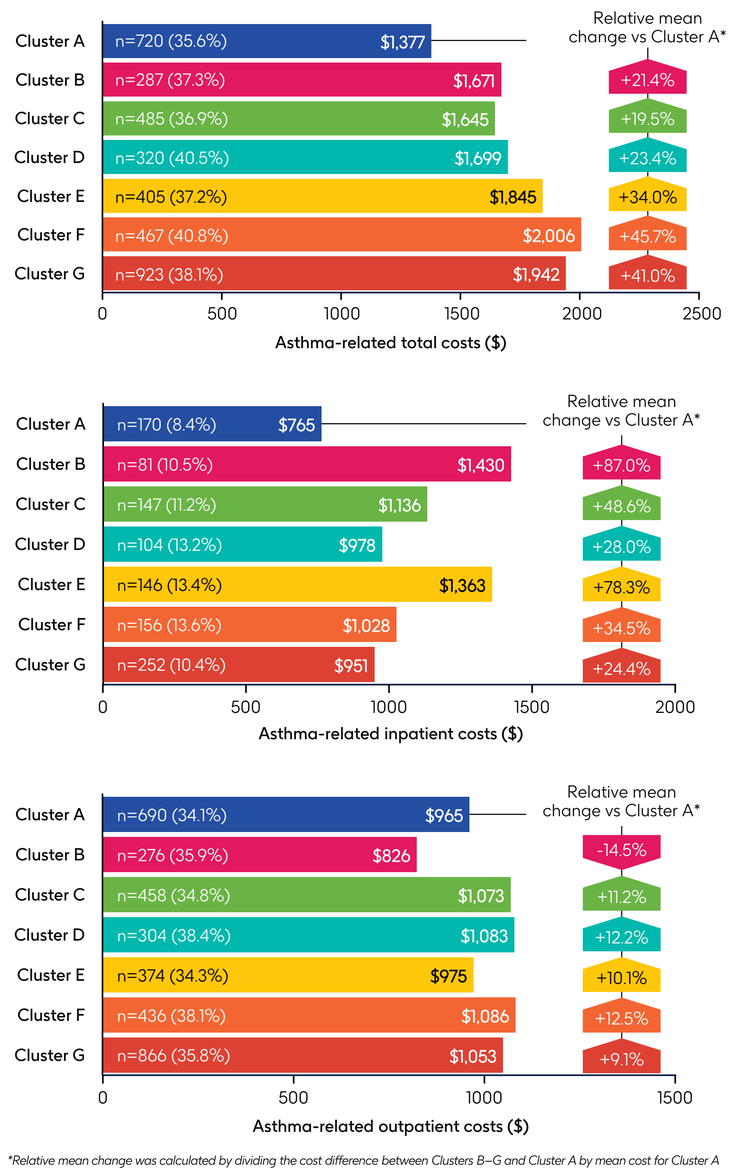
| | Cluster A | Cluster B | Cluster C | Cluster D | Cluster E | Cluster F | Cluster G |
|---|---|---|---|---|---|---|---|
| Age, years, median (IQR) | 57.8 (48.1, 65.7) | 55.0 (44.4, 64.0) | 55.4 (44.9, 63.5) | 55.2 (44.3, 63.0) | 56.3 (45.4, 65.7) | 56.6 (44.2, 64.8) | 56.3 (44.2, 65.4) |
| Female (%) | 64.6 | 67.2 | 64.9 | 60.9 | 62.8 | 65.6 | 66.1 |
| Race (%) | | | | | | | |
| African American | 11.3 | 13.3 | 13.4 | 15.9 | 16.6 | 11.8 | 15.8 |
| Asian | 1.6 | 1.8 | 1.4 | 1.9 | 2.8 | 2.2 | 1.9 |
| Caucasian | 76.2 | 71.7 | 71.2 | 70.3 | 69.9 | 74.1 | 72.2 |
| Other/Unknown | 10.9 | 13.3 | 14.1 | 11.9 | 10.7 | 11.9 | 10.1 |
| BMI (%) | | | | | | | |
| Underweight | 0.5 | 0.3 | 0.5 | 0.1 | 0.9 | 0.6 | 0.6 |
| Normal | 8.2 | 9.5 | 7.9 | 8.5 | 11.5 | 9.2 | 10.6 |
| Overweight | 17.9 | 14.7 | 13.3 | 13.5 | 19.3 | 16.3 | 20.0 |
| Obese | 34.0 | 32.6 | 29.3 | 32.5 | 42.8 | 38.1 | 45.6 |
| Unknown | 39.3 | 42.9 | 49.0 | 45.4 | 25.6 | 35.8 | 23.3 |
| Weighted CCI, median (IQR) | 27 (0, 216) | 27 (0, 162) | 27 (0, 162) | 27 (0, 216) | 108 (0, 297) | 54 (0, 216) | 135 (14, 297) |
| Blood IgE level, median (IQR) | 184.0 (52.5, 539.9) | 153.5 (59.3, 406.8) | 171.0 (61.3 440.3) | 183.8 (59.0, 497.0) | 181.1 (61.8, 487.3) | 186.1 (73.4, 552.8) | 177.0 (62.5, 445.5) |
| BEC, median (IQR) | 220.0 (100.0, 460.0) | 210.0 (100.0, 500.0) | 200.0 (100.0, 400.0) | 200.0 (100.0, 400.0) | 200.0 (100.0, 421.5) | 200.0 (100.0, 400.0) | 200.0 (100.0, 400.0) |
| $FEV_1$, median (IQR) | 1.6 (1.2, 2.1) | 1.6 (1.3, 2.0) | 1.6 (1.1, 1.9) | 1.6 (1.2, 2.0) | 1.6 (1.1, 1.9) | 1.6 (1.2, 1.9) | 1.6 (1.3, 1.9) |

*Missing data may have influenced the differences across clusters and limited interpretability of some findings*

Figure 2: **All-cause healthcare costs were generally higher in clusters with lower adherence across all categories compared with Cluster A, except for event-specific and outpatients costs, which were lower in Cluster B**


*Relative mean change was calculated by dividing the cost difference between Clusters B–G and Cluster A by mean cost for Cluster A*

Figure 3: **Asthma-related total costs generally increased with decreasing adherence across Clusters A–G compared with Cluster A, while inpatient and outpatient costs did not show a clear trend by adherence level**




*Relative mean change was calculated by dividing the cost difference between Clusters B–G and Cluster A by mean cost for Cluster A*

## Conclusions

**Higher biologic adherence** was consistently associated with **reduced** all-cause and asthma-related **HCRU costs** in patients with severe asthma

These findings highlight the importance of **supporting adherence to biologics to achieve both clinical** and **economic benefits**

Demonstrated reductions in costs **strengthen the case for adherence-enhancing strategies,** including biologics with longer dosing intervals, patient support programmes and adherence-focused interventions

## Abbreviations

BEC, blood eosinophil count; BMI, body mass index; CCI, Charlson Comorbidity Index; CF, cystic fibrosis; EGPA, eosinophilic granulomatosis with polyangiitis; EHR, electronic health record; $FEV_1$, forced expiratory volume in 1 second; GBTM, group-based trajectory modelling; HCPCS, Healthcare Common Procedure Coding System; HCRU, healthcare resource utilisation; HES, hypereosinophilic syndrome; ICD, International Classification of Diseases; ICS, inhaled corticosteroid; IgE, immunoglobulin E; IQR, interquartile range; LABA, long-acting $\beta_2$-agonist; MPR, medication possession ratio; NDC, National Drug Code; OCS, oral corticosteroid; QoL, quality of life; SABA, short-acting $\beta_2$-agonist; TB, tuberculosis; US, United States

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