Cost-Utility Analysis of Budesonide/Glycopyrrolate/Formoterol Fumarate versus Fluticasone Furoate/Umeclidinium/Vilanterol for Moderate-to-Very Severe COPD in China

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Why did we perform this research?

- COPD affects ~100 million adults in China (prevalence 13.7% in adults ≥40 years), yet disease awareness remains low at 2.6%. [1] Furthermore, the majority of patients remain undertreated, with a substantial proportion lacking regular maintenance therapy.[2] For symptomatic patients with a history of frequent and/or severe exacerbations, two single-inhaler triple therapies have been acknowledged in GOLD 2026 as reducing COPD mortality compared with LABA/LAMA therapy[s] (budesonide/glycopyrrolate/formoterol fumarate [BGF] in ETHOS[3]; fluticasone furoate/umeclidinium/vilanterol [FF/UMEC/VI] in IMPACT[4]).
- A Matching-Adjusted Indirect Comparison (MAIC) showed greater all-cause mortality reduction with BGF versus FF/UMEC/VI (HR 0.61; 95% CI: 0.38–0.95; p=0.030).[6] However, the comparative cost-effectiveness of these two triple therapies from a Chinese payer perspective remains unknown.
- To adapt a published cost-effectiveness model to evaluate BGF versus FF/UMEC/VI in patients with moderate-to-very severe COPD who are eligible for triple therapy, from the Chinese healthcare payer perspective. [7]

How did we perform this research?

Model adaptation

A previously published semi-Markov cohort model comparing BGF versus FF/UMEC/VI from a UK NHS perspective[7] was adapted to the Chinese healthcare setting. The model consists of four COPD severity levels based upon GOLD grades (Moderate/Severe/Very Severe/Death), each stratified by exacerbation history. Exacerbations were modelled as transient tunnel states with a monthly cycle length.[7]

China-specific inputs

- HCRU and unit costs derived from a multi-center Chinese hospital database (N=3,545 patients with COPD; records ≥2019). **See Supplementary Table 1 for cost inputs.**
- Baseline characteristics from the KRONOS China subgroup[8]: mean age 64.4 years; 91.9% male; GOLD 2/3/4: 42.6%/48.1%/9.3%.

Inputs retained from the previous model, with background mortality adjusted to Chinese life tables.

- Transition probabilities on severity and exacerbation rates from ETHOS and KRONOS, with rate ratios versus BGF applied from a published NMA.[9] All-cause mortality from the published MAIC.[6]

Endpoints: 1-year base-case time horizon; costs and QALYs discounted at 5% per annum.

Sensitivity analyses: DSA (±95% CI) and PSA (1,000 Monte Carlo simulations).

E-poster

Supplementary material

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Poster presented at ISPOR 2026; Philadelphia, PA, USA; May, 17-20, 2026

What did we find?

Table 1: BGF is a less costly and more effective (dominant) treatment strategy versus FF/UMEC/VI at the 1-year time horizon

Total incremental costs	Incremental LYs	Incremental QALYs
−¥354	**+0.003**	**+0.002**
per patient per year	*life-years gained*	*QALYs gained*

Base-case results (1-year time horizon)

- Over 1-year, total costs per patient were ¥9,091 for BGF versus ¥9,445 for FF/UMEC/VI. Economic savings were primarily driven by reduced end-of-life care costs (−¥250) from BGF's mortality benefit, which offset the slight increase in disease management costs (+¥30) from extended survival (Figure 1).
- DSA confirmed BGF remained cost-saving across all parameter variations (Figure 2). PSA results were consistent with base-case findings (Figure 3).

Figure 1: Incremental cost breakdown (¥ per patient, 1-year)

** End-of-life care cost (¥33,499) derived from hospital unit cost analysis and expert consultation.*

Limitations

- Comparative efficacy derived from a MAIC; unobserved confounding cannot be fully eliminated.
- 1-year time horizon anchored to 52-week trial data; long-term cost-effectiveness could not be assessed.
- Hospital-centric RWE database may over-represent severe cases.

Figure 2: In PSA (1,000 iterations), BGF was cost-saving in the majority of simulations, with all iterations clustered in the southeast quadrant

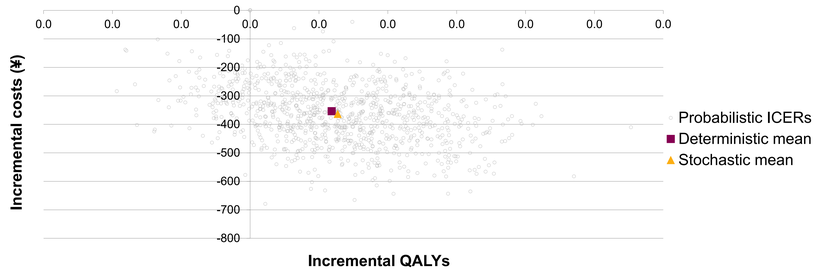
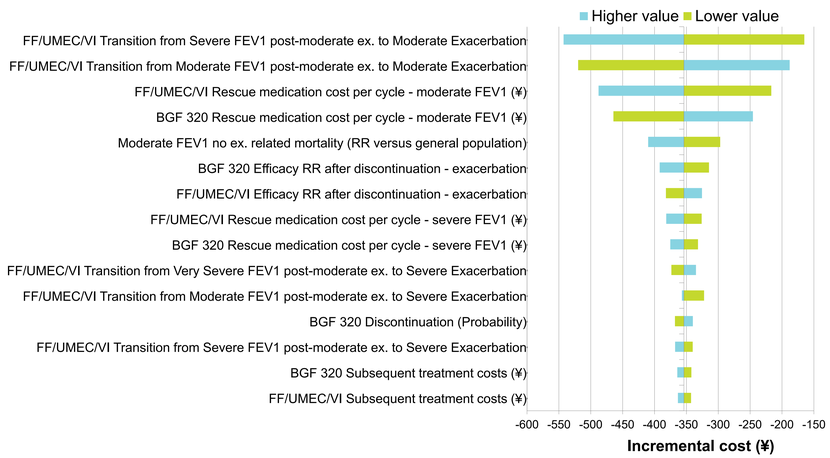


Figure 3: DSA show that the model is most sensitive to subsequent treatment costs and treatment discontinuation probability, with BGF remaining cost-saving across all parameter variations



** BGF maintains dominance through a FF/UMEC/VI price reduction of up to ~10%. Between 10–15%, BGF transitions to cost-effective.*

How might this impact current clinical practice?

- BGF represents a **cost-saving** and more effective therapeutic option for patients with moderate-to-very severe COPD in China versus FF/UMEC/VI, with **−¥354 savings and improved survival** per patient per year.
- By integrating local RWE and accounting for the all-cause mortality benefit from MAIC, this study demonstrates that BGF's clinical advantages translate into considerable economic value for Chinese payers.

Abbreviations

AECOPD, acute exacerbation of COPD; BGF, budesonide/glycopyrrolate/formoterol fumarate; COPD, chronic obstructive pulmonary disease; DSA, deterministic sensitivity analysis; FEV_1, forced expiratory volume in 1 second; FF/UMEC/VI, fluticasone furoate/umeclidinium/vilanterol; GOLD, Global Initiative for Chronic Obstructive Lung Disease; HR, hazard ratio; ICS, inhaled corticosteroid; LABA, long-acting β_2-agonist; LAMA, long-acting muscarinic antagonist; MAIC, matching-adjusted indirect comparison; NMA, network meta-analysis; PSA, probabilistic sensitivity analysis; QALY, quality-adjusted life-year; RCT, randomized controlled trial; RWE, real-world evidence

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Disclosures

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Authors' relevant disclosures outside current work: None reported.

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